

Turning Students on to Transportation: A Pilot Program for Recruiting High School Students into Transportation Careers and Programs of Study

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ABSTRACT

Iowa is facing a looming crisis with its transportation workforce. As experienced, older workers retire, young people are not replacing them. To help address this problem, the Center for Transportation Research and Education (CTRE) at Iowa State University developed a pilot retention and recruitment program aimed at high school students. CTRE formed an advisory committee composed of people in education and transportation. With the guidance of this committee, CTRE carried out several recruitment activities during the 2002–2003 school year. Strategies included an initial interest survey, a “show and tell” session with a high tech snowplow, a booth at two high schools’ career days, and a day-long field trip to a road construction site and college campus.

Key words: recruitment—students—transportation careers—workforce development

INTRODUCTION

Since 1980, the total number of vehicle miles traveled in Iowa has increased by 62 percent. Increased traffic means increased wear on roads, and two-thirds of the pavements on Iowa's primary road system are more than 30 years old. There is plenty of work to be done. But like the rest of the United States, Iowa is beginning to experience a shortage of individuals working in transportation-related careers. Recruiting young people to the industry is crucial.

Attracting young people to the field of transportation has become critical for maintaining and developing Iowa's transportation infrastructure. According to the National LTAP (Local Technical Assistance Program) Association, nearly half of the current transportation workforce may retire by 2010. Losing that expertise could be devastating.

Part of the mission of the Center for Transportation Research and Education (CTRE) is education and outreach, which includes research opportunities for ISU students and continuing education opportunities for professionals and technicians in the field through the Iowa Local Technical Assistance Program. Developing a recruitment and retention program for high school students to address the developing need for transportation workers seems like a natural fit.

A one-year pilot program, described below, is the first phase of a multi-phase, statewide recruitment and retention program. The overall goal is to increase enrollment in transportation-related programs at Iowa community colleges and universities by 10 percent in five years.

The goals of this pilot program, which was conducted with North High School in Des Moines, Iowa, and Ames High School in Ames, Iowa, during the 2002–2003 academic year, were to

- recruit Iowa high school students to participate in the pilot program
- increase awareness of professional and technical opportunities in transportation among high school students, their parents, and guidance counselors
- enroll, in a transportation-related program at Iowa State University (ISU) and Des Moines Area Community College (DMACC) in 2003, 1–2 Iowa high school students who likely would not have considered this course of study if not for the pilot program
- develop a promotion/recruitment tool that is easily replicated at other high schools and that will form the foundation for a future multi-phase, statewide recruitment and retention program

FORMATION OF ADVISORY COMMITTEE

The first step was the formation of an advisory committee. The primary role of the committee was to advise CTRE about the program's content and format. Committee members included the following:

- City public works staff: Jeff May, Knoxville, Iowa; Jon Hanson and Al Olson, Ankeny, Iowa
- High school guidance counselors: Liegh Lussie and Roxanne Kucharski, North High School, Des Moines, Iowa; Mike Wittmer, Ames High School, Ames, Iowa
- Iowa Department of Transportation (Iowa DOT) staff: Gerry Ambroson, Recruiting/Co-op Coordinator; Sandra Larson, Research and Technical Bureau Director
- Des Moines Area Community College (Boone campus) staff: Shelby Hildreth, Education Advisor; Renee White, Group Leader for Civil Engineering Technician and Land Surveying

- CTRE staff: Deborah Witt, Student Coordinator; Marcia Brink, Communications Manager; Michele Regenold, Program Supervisor; David Plazak, Associate Director for Policy; Duane Smith, Associate Director for Outreach

DESIGN OF PROGRAM

The advisory committee brainstormed possible activities to build Iowa high school students' interest in careers in transportation. The committee agreed to conduct the following activities:

- Distribute an interest survey and video about careers in transportation
- Provide show and tell sessions with the Iowa DOT's high-tech snowplow
- Operate a booth during career day
- Facilitate a day-long field trip to a construction site and college campus (ISU or DMACC)

Survey and Video

In November, the coordinator wrote and distributed a survey about careers in transportation to approximately 640 ninth through twelfth grade students in North High School's math and science classes. The purpose of the survey was to gauge students' potential interest in the following careers:

- transportation planning
- civil engineering
- civil engineering technician
- land surveying
- construction engineering
- general (non-college level careers)

Roughly 50–60 percent of the students surveyed expressed interest in these career fields.

