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STUDENT SCIENCE ENRICHMENT TRAINING PROGRAM

Progress Report For
June 1, 1992 To May 31, 1993

Shingara S. Sandhu, Chairman
Division of Natural Science and Mathematics
and Computer Science
Claflin College
Orangeburg, South Carolina 29115

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STUDENT SCIENCE ENRICHMENT TRAINING PROGRAM

PROJECT REPORT

SUBMITTED

TO

U.S. DEPARTMENT OF ENERGY
SAVANNAH RIVER OPERATION OFFICE

HBCU PROGRAM MANAGER
P.O. BOX A
Aiken, South Carolina 29802
(803) 725-8104

By

Shingara S. Sandhu, Chairman
Division of Natural Science and Mathematics
and Computer Science
Claflin College
Orangeburg, South Carolina 29115
(803) 535-5244

SUMMARY

Student Science Enrichment Training Program

Historically Black Colleges and Universities wing of the the United States Department of Energy (DOE) provided funds to Claflin College, Orangeburg, S.C. to conduct a student Science Enrichment Training Program for a period of six weeks during 1990 summer.

Fifty participants were selected from a pool of One hundred thirty applicants, generated by the High School Seniors and Juniors and the Freshmen class of 1989-90 at Claflin College. The program primarily focused on high ability students, with potential for Science, Mathematics and Engineering Careers. The major objectives of the program were (i) to increase the pool of well qualified college entering minority students who will elect to go in Physical Science and Engineering and (II) to increase the enrollement in Chemistry and Preprofessional -Pre-Med, Pre-Dent. etc - majors at Claflin College by including the Claflin students to participate in summer academic program.

The summer academic program consisted of Chemistry and Computer Science training. The program placed emphasis upon laboratory experience and research. Visits to Scientific and Industrial laboratories were arranged. Guest speakers drawn from academia, industry and several federal agencies, addressed the particpants on the future role of Science in the industrial growth of United States of America. The guest speakers also acted as role models for the participants. Several vedios and films, emphazising the role of Science in human life, were also screened

PROJECT REPORT
SUMMARY

TITLE: Student Science Enrichment Training Program

Funds were requested for a Student Science Enrichment Training Program, with special emphasis on chemical and computer science fields. The residential summer sessions was be held at the campus of Claflin College, Orangeburg, SC, for six weeks during 1992 summer, to run concomitantly with the college's summer school. Fiftty participants selected for this program, included high school sophomores, juniors and seniors. The students came from rural South Carolina schools which, presently, have limited science and computer facilities. The program focused on high ability minority students with high potential for science engineering and mathematical careers.

The major objective was to increase the pool of well qualified college entering minority students who would elect to go into science, engineering and mathematical careers. The division of Natural Science and Mathematics and engineering at Claflin College received major benefits from this program as it helped us to expand the departments of chemistry, engineering, mathematics and computer science as a result of additional enrollment. It also established an expanded pool of recruitable graduates by the federal agencies and private corporations, in science and mathematics at Claflin College. Department of Energy's relationship with Claflin College increased the public awareness of energy related job opportunities in the public and private sectors.

The major objectives of these programs were to develop and foster knowledge, understanding and interest in physical, computer, engineering and mathematical sciences. The program placed emphasis upon laboratory experience, visual hand on work and some research participation. Visits to Scientific Laboratories and other points of scientific interests were arranged to

stimulate scientific career goals among the participants. Several guest speakers from DOE, industry and academic institutions participated in the program. They talked about the careers in science, engineering and mathematics and also acted as role models for the participants.

STUDENT SCIENCE ENRICHMENT TRAINING PROGRAM
PROGRESS REPORT

I. Introduction

Claflin College, a predominantly black undergraduate institution located in Orangeburg, South Carolina, has served the needs of rural communities for more than one hundred years. Claflin offers liberal arts and teacher preparation programs, and is fully accredited by the Southern Association of College and Secondary Schools.

The FTE (Full Time Enrollment) student enrollment during the first semester of 1987-88 was 907. According to the information obtained from the Office of Financial Aid, approximately 95 percent of the students received financial aid; on the average, a student was on 80 percent financial aid.

The church-related (United Methodist) school has experienced a significant expansion of its facilities in recent years. The Division of Natural Science and Mathematics is located in the James S. Thomas (JST) Science Center which was dedicated in 1976. It is a multimillion dollar modern building with good equipment and facilities.

The Division of Natural Sciences and Mathematics is composed of three departments: The Department of Biology, the Department of Chemistry, and the Department of Mathematics and Computer Science. The Department of Biology, Chemistry and Mathematics and Computer Science offer major and minor programs. The Division also offers a pre-medical curriculum and a chemistry academic program with concentration in Environmental Chemistry. In addition to offering a major in mathematics, computer science, a composite major in mathematics and computer and a major in information management, the Department of Mathematics and Computer Science offers minor in Computer Science, Mathematics, and Physics. The Division offers B.S. Engineering Techology degree in cooperation with South Carolian State University.

