

PROJECT ADMINISTRATION DATA SHEET

ORIGINAL REVISION NO. _____

Project No. E-15-529 GTRI/~~ST~~ DATE 10/5/82

Project Director: Dr. D. Freeston School/~~Lab~~ Coll. of Eng.

Sponsor: NASA, Langley Research Center
Hampton, VA 23665

Type Agreement: Contract No. NAS1-17141

Award Period: From 9/23/82 To 9/22/83 (Performance) 9/22/83 (Reports)

Sponsor Amount: Total Estimated: \$ 60,000 Funded: \$ 60,000 (fixed price)

Cost Sharing Amount: \$ none Cost Sharing No: na

Title: Summer Technological Institute

ADMINISTRATIVE DATA

OCA Contact Linda H. Bowman x4820

1) Sponsor Technical Contact:

2) Sponsor Admin/Contractual Matters:
Charley L. Crowder
NASA, Langley Research Center
Hampton, VA 23665
(804)827-2536

Defense Priority Rating: none

Military Security Classification: none
(or) Company/Industrial Proprietary: _____

RESTRICTIONS

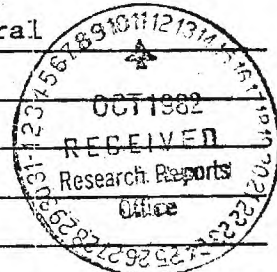
See Attached na Supplemental Information Sheet for Additional Requirements.

Travel: Foreign travel must have prior approval - Contact OCA in each case. Domestic travel requires sponsor approval where total will exceed greater of \$500 or 125% of approved proposal budget category.

Equipment: Title vests with na

COMMENTS:

100% of this contract is to be subcontracted to SECME including General Provisions.



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SR 806 352

SPONSORED PROJECT TERMINATION/CLOSEOUT SHEET

Date 10/3/83

Project No. E-15-529

C. Nease
School XXXX Dean of Engineering

Includes Subproject No.(s) NONE

Project Director(s) Dr. Denney W. Freeston GTRI/GIT

Sponsor NASA Langley Research Center

Title: Summer Technological Institute

Effective Completion Date: 9/22/83 (Performance) 9/22/83 (Reports)

Grant/Contract Closeout Actions Remaining:

- None
- Final Invoice or Final Fiscal Report
- Closing Documents
- Final Report of Inventions
- Govt. Property Inventory & Related Certificate
- Classified Material Certificate
- Other _____

Continues Project No. NONE

Continued by Project No. NONE

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- GTRI
- Research Communications (2)
- Project File
- Other _____



December 17, 1982

Carolyn C. Chesnutt
Executive Director
c/o Georgia Institute
of Technology
Atlanta, GA 30332
404/894-3314.

**Southeastern
Consortium
for
Minorities
in
Engineering**

**SECME Members
Engineering Colleges of:**

Auburn University
Auburn, AL 36830
University of Alabama
Huntsville, AL 35807
The University of Alabama
Tuscaloosa, AL 35486
Tuskegee Institute
Tuskegee, AL 36083
Howard University
Washington, DC 20059
Florida Institute of Technology
Melbourne, FL 32901

University of Central Florida
Orlando, FL 32816
University of Florida
Gainesville, FL 32611
University of South Florida
Tampa, FL 32816
Georgia Institute of Technology
Atlanta, GA 30332
Southern University
Baton Rouge, LA 70813
North Carolina A & T State Univ.
Greensboro, NC 27411
North Carolina State University
Raleigh, NC 27607
Old Dominion University
Norfolk, VA 23508

The Citadel
Charleston, SC 29409
Clemson University
Clemson, SC 29631
University of South Carolina
Columbia, SC 29208
Christian Brothers College
Memphis, TN 38104
Memphis State University
Memphis, TN 38152
Tennessee State University
Nashville, TN 37203
University of Tennessee
Knoxville, TN 37916
University of Tennessee-Chattanooga
Chattanooga, TN 37402

Dr. W. Denney Freeston
Associate Dean
College of Engineering
Georgia Institute of Technology
Atlanta, GA 30332

Dear Dr. Freeston:

As subcontractor, I am pleased to report on the progress of Subcontract No. 1-E-15-529 during the first quarter, 23 September to 22 December, 1982.

