UTC RESEARCH PROJECT DESCRIPTION

PROJECT NUMBER:
03305

PROJECT TITLE:
Gearing Up for Transportation Engineering Institute Phase IV

PRINCIPAL INVESTIGATORS:
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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 under-represented individuals to become engineers. Therefore, the major goal of this program is to introduce middle school students from under-represented groups to basic engineering and transportation-related concepts. An additional goal of the project is 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 to motivate interest in transportation engineering and related science topics. The strategy will be to produce students who know "how to find out" and "how to examine and evaluate evidence." The following criteria will be used in designing the hands-on experiments:

- The activities will be completed by the students, instead of demonstrations performed by the instructors for the class.
- The students must be able to read, perform and document the experiments with limited adult supervision.
- The results of experiment will sufficiently dramatic to keep the children's attention, and each experiment will have 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.

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 2 groups of 20 students based on potential and interest levels.
2) Schedule Mentors – Contact professional organizations, 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.
6) Deliverables: Evaluation, implementation manual, educational web site, and final report
7) Write proposal to UTCA and the National Science Foundation for 2004 funding.
MILESTONES:
Task 1, Jan - Mar, 2003
Task 2, Feb - May
Task 3, Feb - May
Task 4, Jun - Jul
Task 5, May - Oct
Task 6, Sep - Dec
Task 7, Nov - Dec 31, 2003

BUDGET:
One-year project: UTCA $50,849; total budget $101,958.

STUDENT INVOLVEMENT:
The project will employ four undergraduate student assistants (either minority or from an under-represented group) to help in designing the projects, documenting plans, laboratory set-ups, and assisting with the participating middle-school students at the institute. Other university students will act as volunteers through the Society of Women Engineers, American Society of Civil Engineers and National Society of Black Engineers student chapters. These students will use their design experiences to complete a selected topic course in fall.

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

TRB KEYWORDS:
transportation, education, safety, outreach, diversity