II. Target Schools and Students

As is shown in Table I* there is a progressive decline in the Science and Engineering Professions, chosen by the freshmen, entering colleges and universities. This is a nationwide trend and is not unique to Claflin College.

Table I,* Trends in science majors chosen by freshmen, nationwide

PERCENTAGE OF ALL FRESHMEN

	1977	1985
Biological Sciences	4.7	3.4
Physical Sciences	3.1	2.4

	1983	1984
Computer Science	8.8	6.1

	1982	1985
Engineering	12.0	10.0

Source NSF Publication NSB-86-100

Among students who complete degree programs in Sciences and Engineering, about one-half (1/2) of the B.S. recipients, two-thirds (2/3) of M.S. recipients and three-fourths (3/4) of Ph.D. recipients actually entered the science work force. The experts are already guessing, that by 1995, there will be approximately 2 million more jobs than educated workers available for the new openings. They are also guessing, that blacks will continue to lose ground and the government will have to allow more immigrants in to make up the difference. If the present pattern of field selection continues and if employer demand does not abate, it is clear that the nation will face serious manpower supply shortage in technical fields over the next ten years.

Blacks and other minorities (Hispanics, American Indians) have a dismissal record when it comes to their freshmen year. Blacks form about 10% of the nation's workforce. However, they form only 2.7 percent of the national professional manpower. One thousand blacks recieved Ph.D. degrees in 1985, out of which, only 30 Ph.D. degrees were awarded in Science, Mathematics and Engineering. Majority of 30 doctorate receipients were in the field of Biology and Health. In South Carolina, minorities constitute 31.7 percent of the state population, but they form only 15.24 percent of the professional work force. The role of minorities in Science and Technology is very disappointing. A state, possibly, can not move speedily towards the new scientific horizons if a majority of its citizenry is incompetent to participate in the logic of decision making process relating to Science and Technology.

Today, black and other minorities constitute about twenty percent of the public high school's student bodies and by 2010, the minorities will form over one-third of the total work force. One can go on quoting statistics to prove that the minorities are woefully under represented in the Science and Technology work force and a serious need exists to enhance their participation in these professions.

The Federal Government and several national companies have fully realized that there is going to be an acute shortage of technical manpower in the near future, consequently they have decided to exert their influence in increasing the role of minorities in the field of Science, Engineering and Mathematics. Historically Black Colleges and Universities wing of the Department of Energy at the Savannah River Operation Office was able to commit funds for the residential 1988 Summer, "Student Science Enrichment Training Program" which was held at the campus of Claflin College, Orangeburg, SC.

PROJECT PROGRESS

This project accepted thirty predominantly minority (Black) students. All of these students were high school juniors and seniors from rural South Carolina high schools, with limited science education programs. All student were black and came from small or medium sized towns in South Carolina.

This was a residential project. It was very helpful that the housing aid was given to the participants in this project, as the participants were recruited from rural areas where family incomes are very low and without room and board it would have been impossible to reach this group. Indeed, in the small and medium sized towns of South Carolina, making up for the loss of a student's summer earnings is a significant contribution by a family. It was a wise decision that the participants were compensated for room and board while they were on campus, enrolled in the summer project.

III. Major Objectives of the Project

In many of the rural high schools in South Carolina the science and computer educational opportunities are limited to simple classroom discussions with little in-depth exploration of subject matter.

Students from such schools graduate with preconceived notion about the difficult task of succeeding in science professions. In particular, the opportunities for laboratory experiences are non-existent in such schools. In recognition of the deficiencies in scientific knowledge and techniques, the following goals were adopted for this project:

A. Increase the pool of well-qualified college-entering minority students who will select to major in Physical and Engineering Sciences.

B. Develop and foster knowledge, understanding, and interest in science.

C. Offer Chemistry program which places emphasis upon laboratory experiences and some research participation.

D. Develop in minority students the belief that the Science career are exciting, challenging, and can be successfully pursued by minorities.

E. Arrange visits to scientific laboratories and other points of scientific interests for motivational purposes and generate scientific curiousity.

F. Assist students in making career choices by introducing them to a variety of information and experiences, including interaction with scientists, guest speakers and role models.

G. Motivate the participants to go back to their high schools and work hard to prepare themselves so that they will be able to pursue science careers in college.

H. Encourage and motivated participants to take national college entrance (SAT etc.) tests and have the appropiate college faculty to guide the students in that direction.