The activities of this period have been directed toward program planning and staff development for the 1983 SECME Summer Technological Institute. SECME has received copies of the Subcontract from the Office of Contract Administration, Georgia Institute of Technology. Meetings have been held with personnel from North Carolina State University College of Engineering and College of Education. Principles in the summer institute include Ms. Carolyn C. Chesnutt, Executive Director, SECME; Ms. Anne Wilson, Assistant Director, SECME and Mr. Byard Houck, College of Engineering, NCSU. The instructional portions of the institute will be led by faculty from the College of Education, NCSU.

The SECME Summer Technological Institute will be held June 19 - 30 on the campus of North Carolina State University, Raleigh, NC. Classes will be held in the Jane McKimmon Continuing Education building, the participants and staff will be housed in North Hall, formerly the John Yancey Hotel. Meals for the participants will be provided through the university student cafeteria.

The second quarter, 23 December 1982 through 22 March 1983 will be spent finalizing the instructional component, making program arrangements and coordinating the nominations and pre-registration of institute participants.

The pre-institute planning is on schedule with no problems.

Sincerely,

Carolyn C. Chesnutt

C³:sd

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SECME Summer Technological Institute

Summary Results - 1983

The 1983 SECME Summer Technological Institute was held on the campus of North Carolina State University in Raleigh, NC from June 19 - 30, 1983. Ninety teachers, counselors and administrators represented seven states in the southeastern region. Of the total participating in the Summer Institute, women and minorities comprised the largest percentages with 77 percent and 60 percent respectively. The majority of these participants were teachers from the math, science, and language arts disciplines who taught at the high school level.

Participants spent ten days attending sessions about SECME and engineering opportunities, microcomputer labs and instructional labs in their discipline. According to the results from the final evaluation, participants highly rated each Summer Institute component. Participants enjoyed learning about engineering opportunities, the speakers and panel discussions, and the interaction with other teachers. These educators stated that the information received from Summer Institute, particularly the orientation to the microcomputer and curriculum modules, will be most useful in developing their course curriculum.

The theme of the 1983 Summer Institute was "Communications Skills in the 3Rs. Institute participants focused on developing skills and techniques which help students to improve their communications skills. Each participant had at least fifteen contact hours devoted to teaching techniques and strategies appropriate to their subject area.

Each participant also had at least fifteen contact hours of microcomputer laboratory experience. During these sessions, they were taught innovative approaches to subject matter mastery by using the microcomputer as a teaching tool.

The Institute participants were also given various opportunities to hear and interact with representatives from industry, education and the minorities in engineering effort.

The Institute leaders were Anne Wilson, Assistant Director, SECME; Byard Houck, Director of Special Programs, North Carolina State University School of Engineering; and Jack Wheatley, Associate Professor, Science Education, North Carolina State University, Department of Education.

At the conclusion of Summer Institute many participants had a better understanding of SECME and the engineering profession. Results from the Engineering Awareness Survey, a survey designed to measure the participants attitude toward and knowledge of engineering, verified that participants knew more about the goals of SECME and the different disciplines in engineering. In fact, 87 percent of the participants stated they would recommend Summer Institute to other teachers, counselors and administrators.

Each participant in the summer institute was oriented to the purpose and goals of SECME and was taught new methodologies to curriculum enrichment, including an introduction to curriculum modules specifically designed for use in the secondary school classroom. In addition, each participant was exposed to the use and application of the microcomputer as a teaching tool. While educators learned about SECME, the engineering profession, and applied learning techniques, they had the option of receiving five quarter hours graduate credit hours which can be used toward teacher recertification or a graduate degree. SECME Summer Institutes not only train teachers "the SECME way," but also offer many benefits to the teacher. Whenever the skills of the teacher are strengthened, students in the classroom benefit.