After taking the survey, students viewed a brief video, *Careers in the Infrastructure*, provided by DMACC. The purpose of the video was to introduce civil engineering, civil engineering technology, construction engineering, construction technology, construction management and land surveying to high school students/teachers. The advisory committee felt that the video reinforced that civil engineers, land surveyors and technicians do many jobs, which are “invisible” to the public (i.e. water supply, sewage treatment, environmental protection, roads, buildings, etc.). The video also reiterates that there will be plenty of jobs in the foreseeable future.

Show and Tell with High-Tech Snowplow

In December, before the snow came, North High science and math students rotated outside for a brief presentation about the Iowa DOT's high-tech snowplow. Dennis Kroeger, a transportation research specialist at CTRE who's conducted research on the snowplow, gave the presentations. He and the snowplow driver answered students' many questions about winter maintenance, costs, and the jobs that went with operating and constructing the snowplow.

Career Day

In February, the booth at the North High and Ames High's career days was an opportunity to interact with students and talk with them about transportation careers. To entice students to stop, we had a big red helikite, which is part kite and part helium balloon, inflated and tied up to the basketball rim behind the booth. Survey equipment was set up for students to experiment with, and two laptops had presentations running, one about transportation careers and one about 3-D community planning software. We distributed flyers that briefly discussed half a dozen careers, salaries, and education requirements. Candy was also an enticement. Besides educating students about transportation-related careers, we wanted to persuade students to sign up for a day-long field trip. Sixteen students signed up for the ISU field trip, and eight signed up for the DMACC field trip.



FIGURE 1. Career Day at North High, Des Moines, Iowa (Student Peers through Land Surveying Equipment while DMACC's Shelby Hildreth Explains What It Does)

Field Trips

The field trips were the culminating events in our pilot recruitment program. The purpose of the field trips, which occurred in April, was to give students a taste of transportation careers by visiting a construction site and a taste of college life by visiting a campus.



FIGURE 2. Students Visited a Construction Site on the Interstate 235 Project in Des Moines, Iowa

Iowa State University Field Trip

Although 16 students originally signed up for this field trip, two students actually attended, one a senior and one a sophomore (both boys). CTRE staff escorted the students and began with a visit to a construction site on the Interstate 235 project in Des Moines. Wes Musgrove, assistant construction engineer for the Iowa DOT, gave the students a tour of a site that included bridge and embankment construction. Next, the students went to CTRE for a short lesson in global positioning systems (GPS) followed by a scavenger hunt for candy using handheld GPS equipment. The GPS lesson and scavenger hunt were presented by Jay Sraker and Steve Truby with ISU's Science, Engineering and Technology Extension office. The students also got a chance to talk to several ISU students working at CTRE. Lunch at ISU's Memorial Union was next. The Union is a busy place and gave the boys a nice feel for college life. After lunch, the boys were given a tour of central campus. The guide pointed out the buildings students most often use and gave them a bit of history about the university. The weather was perfect and showed off the campus well. Both boys seemed impressed with the whole experience.



FIGURE 3. Students Participated in a Scavenger Hunt for Candy Using Handheld GPS Devices

Des Moines Area Community College Field Trip

DMACC experienced much better turn out for its field trip. While eight students originally signed up during career day, 13 students went on this field trip. DMACC's field trip occurred two weeks after ISU's, so word of mouth may have contributed to the increased participation. DMACC staff escorted the North High students and took them for a similar Interstate 235 construction tour. Once students reached the DMACC campus in Boone, they were given a campus tour and then heard presentations about the two transportation-related programs, which are only available on the Boone campus, civil engineering technology and land surveying. Students visited DMACC's materials lab and participated in a couple of hands-on activities with materials. They had lunch brought in to the lab. They concluded their visit with a trip to the admissions office.