IV. Project Description

The project for Student Science Enrichment Training Program (SSETP) was planned for minorities and disadvantage students who were (1) Rising Juniors (2) Rising Seniors and (3) Freshmen Class at Claflin College (1990-1991 Freshmen Class). The brochure was printed (see Enclosure 1). A list of all high schools, located in the State of South Carolina, was procured from the Office of the Admissions and Records. Five copies of the brochure which also included application blanks, was mailed to the chairman, Department of Science of each high school in the state. Copies of the brochure were also distributed to every freshmen at Claflin College. Infdormation was also advertised in all major daily news papers of South Carolina. Additionally each freshmen orientation instructor at Claflin College was requested to talk to the students about the availability of SSETP during 1990 summer for such individuals who may be interested in science areers. The students who were identified by their teachers or guiding counselors or academic advisors, as capable of pursuing careers in Physcial Sciences and Engineering were encouraged to apply for SSETP.

In response to our approach, the project received 65 applications which were placed into following catagories (a) applicants who expressed interest in choosing Claflin College for their undergraduate studies (There were 11 such applicants) (b) applicants who were ready to go into Science careers, but their choice of undergraduate studies was not Claflin (c) the applicants who were not interested in science careers. The applicants in this catogory (c) were not considered for acceptance into SSETP. The project director interviewed, by telephone each of the remaining applicants to determine the firmness of their interest in Science, Engineering and Mathematics. The applicants in the categories A and B were separetely graded based on the telephone interviews and their academic performance. Applicants out of these two categories were selected. All the selected applicants were informed through a letter. They were asked either to accept the offer by checking "Yes" or refuse the offer by checking "No" . Two applicants checked (No) and several of them did not care to respond. Consequently a subsidiary list of applicants who were on the waiting list was produced. The applicants in this group were made the similar offer as mentioned above. By June 13, 1988 we had thirty applicants who committed to join the program for 1988 Summer. One out of thirty participants dropped out on the second day of initiation of the program .

The students were housed in the college dormitories. The female students, numbering twice than the male participants, were accomodated in Asbury Hall, two per room on the ground floor. The male students were accomodated in High Rise dorm, three to a room. The project director and some other SSETP staff members were in the dorms to facilitate their moving into the assigned spaces.

The Student Science Enrichment Training Program (SSETP) ran concurrently with the college's summer school of 1990. The SSETP commenced on June 12 and ended on July 21, 1988. The students reported to the Science building on the morning of June 12, 1988. The participants were enrolled in

Chemistry 121 (Gen. Chem) and Computer Science 200 (Computer concepts) for a total of 7 Semester Hours (SH). They were divided into two groups of 15 each. Consequently, there were two sections (A&B) for Chem 121 and two sections for Computer Science course. One group of fifteen students took Computer Science and the other took Chemistry. The group rotated with each other so that each student was exposed to chemistry and computer operations and its applications in solving chemical problems. Chemistry academic programs, assisted by computer simulations and computer assisted instructions (CIA) to make learning of chemistry fun, were offered during six weeks of the program. Each student was aided to learn adequate fundamentals of computer handling and operations which were applied to the learning of Chemistry and en-hancement of computer expertise.

The students were involved in classroom instructions, laboratory activities and research. It was conceived that student's involvement in research and science projects stimulate the high ability students to continue their education and plan for careers in Science and Engineering. Each student was encouraged to select a topic in the fields of Science or Computer Science which involved one of the followings:

A. Laboratory research work; requiring skills to use simple scientific tools and chemicals under laboratory conditions

B. Literature research on any of the modern topics of scientific interest such as laser and fusion, Super conductivity, threat of aid etc.

C. Science equipment fabriation which can demonstrate Science Technology applications.

D. Computer simulation/software modifications etc.

This idea of student's involvement in research was a great success. Every student prepared material (see enclosure) of his or her choice and presented it to the audiance which included students and faculty. These seminars were jointly chaired by a student and a faculty member. The student chairperson was given the responsibility to introduce the speaker who provided autobiographic material to the chairperson

Name	Topic	Field
	First Place	
Avis Wright	"Electrolysis"	
Brandy Dawkins Lowell Tyler	"Computer Images"	
	Second Place	
Reginald Williams	"Fun With Flame Test"	
Ralph Elam	"The Machine that Change the World"	
	Third Place	
Miriam Bennett Christopher Goodwin	"The Explosiveness of Hydrogen"	
Denita Simuel	"Black Female in the Sciences"	
Tami Thompson	"A New Dimenson: Shining a Light Mircrosophy"	
Kamalita Parrott	"The Effects of Darkness and Lightness on the Sprouting of Potatoes"	
Adrienne Price Lori Riley	"Our Science Project Osmosis"	

The caliber of material and its presentation were excellent considering the academic background of each participant. Each winner listed above was awarded an achievement certificate (see enclosure 7) and a cashier's check of $20.00 for first place, $15.00 for second place and $10.00 for the third & honorable place. These awards and certificates were awarded by Ms. Jean Guy of DOF from SRS Site on July 22, 1988 at the closing banquet (see enclosure 8) . The parents of the participants as well as the graduates of 1988 & 1989 SSETP were invited for the banquet. The closing banquet was taped. The video tape is available in the Office of the Director. Mr. George Lee, Director of Admission and Records high-lighted the occasion by his humerous talk which brought out the role of minority scientists in keeping America ahead of competition . Each participant received a certificate for having successfully completed the SSETP (see enclosure 9). Additionally each particpant received 7 Semeter Hours of academic credit 4, SH in Chemistry and 3 SH in Computer Science - which is transferable to an undergraduate institution of their choice.

