Although the TRAC™ PAC is a self-contained laboratory which includes its own ideas, participation in TRAC™ does not require the teacher to set aside the prescribed curriculum to "do TRAC™." Instead, teachers use TRAC™ when they wish and as they wish to illustrate concepts that their curriculum requires them to address.

VOLUNTEERS AS GUIDES

Volunteers are usually engineers from state departments of transportation, though they could be persons from other transportation related fields. Their typical role is to be a mentor to the students and to assist the teacher in presenting the TRAC™ material. Then, for as long as the TRAC™ PAC remains in the school, volunteers remain on call to provide technical assistance and to answer students' college and career questions.

The volunteers serve as role models; in some inner-city high schools, they may be the first engineers the students have ever met.

REGIONAL CENTERS PUT PROGRAM ON TRACK

Each participating state sets up a Regional Center to administer TRAC™. In most states, the Center is headquartered and led by the Department of Transportation or highway administration. Most DOTs work in close cooperation with other government organizations, universities, nonprofit organizations, and private industry.

Each Regional Center is responsible for placing the program in schools, recruiting and training mentor teams, and maintaining and updating the TRAC™ PAC kits. Most states place the TRAC™ PAC in ten high schools the first year, leaving it there throughout the year on a permanent or semi-permanent loan basis, and expand the program to additional schools each succeeding year.

TRAC™ is the hands-on program that lets students use math and science to solve real-world problems in transportation and civil engineering.

TRAC™ Leading by Example

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AASHTO The Voice of Transportation

TRAC™ is a program of the American Association of State Highway and Transportation Officials.

www.trac-rides.org

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AASHTO The Voice of Transportation

TRAC™ Leading by Example

Introducing TRAC™ "The ride of a lifetime"

TRAC™ is a hands-on education program designed for use in science, math, and social science classes. By engaging students in solving real-world problems such as magnetic-levitation train transportation, TRAC™ connects students to the work world of transportation and inspires them to consider careers in transportation and civil engineering.

HOW TRAC™ WORKS

TRAC™ sends teams of engineers into middle schools and high schools with a self-contained mobile laboratory known as "TRAC™ PAC." The most recent version, TRAC™ PAC 2, consists of eight separate education modules. Each module covers a specific topic—such as environmental engineering or bridge design—and contains all the materials needed to run a variety of experiments.

TRAC™ stands for TRAnsportation and Civil engineering. The acronym also applies to the TRAC™ PAC mobile laboratory, which is a Transportation Research Activities Center.

THE CHALLENGE

The transportation field is changing rapidly. Not so long ago, most transportation professionals were civil engineers; in the near future, with the advent of Intelligent Transportation Systems (ITS) and other new technologies, transportation will need to attract large numbers of computer systems engineers, telecommunications people, environmentalists, technologists from a wide number of disciplines, and others. Civil engineering will remain a core discipline. The transportation industry recognizes the need to recruit the best and the brightest young people, male and female, from every background and ethnic group.

Although there are no national statistics on the current makeup of the transportation labor force, statistics on the civil engineering field provide a good index to the transportation field. The Bureau of Labor Statistics says that, in 2001, of the total 297,000 civil engineers in the nation, 10.2 percent were women, 6.0 percent were African American, and 1.9 percent were Hispanic. By comparison, the national labor pool during the same year included 46.9 percent women, 11.3 percent African Americans, and 10.9 percent Hispanics.

Teachers enjoy a scavenger hunt through their resource trunk.

TRAC™ targets women, African Americans, Hispanics, and American Indians by going into high schools with large populations of these groups. The program is available without regard to gender or ethnicity.

THE TRAC™ PAC

At the heart of the program is TRAC™ PAC 2; eight self-contained education modules featuring professionally developed curricula that meet national standards of learning. Each module contains the equipment, software, and supplies needed to perform hands-on activities related to:

- Bridge Design,
- City Planning,
- Design and Construction,
- Environmental Engineering,
- Highway Safety,
- Magnetic Levitation,
- Motion, and
- Traffic Technology.

The units have been designed to be presented with little to no teacher or volunteer training. Included in each module is a teacher reference guide, a volunteer guidebook, and a QuickTime™ movie showing how each activity works. The modules have up to five activities, allowing teachers to tailor the lessons to their needs. The modular design of TRAC™ PAC 2 also allows for greater flexibility when placing the TRAC™ Program in schools. Teachers can request only those units relevant to their lesson plans.

STUDENTS AS INVESTIGATORS

All TRAC™ activities are structure to allow students to teach themselves what they need to know in order to solve the problems. The students are given inspiration, guidance, and the proper tools, and they work in teams, just as transportation professionals and engineers routinely do.

Teachers enjoy a scavenger hunt through their resource trunk.

Instead of sitting passively while listening to lectures, students become explorers and investigators. They can build a magnetic levitation train that actually works, measure the impact of collisions, even use a computer program to create a city and watch it grow. They seek out and absorb information, formulate new ways of solving problems, and learn that working in transportation is fun, exciting, stimulating, challenging, and doable.

TEACHERS AS FACILITATORS

The teach acts as facilitator for the students as they explore the problems presented in the TRAC™ PAC. The teacher's fund of knowledge becomes a resource as the students investigate ways to approach the problem.

TRAC™ activities are designed around a number of disciplines. Math teachers use the TRAC™ PAC at every level from basic algebra to advanced calculus, with activities that illustrate computer spreadsheets, geometry, graphing data, probabilities distribution, and queuing. Physical science classes address friction, gravity, magnetism, motion, and structures. Social science teachers explore the environment, urban planning, history, local government, technology's relationship to society, politics, and government regulations.