As Table 1 indicates, all states in the consortium have sent representatives to the seven Summer Institutes. Approximately 66 percent (N=405/612) of the total have received graduate credit. An engineering awareness survey was administered to participants before and after Summer Institutes. This survey was designed to measure the participants' attitude toward and knowledge of engineering. In every year the results were tabulated. It is apparent that participants' knowledge about engineering increased during each Summer Institute.

In order to determine the extent to which participants used materials and applied skills acquired at a Summer Institute, SECME conducted a follow-up study. The basic research design utilized for data collection was a combination of mail surveys and on-site interviews. A total of 207 valid responses were returned by mail (N=207/612) and a series of 21 staff visits to 14 SECME schools were made.

These respondents, representing all SECME member states, were from 152 schools in 86 school systems. Over 140 of these schools have participated in the SECME program for three years or more.

SECME teachers tend to be more experienced educators. The average number of years teachers have taught students is 15.3 years. Twenty percent of those teachers surveyed taught at the eighth grade level and the remaining 80 percent taught grades 9 through 12. Primary science subjects taught were physical science and biology while general mathematics, algebra and geometry were the principal math subjects taught. A significant change was reported when teachers were queried if their subject matter had changed since participating in the Summer Institute. Eight teachers stated they created new, computer-related classes since they attended a Summer Institute.

Respondents answered a series of questions regarding their classroom activities since participation at a Summer Institute. Approximately 80 percent of the participants stated that they were doing different or innovative things in the classroom as a result of the

Summer Institute. Over 130 of those surveyed have incorporated the use of curriculum modules and/or the teaching technique taught into their lessons. In addition to using curriculum modules in their classes, participants have: organized seminars, field trips and engineering projects (56 responses); developed computer programs for classroom use (21); increased problem-solving assignments and the use of calculators (20); and initiated JETS clubs (18).

These innovations have had a positive effect. Many commented that more students were becoming familiar with the microcomputer and have shown an increased interest in their science, mathematics and language arts courses. One SECME teacher, who has seen the SECME program prosper, made the following comment:

". . .it increased their awareness of engineering as a career. Also, it motivated them to work harder academically to prepare themselves to enter a college of engineering. . . The first to attend our Engineering Banquet in 1979 graduated from Vanderbilt as a chemical engineer and is now employed with Procter & Gamble."

A number of courses have also been added to the school curriculum as a result of SECME Summer Institutes. Another SECME teacher stated:

"After joining SECME we applied and were funded by our school board to be a math-science optional school. This funding has enabled us to purchase seven Apple microcomputers and to begin teaching computer math."

In general, Summer Institute participants have noticed an increase in the number of students who are aware of engineering and genuinely motivated to prepare themselves for engineering studies upon graduation.

SECME Summer Technological Institute-1983

The 1983 SECME Summer Technological Institute was held on the campus of North Carolina State University in Raleigh, North Carolina from June 19-30, 1983. Ninety teachers, counselors and administrators represented seven states in the southeastern region. Of the total participating in the Summer Institute, women and minorities comprised the largest percentages with 77 percent and 60 percent respectively. A racial and gender breakdown of participants is as follows:

	Female	Male
Black	42	12
White	27	9

In addition, these participants held the following positions in their schools:

Teachers		74
Mathematics	31	
Science	29	
Language Arts	11	
Gifted	3	
Counselors		12
Administrators		4
Total		90

These characteristics are typical of those who have attended previous Summer Institutes.

Participants spent ten days attending sessions about SECME and engineering opportunities, microcomputer labs, and instructional labs in their discipline. Preliminary results from the Summer Institute final evaluation indicate that participants enjoyed learning about engineering opportunities, the speakers and panel discussions, and the interaction with other teachers. These participants stated that the information received from Summer Institute, particularly the orientation to the microcomputer and curriculum modules will be most useful in developing their course curriculum.