Instruction on the use of the library, correction of fundamental deficiencies in Mathematics and Science, discussion on career in Science, and the preparation and presentation of papers on the research projects were integral part of this project.

Provision was made for tutoring by undergraduate Chemistry and Computer Science student assistants, in supervised study sessions, and for generous time allotment to teachers for office conferences with students. Supervised study sessions were scheduled for the afternoon hours. Miss Erica Brooks, a Junior Chemistry Major and Mr. John Entsah, a Pre-Med Major were employed as laboratory assistants. They performed tutorial services and were constant companions of the SSETP particpants.

V. Guest Speaker

Several activities such as project meetings, sessions with the guest speakers, presentation of science application videos and sound filmstrips were scheduled in the afternoon. The guest speakers were drawn from a spectrum of persons, with good scientific as well as community service backgrounds. The speakers who participated in this program represented academia, Claflin College, South Carolina State College, Industry-Ethyl Chemical Corporation, Dupont, Business World and Governmental agencies-Department of Energy. The speakers acted as role models and assisted the participants to examine career choices in Physical Science, Computer Science, Mathematics and Engineering. Selected sound strips and videos which contributed to student's knowledge, were procured from American Chemical Society and National Science Foundation, were screened from time to time. Each such presentation was followed by open discussion in which participants as well as guest speakers took an active part. The guest speaker donated their time and energy free as a service to the community. The names of the speakers, their affiliation along with their topics are given below.

1. Dr. Oscar Rogers, Jr. Ed.D
   President, Claflin College
   "Life Experience"

2. Bert Knessel, Ph.D
   Organic Chemist
   Ethyl Chemical Corporation
   Orangeburg, S.C. 29115
   "Chemistry and You"

3. Marion Henry M.D.
   Claflin Aluminus
   Future of Medicine

4. Vernon Middleton
   Vice President for
   Alumini Affairs
   "Role of Claflin in our Community"

5. Willie Frazier, Ph.D.
   Claflin Aluminus
   Dupont, SRP,
   Aiken, S.C.
   "SRP and Our Community"

6. Carl Clark — "Super Conductivity"
   Physicist
   College of Science
   S.C. State College
   Orangeburg, S.C.

7. George Lee, Director — "Claflin is Good for You?"
   Admissions and Records
   Claflin College

8. Earl Middleton — " I made it, Can You"
   Claflin Aluminus
   Owner Operator Coldwell Banker
   Real Estate
   Orangeburg, S.C.

9. Frank Wright — "Future Role of Black Scientist's"
   HBCU Coordinator
   DOE, SRS
   Aiken, S.C.

10. Ms. Jean Guy — " DOE's Role in Meeting Technical Needs
    DOE/HBCU Programs
    Aiken, SC

11. Mr. Budy Clark — " More Scientists are Needed
    Manager Pulbic Relations
    Dupont
    Camden, SC

12. M. Nathaniel Edward
    Claflin Aluminus
    Dupont
    Camden, SC

VI. Industrial/ Academic Visits

To expose the students to science outside the program and to familiarize them with research tools in science, students were taken to a day-long field trips to scientific laboratories located at places such as the Savannah River Plant (D.O.E. facility in Aiken) and the Medical University of South Carolina, Wesvaco Paper and Pulp Plant and Dupont Fiber pedint, Charleston.

To further expose the students to different scientific settings and provide appropriate role models, a series of science laboratory visitations and field trips were planned. For example, students visited the University of South Carolina, Columbia, which has regional Nuclear Magnetic Resonance (NMR) facilities and recently completed an engineering center and Savannah River Ecology Laboratory which houses live aligators and many other reptiles. At SRS, students also visited laboratory facilities where research relating to the handling and disposal of radio active waste material is being conducted. The students also visited robots research center at SRP. A number of get together opportunities were made available to the students through picnics and formal dinners. Summer program for participating students was conducted in such a way that students left the campus, at the close of the semester, thinking that Science is fun and a rewarding field to get into. The places visited by participants along their importance are given below:

Place	Importance
1. Ethyl Chemical Speciality Chemicals Orangeburg, S.C.	Iboprofin, Alkyl Aluminum and and several pesticide intermediates
2. Carolina Eastman Columbia/St. Mathews	Fiber material, Coke, Pepsi Plastic containers etc.
3. University of South Carolina Columbia, S.C.	Super Computer Center, Science facilites Engineering Center Campus Tour
4. Westvaco Charleston, S.C.	Paper and Pulp Manufactoring faculty

5. Medical University of South Carolina Charleston, S.C.	Department of Anatomy, Pathology Medcine, Biochemistry, Minority Center, Campus Tour
6. Savannah River Plant Aiken, S.C.	Nuclear Power Plant, Nuclear Waste disposal facilites SRL and SRE, General Tour of Plant
7. Riverbank Zoo Columbia, S.C.	Visit to Animal Shelter Place etc.

