

GEORGIA INSTITUTE OF TECHNOLOGY
OFFICE OF CONTRACT ADMINISTRATION

NOTICE OF PROJECT CLOSEOUT

4

SR 481

Closeout Notice Date 10/31/96

Project No. E-21-5E9 _____ Center No. 10/11-6-P5411-0A0_

Project Director GAYLORD T K _____ School/Lab ECE _____

Sponsor UNIVERSITY OF GEORGIA/ATHENS, GA _____

Contract/Grant No. RH229-113/1182024 _____ Contract Entity GTRC

Prime Contract No. S164B40010 _____

Title INTRODUCING HIGH SCHOOL SCIENCE & MATHEMATICS TEACHERS/STUDENTS TO ... _____

Effective Completion Date 960630 (Performance) 960731 (Reports)

Closeout Actions Required:	Y/N	Date Submitted
Final Invoice or Copy of Final Invoice	Y	960731
Final Report of Inventions and/or Subcontracts	N	_____
Government Property Inventory & Related Certificate	N	_____
Classified Material Certificate	N	_____
Release and Assignment	N	_____
Other _____	N	_____
Comments _____		

Subproject Under Main Project No. _____

Continues Project No. _____

Distribution Required:

Project Director	Y
Administrative Network Representative	Y
GTRI Accounting/Grants and Contracts	Y
Procurement/Supply Services	Y
Research Property Management	Y
Research Security Services	N
Reports Coordinator (OCA)	Y
GTRC	Y
Project File	Y
Other _____	N
_____	N

E-21-5E9
#1

**Dwight D. Eisenhower Mathematics and Science
Program in Higher Education**

PROJECT DIRECTOR'S FINAL REPORT

Eisenhower Project No. E60-MSB1

Title Introducing HS Science and Math Teachers/Students to Integrated ...

Director Thomas K. Gaylord

Institution Georgia Institute of Technology

Circle one: (a) Public 4-year university or college b) Public 2-year university or college
 c) Private 4-year university or college d) Private 2-year university or college

Amount of Grant \$ 7,748

A. GRANTEE ACTIVITIES

A-1 Provide a listing of all local education agencies that participated in your activities:
Fulton County Schools, DeKalb County Schools, Gwinnett County Schools,
Westminster Schools

A-2 Circle the category that best fits the primary focus of activities conducted under your grant. (Circle only one)

a) Establishing traineeship programs for new teachers who will specialize in teaching mathematics and science at the secondary school level

b) Retraining:

1) teachers who specialize in disciplines other than mathematics and science, to specialize in mathematics and science

(2) mathematics and science secondary school teachers to expand their areas of specialization within those disciplines or to expand their specializations across disciplines

c) Inservice training for elementary, secondary, and vocational school teachers and training for other appropriate school personnel to improve their teaching skills in mathematics and science

d) Other (Specify _____)

A-3 Circle the subject area that your activities primarily focused on

- a) Mathematics only b) Science only c) Both mathematics and science

A-4 Circle the teaching strategy that your activities primarily focused on (Circle only one)

- a) Integration of higher order thinking skills into mathematics and science
b) Training teachers in the instructional use of computers and technology
c) Cooperative learning
d) Alternative means of assessment
 e) Integration of mathematics and science
f) Hands-on activities
g) Other (Specify _____)
h) Not targeted to any one particular teaching strategy

A-5 Circle the item that lists the primary audience of your activities (Circle only one)

- a) "Lead" or master teachers who will train or pass knowledge on to others
 b) Teachers adequately prepared in one area of mathematics or science who need retraining in another area
c) Underprepared teachers currently assigned to mathematics or science
d) Out-of-field or uncertified teachers
e) Preservice teachers
f) Not targeted to any one particular group

A-6 Provide the number of contact hours per participant for your project 20

A-7 Circle *all* the following agencies or organizations that supported your project with funds in addition to Eisenhower Higher Education funds

- | | |
|--|--|
| a) National Science Foundation | f) Other federal (Specify _____) |
| b) U.S. Department of Energy | g) State funds (Specify _____) |
| c) NASA | h) Local public funds |
| <input checked="" type="radio"/> d) Eisenhower Local Funds | i) Local private funds |
| e) Eisenhower SEA D&E grants | <input checked="" type="radio"/> j) Other funds)Specify _____ |

B. PARTICIPATION

B-1 Provide the number of participants by each of the following positions: (List only under the category which is the participant's primary function.)

