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NASA FACULTY FELLOWSHIP PROGRAM

MARSHALL SPACE FLIGHT CENTER

**THE UNIVERSITY OF ALABAMA
THE UNIVERSITY OF ALABAMA IN HUNTSVILLE
ALABAMA A & M UNIVERSITY**

**A SUMMARY OF NASA SUMMER FACULTY FELLOWSHIP
WORK IN THE E.O. OFFICE AND
IN THE EDUCATOR RESOURCES CENTER**

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Introduction

The Office of Equal Opportunity supports a number of summer programs which are designed to: 1.) Increase the number of elementary and secondary students and teachers who are involved in NASA-related education opportunities; and 2.) Support higher education research capability and opportunities that attract and prepare increasing numbers of students and faculty for NASA-related careers.

A part of my work in the E.O. office involved the evaluation of several of the programs in order to determine their level of success and to make recommendations for the improvement of those programs where necessary. As a part of the involvement with one of the programs, the PSTI, I had the great opportunity to interact with the students in a number of their sessions which involved problem-based learning in science, mathematics and technology.

A summary of the evaluation of those programs is included in this report.

The second part of my work involved assisting the coordinator of the Educator Resource Center at the Space and Rocket Center. I participated in space science workshops for in-service and pre-service teachers. These educational resources were made available to the participants including many hands-on activities that they could take back to their classes. I participated in the three hour workshops that were offered on Tuesdays and Thursdays of each week, although there were workshops on other days. On Mondays, Wednesdays, and Fridays, I worked in the E.O. office. As a result of my work in the ERC, I developed a Directed Reading PowerPoint Lesson Plan Guide involving remote sensing entitled, "Echo the Bat." This was based on a NASA published children's book entitled Echo The Bat, written by Ginger Butcher. I have included a description of the lesson in this report.

A summary of the evaluations of several of the summer programs supported by the Equal Opportunity office are included in this report.

The Pre-Service Teacher Institute (PSTI) –Oakwood College, Sponsor

The goal of the PSTI is to offer undergraduate and graduate students majoring in Early Childhood or Elementary Education at minority universities in a pre-determined region, an opportunity to spend two residential weeks at NASA and at Oakwood College fully immersed in the procedures and techniques of teaching science, mathematics, and technology to K-8 students. The objectives of the program are: 1.) To gain information about the classroom of the future; and 2.) To teach a lesson plan using problem-based learning to fourth graders. The success level was excellent over-all. The program met and exceeded objectives and measured outcomes. It also met an outside reviewer's indicators of success.

The Michael Anderson Research Program—Alabama A & M University, Sponsor

The goals of the program were: 1.) To boost student enrollment by twenty to thirty percent, at least 50% of which will be minority female; 2.) To increase student retention in the engineering program by 50%; and 3.) To provide a quality learning experience for minority students who

pursue engineering, but are academically unprepared for the demands placed on them by the disciplines of an engineering curriculum. The objectives were: 1.) To encourage high school students to enhance their knowledge of science, mathematics, and technology through “hands-on” experimentation; and 2.) To inform parents of their role in getting their children prepared to study science, mathematics, engineering, and technology. The success level indicated that it is an excellent program. The verbal reports of both faculty and students indicated that the students benefited tremendously. There were a number of projects that were completed by the students including building solar powered boats which they raced across water, heart monitors, small motorized vehicles which had object sensors to enable them to change direction when they encountered an obstacle, and other similar technological products.

The I AM SET Project (Individuals With Disabilities in Math, Science, Engineering, and Technology---Alabama A & M University, Sponsor

The goal of the I AM SET program is to provide educational science, technology and mathematics based opportunities for high school students with disabilities through monthly workshops, career development seminars, and 6-week summer internships in their field of interest at NASA/MSFC. The objectives of I AM SET were: 1.) To match students with professionals in different career fields to shadow them in the work environment for a few hours and heighten awareness of specific careers; 2.) To have industry tours which will help students to become aware of different career opportunities in business and industry; and, 3.) To provide summer jobs for high school and college students. An evaluation of the success level of the program indicated that it has experienced some degree of success in assisting students with disabilities to participate in NASA workplace environments which involve science, mathematics, and technology during the summer term.

The G.L.O.B.E. (Girls Leading Others By Example) Program---Lawson State Community College, Sponsor

The goal of this program is to strengthen the SMET knowledge base of the underserved community and to increase the number of Hispanic and African-American females in grades 6-12 entering colleges/universities. The objectives of this program are: 1.) To involve Hispanic and African-American females in the Birmingham, Alabama area with an emphasis on grade levels 6-12; 2.) To engage local community college females as role models; 3.) To help students learn about different careers in space science and technology and mathematics through field trips and guest lecturers; 4.) To provide computer training workshops ranging in skills development from basic to advanced applications; 5.) To provide leadership/teaming approaches to learning; and 6.) To encourage “out of the box” thought processes. An evaluation of the success level revealed that the program met and exceeded the goals for this year.

The MISE (Minorities In Science and Engineering Program)---Oakwood College, Sponsor

The goal of the MISE program is to increase the number of African-American scientists and engineers attending Oakwood College, Alabama A & M University, and minorities from the University of Alabama School System. The Objective of the program is to provide an opportunity for minority students enrolled at AAMU, Oakwood College, and UAH, to spend ten

weeks at the MSFC working full-time in the laboratories of prominent NASA scientists. This program has met and exceeded expectations. Evidence of the quality of this program may be seen in the success of former participants: Mr. Courtney Pace (a May, 2003 graduate of AAMU) was hired by Lockheed Martin in Sunnyvale, California as an engineer. Ms. Alicia Peters (a May, 2004 graduate of AAMU) was hired as a Computer Science Specialist 1 for United Space Alliance of Houston, Texas (a prime contractor for NASA's Space Shuttle operations.)

Project MI FUTURO---Stillman College, Sponsor

The goal of this project is to provide a new and innovative curriculum for Hispanic students that helps them to study, stay in school, graduate successfully, and pursue higher education. The objectives are: 1.) To offer Hispanic high school students math, science, literature, career development, self-esteem, cultural, and entrepreneurial exploration, leadership and life-skills development through creative activities and the bio-track program; and 2.) To offer non-Hispanic students who are in 10th -12th grades, the opportunity to participate if certain criteria are met, including being willing to tutor Hispanic students at least two hours per week outside the normal classroom schedule. This program has met and exceeded the goals which were set. There has been a 100% high school graduation rate for the participants.

Educator Resource Center

A major part of my work in the Center was preparing for, and assisting with the workshops on various topics related to space science that were held weekly. Another task involved greeting visitors to the ERC from all over the nation, as well as some international teachers, and supplying them with the materials that they requested, based upon the grade level that they were teaching.

I also developed a Directed Reading Lesson in remote sensing for a fourth grade class entitled, "Echo the Bat." This is from a children's book of the same title written by Ginger Butcher and published by NASA. A copy of the PowerPoint Lesson has been e-mailed to the NFFP office. Mrs. Chanel Leslie has indicated that she will use this lesson next summer with her PSTI students. I will use the lesson at Alabama A & M University in the Reading in the Content Areas course which I teach. An assignment will be given to the students which will require them to make use of the ERC in the development of lesson plans to teach reading skills in science, mathematics and technology.

Conclusion

All of the programs that I reviewed this summer showed evidence of success in helping to inspire the next generation of explorers and should be continued if funding is available.

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Reference

Butcher, Ginger. (2000), "*The Adventure of Echo The Bat*," <http://imagers.gsfc.nasa.gov/k-4/>