In addition to Scientific and industrially related trips, students participanted in several picnics at places such as Edisto gardens, Battery, Charleston; Capital, Columbia and had lunch in the SRP cafeteria. They also had BBQ at the president's resident and at Dr. S. Sandhu's resident.

The Computer Science Program was supported by a computer laboratory, housing an interactive, time sharing, mini-computer system. The Computer Laboratory is located on the first floor of the air conditioned Science Center. The college owns a Digital Equipment Corporation VAX-11/750 RA81/TU80 computer system with 2 MB of ECC MOS memory and 456 MB of disk storage. The laboratory, a "user oriented" computer facility, has 9 VT 220's and 2 VT 240's (graphic) video terminals. The CRT terminal users were able to get hard copies from the LP 25 line printer.

The Chemistry Department is located on the third floor of the JST Science Center. The equipment in chemistry and the facilities in which it is housed are modern and more than sufficient for instructions at the college level (Professional B.S. in Chemistry). Claflin's Chemistry Department is particularly well positioned for this kind of project, in part, because it has received, since 1972, several research grants from the Environmental Protection Agency, the United States Department of Agriculture and the Department of Energy. The Department owns or has free access to a wide variety of scientific tools and equipment.

VII. The Chemistry Program

The chemistry program was designed and implemented by Dr. Nahid Shabestary. In addition to the previously mentioned general science objectives, the chemistry program had the following additional objectives.

A. Develop in students the basic knowledge and skills essential to the understanding of chemistry.

B. Develop skills of accuracy and precision in thinking, communication, experimental observation and manipulation

C. Develop an ability to interpret the properties and reaction of atoms and molecules in terms of structural theories.

D. Inspire in each student an interest in Chemistry as an exciting and useful descipline.

E. Guide Students to understand the elementary methods employed to conduct research in the area of Chemistry

In addition to recitations and discussions, in a relaxed classroom environment about the theoretical aspects of chemistry, students were led to perform laboratory work which enabled them to intuitively accept various chemical principles. They were encouraged to select research topics appropriate at their levels for conducting group or individual research. The activities of the chemistry program was organized as outlined below.

First Week. Students were exposed to some physical measurements, periodic table, atoms and molecules, followed by laboratory experiments relating to the theoretical aspects of these discussions. The students were exposed to chemical literature research and encouraged to select topics of their choice for group or individual research. The role and importance of chemical discipline for man and his environment were brought to their attention. Emphasis was placed upon the job and career opportunities which exist in this field.

Second Week. The students were led into the secret of chemical bonding, formulas equations, and classes of compounds. Laboratory was designed to

reinforce the theoretical experience gained by them in the classroom. The students were encouraged to discuss with the instructor the topics of their choice for research for the final selection and approval of one of the research topics for further study.

Third Week. The students were exposed to the mole, energy, and weight relationship. The laboratory work was designed to calculate molarity, normality, equivalent weight, and prepare standard solutions of various acids, and bases. The students designed and set up experiments to meet their respective research objectives pertaining to their selected research projects and started collecting data or fabricating science projects.

Fourth Week. During this week students studied acids, bases, and salts. Theoretical aspects of proton donor and its relation to pH were discussed. The laboratory work was designed to determine the acidity of lemon juice, vinegar, and acid neutralizing power of various anti-acids available in the market. The student continued to work on their projects collecting data.

Fifth Week. The students were exposed to the gas laws, and the kinetic-theory of gases. Laboratory work was designed to study the diffusion and weight relations of gases, relations of pressure temperature, and volume were explored. Students fabricated their own equipment for these experiments. The students continued to collect research data and prepared manuscripts for seminars.

Sixth Week.: Final test was held. Research/Science Projects were written up for presentation at the seminars. Seminars were held (see enclosure 5). The Research and Science Project data were presented. Students evaluated the SSETP project (see enclosure 11).