	# of Participants
a) Teachers	20
b) Preservice teacher candidates	_____
c) Administrators/Supervisors	_____
d) Other (Specify _____)	_____
e) Total number of participants	_____

B-2 Provide the number of participants for each of the following categories:

	# of Participants		# of Participants
a) Male	8	a) White, non-Hispanic	12
b) Female	12	b) Black, non-Hispanic	8
c) TOTAL	20	c) Hispanic	_____
(Should equal B-1 total)		d) Asian/Pacific Islander	_____
		e) Amer. Indian/Alaskan Native	_____
		f) TOTAL (Should equal B-1 total)	20

B-3 Provide the number of participants by each of the following levels of schooling (of students taught or worked with): (Provide the grades that are included in the levels of school indicated. List only under the category that the participants primarily taught or worked with.)

	# of Participants
a) Elementary (Grades _____)	_____
b) Middle/Jr. High (Grades _____)	_____
c) Senior High (Grades <u>9 - 12</u>)	20
d) Not associated with a specific level	_____
e) TOTAL (Should equal B-1 total)	20

B-4 Provide the number of participants receiving each of the following types of credit after participating in an Eisenhower Higher Ed activity: (List all types of credit received. This will be a duplicate count.)

	# of Participants
a) Graduate Credit	_____
b) Undergraduate Credit	_____
c) Credit toward salary increase	_____
d) Credit toward continuing education	_____
e) Credit toward certification	20
f) Other (Specify _____)	_____

C-1 Results of Project (e.g. impact on teachers, curriculum, products). This has been requested by the Board of Regents. We will accept your judgement and relay it to the Regents in a report available to the public. Report on a separate sheet if necessary (200-300 words would seem sufficient)

Please see attached article appearing in the Aug. 21 issue of The Whistle.

THE WHISTLE

GEORGIA INSTITUTE OF TECHNOLOGY HOME OF THE 1996 OLYMPIC VILLAGE August 21, 1995

Costs for Paralympics

letes from 19 countries competed in the International Paralympic Swim Trials from August 17-20 at the Georgia Institute of Technology. The event was part of the Olympic Countdown Celebration, a Paralympic Organizing Committee event at the Shepherd Center of Atlanta. 154 medal events, designed to provide a challenge for athletes to obtain international recognition and a chance to establish a qualification for the 1996 Atlanta Paralympic Games, August 16-25, 1996. The largest showing was with over 90 athletes from Australia. China and the United States had the next largest showing with 25 athletes. Other countries represented included Argentina, Canada, Cuba, Guinea, Iraq, India, Japan, Malaysia, Nepal, New Zealand, Nigeria, and Thailand, according to...

...range from wheelchair basketball to tennis. Participants are comprised of athletes with cerebral palsy, visually impaired, paraplegics, and les autres (those difficult to categorize). Each competitor is selected by his or her national team before the international event. The Paralympic Games were held in Rome in 1960, and have been held every Olympic year since, with the exception of the country hosting the Olympic Games and the Olympics share most of the same sporting...

Handle Packages with Care

The Georgia Post Office experienced a problem Saturday, August 12, upon receipt of a package with no return address. The package was sent to the School of Earth and Atmospheric Sciences, was wrapped in tape, with the wrapping cut through the wrapping. The two packages taped together, without a return address, said Jack Vickery, Georgia Institute of Technology. He notified city officials just to be on the safe side. The city's profile for "suspicious packages" was opened remotely. At this point, it...

Teachers Integrate Problem Solving Techniques

A recent School of Electrical and Computer Engineering (ECE) workshop reminded high school teachers "people are the real problem solvers, not machines."

The "Integrated Problem Solving Workshop" emphasized the blending of science and mathematics courses, and encouraged the use of integrated calculation methods.

"We think it is important for educators to take an integrated approach to problem solving by combining the use of pencil and paper, modern calculators, and computers," said Thomas Gaylord, Regents' Professor, School of Electrical and Computer Engineering. "The strengths and weaknesses of each, and how they fit with each other, is crucial to solving real world problems," he said.

One of the themes of the workshop was, "the problem solver, not the calculating device, is the key to problem solving," according to Gaylord.

Twenty high school science and mathematics teachers assembled at Tech for the three-day intensive hands-on workshop. Participating teachers represented private and public high schools from several metro Atlanta counties. The workshop, taught by a

combination of ECE and North Springs High School instructors, was based on senior-level problems in chemistry, physics, and business. Instructors used the applications to introduce problem solving methods and tools. Participants analyzed and solved the problems using pen and paper, graphics calculators and computer software.

"the problem solver, not the calculating device, is the key to problem solving."

