UTC PROJECT DESCRIPTION

PROJECT NUMBER:
01326

PROJECT TITLE:
Gearing Up for Transportation Engineering Summer Institute

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PROJECT OBJECTIVE:
The objective of this research is to develop a summer program for encouraging diversity in transportation-related educational programs in Alabama.

PROJECT ABSTRACT:
The numbers of female and minority students are increasing overall in engineering, however there is still a relatively small percentage drawn to the field of transportation engineering. As a consequence, there is a need to educate young people about the profession to encourage underrepresented individuals to become engineers. Therefore, the major goal of this program is to introduce middle school students from underrepresented groups to basic engineering and transportation-related concepts. An additional goal of the project will be to draft local minority and female engineers to act as mentors. Students will use real world examples and new technologies in their hands-on activities.

Instructional and interactive experiences will be developed with this grant to motivate interest in transportation engineering and related science topics. The strategy of this program is aimed at producing students who know "how to find out" and "how to examine and evaluate evidence." The activities will be designed so that the students can complete by themselves; not demonstrations performed by the instructors for the class. The students must be able to read, perform and document the experiments themselves with limited adult supervision. Each experiment will be designed such that the results are sufficiently dramatic to keep the children's attention and that there is a high probability of success. Experience has shown that the kids work best in teams so the activities and equipment will be appropriately structured. In general, each experiment will take approximately one hour including set-up and clean-up, follow-up discussions will be held to highlight concepts and results. Safety and good lab protocol will be considered and stressed throughout.

Once the individual experiments and full curriculum are developed and tested, the program will be placed on the UTCA web page for teacher access. A project deliverable will be a manual detailing all nine hands-on experiments developed in this program.

PROJECT TASK DESCRIPTIONS:
1. Recruiting – Send out letters to schools, phone calls to science teachers and follow-up contacts. Get committee together to select two groups of 20 students based on potential and interest levels.
2. Schedule Mentors – Contact professional organizations (NSBE, SWE, ASCE), interested college students, and local companies.
3. Set-up schedule and lab experience.
4. Run summer institute – Tentatively scheduled for two one-week sessions (June -July).
5. Complete manual and web page as teacher resource – All PIs responsible for completing their laboratory experiments.
7. Write proposal to UTCA and NSF to continue funding for next year.

MILESTONES AND DATES:
Start Date – Jan 1, 2001
Task 1 – Mar 1, 2001
Task 2 – May 31, 2001
Task 3 – Jun 1, 2001
Task 4 – Jul 31, 2001
Task 5 – Sep 30, 2001
Task 6 – Nov 30, 2001
Task 7 – Dec 31, 2001
Project completion: Dec 31, 2001

TOTAL BUDGET:
One-year project: UTCA $58,166; total budget $116,588.

STUDENT INVOLVEMENT:
The project will employ four undergraduate student assistants (either minority or from an underrepresented group) to help in designing the projects, documenting plans, laboratory set-ups, and assist with the participating middle-school students at the institute. Other university students will act as volunteers through the SWE, ASCE and NSBE student chapters. These students will use their design experiences to complete a selected topic course in fall.

RELATIONSHIP TO OTHER RESEARCH PROJECTS:
This project is a continuation and expansion of UTCA project 00303, “Gearing Up for Transportation Engineering Summer Institute.”

TECHNOLOGY TRANSFER ACTIVITIES:
The team members will prepare documents of lab activities in manual form (both student activity guide and teacher instruction guide) and electronic version as a teacher resource. The research findings of this study will be incorporated into a final report and will be distributed to transportation professionals throughout the state.

POTENTIAL BENEFITS OF THE PROJECT:
This proposal addresses the mission and several of the major goals of UTCA. In addition to providing educational experiences for minority students within Alabama (thus addressing diversity issues), this program has the potential to affect the future workplace (human resources issues). The students will become involved in working on transportation-related safety research at an early age and thus may gravitate towards the profession as they mature. This will also address the technology transfer goal of the center since student assistants; mentors and participants will be exposed to state of the art technology within the curriculum.

TRB KEYWORDS:
Transportation, education, safety, outreach, diversity.