VIII. The Computer Science Program

The Computer Science Program was designed and implemented by Mr. Perwaiz Aslam, Director of Computer Lab. Upon completing of the Computer Science Program, we expected the students to analyze simple scientific/mathematical type problems, to write BASIC programs for solving them numerically, to enter the programs on the computer, to correct the errors, and to execute them properly on the College computer system. The students were able to:

1. Analyze simple science/mathematics problems and to devise algorithms for solving them.
2. Express the algorithms in sequence of computer steps.
3. Code the steps in the BASIC language.
4. Enter the computer code into the computer system, edit the code, list the code, and execute the code.
5. Modify existing programs in order to meet a modified statement of the initital problem.
6. Use available software/methodology of C.S. for learning Chemical facts.
7. Application of computer for learning Chemistry.
8. Modify existing programs in order to improve them structuraly, and to make them clear, faster, and efficient.
9. Use computer jargon and concepts properly
10. Apply computer methods in fields like, sorting simulation gaming, word-processing, mathematics, economics engineering and the other science fields.

IX. Evaluation

Each student's performance was quantitatively evaluated through objectives type of testing procedure which was adopted by each participating instructor. Three tests, including the final two hour tests, were given in each area to evaluate

the learning potential of each student and his or her ability to perform in Science, Mathematics, and Engineering fields.

Each instructor also performed a qualitative analysis on each participant to evaluate his or her motivation, energy, and desire to succeed in their chosen academic field through intelligent particpation and hard work. All participants with one exception were absolutely positive to select careers in Science, Engineering and Computer Science. No student took advantage of the facilities available at Claflin College to prepare for SAT etc. There were several reasons for this as given below.

A. The normal project load was so heavy that the participants could not spare time to put in this direction.

B. Over 30% of students had already taken their SAT and were accepted for undergraduate studies in the college of their choice.

C. Students and faculty got keenly absorbed in research; consequently could not divert resources for SAT Preparation.

Three of six students selected in this program from the College's freshmen class decided to stay with the Department of Chemistry or Computer Science.

The data generated by each instructor is being compiled by the program director for an overall evaluation of each participant. This could not be done in the sixth week due to lack of time and coordination as instructors were busy. Each participant was awarded a certificate at the closing ceremony, which was held on July 22, 1988, the last day of work at Claflin College. The parents and the college administrators joined this occasion. The final banquet was well attended and was taped for future reference.

The course outlines in Chemistry and Computer Science Programs offered, during the summer sessions at Claflin College have been supplied to participating schools, Department of Chemistry and Department of Computer Science at Claflin College, with the recommendation that each participant be awarded 4 Semester Hour credit in Chemistry and 3 Semester Hour credit in Computer Science.

X. Follow Up

Each participant at some future date will be provided with his or her confidential rating report and analysis of his or her future goals. The Director has designed and set up a mechanism to establish contacts with the students, for monitoring his or her Science, Engeineering and Computer Science careers. The students revisited Claflin College on home coming. They were college guests and were allowed to watch the pantherettes play basketball free

Pre-College Science Engineering and Mathematics Seminar

In continuation with our efforts to motivate the high school students, the student Science Enrichment Training program in cooperation with the College administration, held one day Pre-College Engineering Science and Mathematics Seminar on home coming day. The summer Science participants and the high school counselors joined a group of other high school students for the seminar. Claflin was having a home coming basketball game. The college's Pantherettes (lady basketball team) ended their season with a number one National spot in there league. Several activities were scheduled for the visitors. However; the major theme was to bring to the attention of visitors what Claflin could do for them in the field of undergraduate science and computer studies. The visitors were Claflin guests and were allowed free to get in the basketball game. All the visitors were introduced during the half time.

Monitoring of student progress will continue through out his or her college life to collect data to evaluate the degree of success of the project. The monitoring of students progress and his ultimate success will continue beyond the project period of summer 1992, even though no federal funds will be available at that time. College agreed to allocate resources to achieve this part of the project objectives. The college feels strongly about the validity and the usefulness of this project. Consequently it decided to commit its resources to accept the responsibilities of

bringing the project to successful completion and probably develop a model for use nation wide by other schools and colleges.

XI. Organization and Management

The project was initiated on June 9, 1992 to coincide with the College Summer School 1992. Its duration was six weeks. Dr. S.S. Sandhu carried the primary responsibility for the operation of the project. A SSETP Advisory Committee consisting of. Mr. Aslam, Mrs. Rebecca Leffew, Ms. Ms. Brooks, and Mr. Terrance McLeod was established. Dr. Sandhu served as a chairman of this committee. Selection of participants was done by the SSETP faculty and staff.

The project instructors had a few days, prior to starting date, for the preparation of instructional materials for finalizing their plan of action for class, laboratory, research, and program activities.

The College General Fee allowed the participants to become involved in the athletic and social recreational programs, organized by the College. Nevertheless, two laboratory assistants were employed to serve (1) as coordinators of recreational programs (2) to coordinate the tutoring in supervised environment and (3) to help in Chemistry and Computer laboratories. The Project Director's responsibilites also included the organization of student activities and visitation by the guest speakers.

The formal evaluation of the project programs was done first by students on end-of-semester evaluation forms. Secondly, by student laboratory assistants and finally, during the final week, the project instructors participated in the evaluation of project activities. The instructors met to share the experiences and evaluate the project from their prospectives. The Project Director is presently in the processes of consolidating this information.