"A lot of teachers don't have the time or resources to keep up to date with the available instructional tools," Gaylord said. "We hope that the computer and technical training we provided will help them to broaden their teaching methods," he said.

Several ECE professors served as workshop instructors. Participating professors included Gaylord, Dave Hertling, and Jim McClellan. José Cruz-Rivera, Ph.D. candidate, also

served as a workshop instructor. High school instructors were Jan Gaylord and Patricia Walker, both from North Springs High School.

"Putting the workshop material together and refining our training techniques was the hard part," said Gaylord. "Assuming our sponsorship needs are fulfilled, we will be able to offer the workshop on a regular basis."

Participants responded positively to the workshop, said Diana Fouts, workshop coordinator. Written evaluations revealed that 100 percent of the high school teachers who attended "would recommend this course to others."

Seventy high school teachers applied for the workshop. To ensure each teacher would receive individual instruction, only 20 were selected.

Participants were chosen, said Gaylord, with favor given to those schools that were able to send both a science teacher and mathematics teacher.

The Eisenhower Higher Education Program, the Eisenhower Secondary Education Program, Texas Instruments, Prentice Hall, and Mathworks provided sponsorship for the event.



EVALUATION

INTEGRATED PROBLEM SOLVING WORKSHOP Georgia Institute of Technology June 19-21, 1996

Sixty nine written applications were received for the workshop. Twenty high school teachers were selected to attend. At the end of the workshop, evaluation forms were distributed and a summary of those results are as follows:

The Program: 11 "exceeded expectations"
7 "met expectations"
0 "needs improvement"

Content/Objectives: 4 "exceeded expectations"
14 "met expectations"
1 "needs improvement"

Instruction: 12 "exceeded expectations"
7 "met expectations"
0 "needs improvement"

Services: 8 "exceeded expectations"
9 "met expectations"
0 "needs improvement"

Program Information: 12 "exceeded expectations"
7 "met expectations"
0 "needs improvement"

Meeting Facilities: 14 "exceeded expectations"
5 "met expectations"
0 "needs improvement"

Would recommend this course to others: 17 "yes"
0 "no"

Workshop Evaluation: 17 "considerable value"
2 "some value"
0 "little or no value"

Participant Comments:

Great variety of problem-solving strategies.
Well organized and well-paced.
Perhaps it could be extended a few days.
I enjoyed being a part of this workshop. I am going to recommend it highly to our math coordinator.
Excellent, informative, and motivating.
I enjoyed it.
Course was informative and gave many ideas to add to improving students' knowledge in math.
This was great. I learned a lot about using the TI-82. I want to learn more.
Good math refresher.

Excellent instruction. Great information for my
classroom use.
Great variety of problems. Notebook well prepared. I
look forward to using it in my courses.
Valuable and interesting.
Overall the workshop was interesting.
Course was very informative in relating new and old
concepts to the TI-82 calculator.
Workshop very effective. Learned many things useful for
teaching precalculus and algebra II.

Instructors:

José Cruz-Rivera:	14	"excellent,"	5	"good,"	0	"fair,"	0	"poor"
Tom Gaylord:	11	"excellent,"	8	"good,"	0	"fair,"	0	"poor"
Dave Hertling:	18	"excellent,"	1	"good,"	0	"fair,"	0	"poor"
Tricia Walker:	14	"excellent,"	5	"good,"	0	"fair,"	0	"poor"

Comments on Instructors:

José Cruz-Rivera: Excellent support person.
Poised for success. Go for it.
Well organized. Very good presentation.
Level of presentation was great. Not too demanding.
Really enjoyed.
Good job on the presentation.
Very helpful in labs and giving technical advances.
Great presentation.

Tom Gaylord: Great direction and excellent instructor.
Good problems.
Obviously very intelligent.
Several interesting problems.
Very helpful in group and individual activities.
Appreciated his sense of humor.

Dave Hertling: Very good applications person.
Organized, very experienced, great applications
Entertaining as well as informative.
Made you feel very enthusiastic.
Excellent teacher, very interesting.
Good visuals to show the math.

Tricia Walker: Good connector for me as high school teacher.
Knew TI-82 very well.
I liked the way she made things appear very simple.
Enjoyed hands on activities with the TI-82 calculator.
Good presentation.
Instructed the calculators in a manner in which a
beginner could follow.

PARTICIPANT INFORMATION

INTEGRATED PROBLEM SOLVING WORKSHOP
Georgia Institute of Technology
June 19-21, 1996

Gender: 8 males and 12 females

Ethnicity: 8 black and 12 white

Level: 20 high school teachers, grades 9-12.

Experience: 1 to 30 years (average of 14.9 years).