FIGURE 4. Students Mixed Materials During the DMACC Field Trip to Boone, Iowa

SUCSESSES AND CHALLENGES

Ultimately, this pilot program will have been successful if one or two North High School students attend either ISU or DMACC in fall 2003 with the intention of studying for a transportation-related career. Since only one of the two students who participated in the ISU field trip was a senior (the other was a sophomore), it's unlikely our recruiting efforts will impact ISU this year. We won't know until classes start at DMACC in August whether the program helped DMACC's recruiting efforts. Students who decide to attend DMACC often do so at the last minute, right before the start of classes.

One of the biggest challenges, we realized too late, was in keeping students' interest level up about participating in the ISU field trip. Six weeks elapsed between the time students signed up for the field trip during the career day and when they actually took the field trip. The North High guidance counselors tracked down the students who had signed up to give them permission slips for their parents to sign, but that wasn't enough to generate interest in more than three students (one was sick the day of the field trip) among the 16 who had originally signed up.

DMACC's field trip, on the other hand, had much better participation. It was scheduled two weeks after ISU's. While DMACC originally had eight students signed up, 13 went on the field trip. We believe this is due, at least in part, to the ISU field trip participants' "spreading the word" about their enjoyable experience.

PROGRAM'S FUTURE

We began this pilot program with the idea that it was the first phase of a multi-phase project that would involve more and more high schools. Now that we've completed the program, we realize how time and resource intensive this approach can be. Consequently, we've come up with a new plan for the next school year (2003–2004).

We'll be taking a two-pronged approach:

1. One part of the program will be to plan and host a day-long transportation career fair at Iowa State University during the late winter or spring and invite students from central Iowa schools and possibly statewide. Our early planning will consist of gauging interest among schools and, assuming sufficient interest, recruiting teachers, guidance counselors, and transportation industry representatives to form an event planning committee.
2. The other part of the program will be the development and distribution of a standardized presentation about careers in transportation to people working in the industry such as city public works directors, consulting engineers, snowplow drivers, motor grader operators, and city planners. These professionals could give the presentations to children during their local school's career day or during extra-curricular events. They can help generate enthusiasm about careers in transportation (and about the career fair) where they live and work. We have a good start on this because of the materials already created for the pilot program.

Potential Program/Activity Models

Many exciting programs exist to interest young people from grade school through college in careers in highway construction and transportation. Following are just a few to give readers an idea of the diversity of programs:

- The U.S. Department of Transportation's Garrett A. Morgan Technology and Transportation Futures Program sponsors a K–12 math, science, and technology literacy challenge to help teachers integrate transportation components into the curriculum.
- The AASHTO/Transportation and Civil Engineering (TRAC) Program includes a hands-on math and science education program, an essay contest about the role of transportation, and a MagLev design/build contest for junior and senior high students.
- The National Association of Women in Construction (NAWIC) provides a video about construction, a building design program for middle/junior high students, and a CAD design/drafting program for high school students.

Two models that we're particularly interested in relate to our proposed career fair:

1. One program was originally developed with the assistance of the Federal Highway Administration (FHWA) and is a good model for the overall structure of our career fair. The FHWA has sponsored construction career days in several states, beginning in Texas in 1999. State departments of transportation have helped fund and/or organize the events. Organizations such as Associated General Contractors have also contributed money, equipment, and volunteers to plan and staff the event.
2. Two other programs, developed by the American Society of Civil Engineers (ASCE) and the National Engineers Week (E-week), are useful models for a major event during the career fair. Both organizations conduct contests on building truss bridges. The purpose of the contest is to provide high school students with a realistic, engaging introduction to engineering. The contest gives students the hands-on opportunity to build a bridge spanning 12 inches that will hold 50 pounds using only Popsicle sticks and glue.

CONCLUSION

Even if the pilot program is unsuccessful in recruiting students to study transportation in fall 2003, we still regard it as a beneficial experience. The advisory committee came away with renewed enthusiasm for recruiting students into transportation-related careers, and the future of the program looks bright. Ultimately we hope the program will generate as much enthusiasm among Iowa students, parents, educators, and employers.