XIII. Benefit of SSETP

A. Motivational:

Upon completion of this program all of the participants were motivated to enroll in high school science and mathematics courses, and hopefully will work hard to prepare themselves for college entrance. All participants except one who chose to follow the profession of law, was eager, to pursue careers in Science, Engineering, Computer and Mathematics as he or she goes to the college of their choice. Claflin students who chose to participate in this program, were urged to continue their career in Chemistry and Computer Science. Indeed, during the Fall Semester of 1988, the Project Director will try to invite school principals or their designees to estimate the general effect of the project on the pariticipants, and their subsequent classrooms performance.

B. Claflin College as Beneficiary

Availability of funds for summer academic programs in Chemistry were great attraction and inducement for 1987-88 freshmen class at Claflin College to opt for Chemistry career. Minority teens, especially of rural areas, have a very difficult time in getting rewarding summer jobs. The college, having received funding through this project, contributed richly to the professional growth of the student throughout his or her stay in the college. The added attraction of academic summer program in Chemistry along with the growing demand for Science and Engineering professional probably will contribute towards increased enrollment in the Department of Chemistry at Claflin College. Two students out of seven who participated in SSETP from Claflin College changed their major to Chemistry. It is a good beginning.

C. Academic Head Start:

The participants had a head start over the general high school population who intend to go to college. They have also favorable and promising start. Not only they earned 7 Semester Hours of credit 4 SH in Chemistry and 3 SH in

Computer Science to carry to the college of their choice they also had an early taste of college life; the freedom and the responsibilities that follow such activites. They were able to see first hand the Chemists, the Computer Scientists, Physicistis and Physicians in action. They saw the role of Chemistry in Human Life.

STUDENT SCIENCE ENRICHMENT TRAINING PROGRAM INFORMATION DISSEMINATION

SSETP Brochure was published. It provided information to the potential participants about the requirement for entering the SSETP program and their obligations. The brochures were mailed to the Science Teacher of every high school in the State of South Carolina which was followed by telephone calls to some schools, which are located in rural areas away from cosmopolitan cities. Every student of the freshmen class of 1992-93 at Claflin College was provided with SSETP brochure. Additionally, every orientation teacher of the freshman class was requested to spend sometime in his or her class to provide information to the students about the SSETP. The program information was also disserminated through taking advisements in news papers, in cities like Charleston, Floreance, Columbia, Aiken, Greenville, and etc.

A few days prior to the initiation of the SSETP at Claflin College the Director of the Program was invited by the Jones Inter Cable TV, Orangeburg, S.C. for in depth discussion of the requirements and future impact of SSETP on Science and Engineering fields. The tape of this recording is available in the office of the Project Director. The taped program was screened for the TV viewing audiance in South Carolina.

A reporter from Times and Democrat, a popular local daily news paper; visited the college for an interview with the Director and to observe the SSETP students in operation. The reporter wrote an article which not only was complimentary to the program but also provided an in depth analysis of the program. The interviews with the various news media were arranged by the college Public Relation officer, Mrs. Lemon. A representative of Quicky Radio Station, St. Mathews, also visited the college to observe the SSETP participants in action. The final phase of SSETP which was high lighted by a banquet, award of certificates and achievement awards.

PROPOSED SCHEDULE OF ACITIVITES

FY 1993-94

Description of the project activitites was detailed in the orginal project proposal which was submitted to the Department of Energy in the Spring of 1992. Major activities for Fall of 1992 related to the follow up studies of the academic achievements of the participants. The Director has established a mechanism to contact the students and their academic counselors. A report on the quantitative and qualilative evaluation of his or her motivation, energy and desire to succeed in their chosen academic field was discussed with SSETP graduate. The director will continue to maintain close ties and contacts with the SSETP graduates through telephone calls and other contacts. He will coordinate his activites through respective academic couselors who will help the students to make career choices.

The brochure providing information to the potential participants has been published for 1993 summer program. The copies of the brochure have been provided to the office of the Academic Counselor of each high school. The counselors along with the science teachers have been urged to identify such students who have potential to go into Science and Engineering fields and have such students to apply for the SSETP program during 1993 summer to be held at the campus. The 1992-93 freshmen class at Claflin College has been provided with the copies of the SSETP brochure. It is also desired to provide copies of the brochure to the SSETP participants of 1992 summer, for them to identify students in their schools who may be interested in participating in SSETP. Several ads in the local dailies of Charleston, Florence, Columbia, Aiken, and Greenville were also taken to provide information to the potential applicants for this program.

A merit list of applicants based on the information supplied by the potential participants will be prepared by the Director. The top 50 applicants will be offered spots in the SSETP, for them either to accept or reject the offer by May 21, 1993. A

subsequent list of candidates will be prepared and additional potential participants will be contacted in case a need arises.

The project will be inititated June 6,1993 to coincide with the College Summer School of 1993 . Its duration will be six weeks. One student will be hired as laboratory assistant and tutor and to manage the out of class activities, such as local trips, picnics, visitations to various points of interests within the State of South Carolina. Introduction and class registration for courses will be done on the first day of the school. The SSETP will run through July 16,1993.

The activities listed in the orginal project were found appropriate and rewarding for the target audiance and will be repeated for 1989 SSETP. Each SSETP Aluminus who will come to participate in the banquet to be held at Claflin College campus will be compensated for travel cost. The project will also provide lunch to the alumini at the banquet.

Name of SSETP Participants for 1992

1. Kevin Barber	139 Holly Circle Darlington, SC 29532
2. Miriam Bennett	Rte. 2 Box 190-A Denmark, SC 29042
3. Dvewa Brown	5205 Oaktree Trail Lithonia, GA 30038
4. Sheinata Carn	P.O. Box 5 346 Harrison Rd. Dorchester, SC 29437
5. Michael Coaxum	906 Harper Street Orangeburg, SC 29115
6. Naima Cochrane	38-812 Reid School Rd. Taylors, SC 29687
7. Shirley Cohen	510 Blue Ridge St. Easley, SC 29640
8. Dana Colleton	1250 Tibwin McClellanville, SC 29458
9. Andreana Curtis	103 Lael Court Moncks Corner, SC 29461
10. Angela Cuthbert	Rte 2 Box 299-B St. Helena Island, SC 29920
11. Brandy Dawkins	P.O. Box 5 Gray Court, SC 29645
12. Taimekia Dawkins	125 Lincoln Rd. Taylors, SC29687
13. Antoine Dingle	Rte. 1 Box 44 St. Stephen, Sc 29479
14. Ralph Elam	P.O. Box #2 Tillman, SC 29943

15. Russell Gaither	167 N. Rahway St Goose Creek, SC 29445
16. Christopher Goodwin	P.O. Box 232 Ehrhardt, SC 29081
17. Vanetta Guinyard	105 Flower Road St. Matthews SC 29135
18. Kevin Hall	513 Garmony Rd. Columbia, SC 29212
19. Christie Hunley	118 President Street Charleston, SC 29403
20. William Jefferson III	142 Spring St. Chaleston, SC 29403
21. Orenthial Johnson	19 Crescent Lane Columbia, SC 29212
22. Kimberly Kelly	208 Waterford Drive Columbia, Sc 29203
23. Myra Key	700 South Main St. New Ellenton, SC 29809
24. Melissa Kelly	767 Hitching Post Rd Charleston, SC 29414
25. Michele Kennedy	151 Church St. Darlington, SC 29532
26. John Kidd	767 Larkwood Rd Charleston SC 29412
27. Mohammad Khan	Route 1 Box 6 Santee, SC 29142
28. Elizabeth Major	Rte. 2 Box 14 St. Helena Island, SC 29920
29. Neosia McMillan	Rt 2, Box 38 Bamberg, SC 29003

30. Tiesha McNeal	P.O. Box 504 Chesterfield, SC 29709
31. Kadra McQueen	205 Tynes St. Dillon, SC 29536
32. Kendra McQueen	205 Tynes St. Dillon, SC 29536
33. Dannah Mitchell	27 Skyland Drive Greenville, SC 29607
34. Bryan Morris	P.O. Box 87 Lane, SC 29564
35. Kamalita Parrott	Rte. 1 Box 444 Darlington, SC 29532
36. Quinassa Phillips	4000 Harbor Lake Dr. Goose Creek,SC29445
37. Harold Pinckney	Rt. 1 Box 236 Ridgeland, SC 29936
38. Tamara Pollock	116 Dutch Village Drive Irmo, SC 29063
39. Adrienne Price	6612 Emlen St. Philadelphia, PA 19119
40. Michael Raiford	1808 Vincent St. Newberry, SC 29108
41. Lori Riley	133 Basil Rd Swansea, SC 29160
42. Denita Simuel	3515 Dixon St. Temple Hills, MD 20748
43. LaTonya Smith	209-G Chalice Lane Columbia, SC 29223
44. Takeela Strother	Rt 4 Box 316-B Neberry, SC 29108

45. Tami Thompson	1916 Morrel Hill Rd. Hopkins, SC 29061
46. Lowell Tyler	P.O. Box 1204 Ridgeland, SC 29936
47. Kim Walker	715 Edrie St. NE Aiken, SC 29801
48. David Washington	Rt. 1 Box 161 Effingha, SC 29541
49. Reginald Willams	P.O. Box 483 645 Cotton St. Denmark, SC 29042
50. Avis Wright	P.O. Box 668 Denmark, SC 29042

DATE
FILMED
6/16/94
END