EP-284

NASA's Education 91

National Aeronautics and Space Administration

(NASA-EP-284) NASA'S EDUCATION PROGRAM INVENTORY FY 91 (NASA) 87 p

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NASA's Education Program Inventory FY 91

Prepared by:

Education Division

Office of Human Resources and Education

National Aeronautics and Space Administration

August 1992

Contents

Executive Summary

Since 1983 and the publication by the Secretary of Education of *A Nation at Risk: The Imperative for Educational Reform*, organizations across the country, both private and public sector, have examined the Nation's education problems. Hundreds of studies have been conducted that point to the need for fundamental improvements in the entire educational system.

NASA's involvement with education dates back to the agency's beginning. The National Aeronautics and Space Act of 1958 empowered the agency to expand human knowledge in aeronautics and space and to involve the scientific community in that quest.

The success of NASA as the world leader in space exploration and aeronautics research is fundamentally dependent upon the health of our national education system. If NASA is to continue to attract the "best and brightest" — while at the same time helping to ensure a more technically literate society in the future — our educational outreach program must target the entire educational pipeline.

In 1988, the Education Division produced an inventory of NASA– supported education programs. One hundred sixty-two programs were described in the publication, *NASA and the Educational Community: An Inventory of Programs*.

Since then, mathematics, science, and technology education has taken on a more visible role, not only as part of NASA's mission, but as part of the National Education Goals and other Federal initiatives. These events have demonstrated the increasing importance of identifying the totality of NASA's efforts in support of education. Therefore, it became important to update the 1988 inventory in order to achieve a more accurate and comprehensive look at NASA's educational programs, grade school through graduate school. *NASA's Education Program Inventory FY 91* is the result of that effort.

In FY 1991, NASA headquarters and field centers managed over 270 educational programs, an increase of 60% over the previous inventory. These programs reached all levels of the educational spectrum, supported the National Education Goals and other Federal priorities, and served a cross-section of U.S. students, teachers and faculty. This document summarizes the data collected and provides brief descriptions of each program.

The scope of NASA's role in education is small when compared financially to that of the Department of Education or the National Science Foundation. However, by leveraging the agency's unique resources — its facilities and personnel — NASA has the opportunity to use its inspiring mission as an effective vehicle for teaching and for learning. As a Federal agency with a vested interest in the Nation's scientific and technological health, education is not only an opportunity for NASA, it is an obligation.

Introduction

National Picture

Since 1983 and the publication by the Secretary of Education of *A Nation at Risk: The Imperative for Educational Reform*, organizations across the country, both private and public sector, have examined the Nation's education problems. Hundreds of studies have been conducted that point to the need for fundamental improvements in the entire educational system.

Implicit in improving the U.S. education system is the need for the Federal government, the private sector, and state and local governments to focus all efforts toward the accomplishment of a set of national education goals. In September, 1989, President Bush met with the Nation's governors, various Department Secretaries and the NASA Administrator to discuss the education crisis. Out of this historic summit and subsequent meetings emerged the National Goals for Education (Appendix 1).

In order to define the role of the Federal government in the implementation of the National Education Goals as they relate to science, engineering, and technology, the Science Advisor to the President formed an interagency committee of those Federal departments and agencies whose missions are dependent upon a highly skilled science, engineering, and technology work force. The Federal Coordinating Council on Science, Engineering, and Technology; Committee on Education and Human Resources (FCCSET/CEHR), and its member agencies, have developed a Strategic Plan that confirms the Federal government's commitment to ensuring the health and well-being of science, mathematics, engineering, and technology education at all educational levels.

The CEHR strategic plan is designed in acknowledgment of the sense of urgency required to reach the Nation's goal of being first in the world in mathematics and science education. While it builds on and encourages the science, mathematics, engineering and technology education reform efforts underway in all sectors of society, it is structured to produce a permanent change on the national scene. The plan sets priorities for individual agendas and collaborative Federal agency action in pursuit of this national goal. It seeks to make optimum use of scarce Federal resources by combining existing programs with new initiatives into a comprehensive strategy that will help the U.S. succeed in the future. Appendix 3 describes both the strategic planning framework for the CEHR and the priority framework within which the CEHR will work over the next several years.

NASA's Educational Mandate

NASA's involvement with education dates back to the agency's beginning. The National Aeronautics and Space Act of 1958 empowered the agency to expand human knowledge in aeronautics and space and to involve the scientific community in that quest. Therefore, NASA's education program addresses the requirements of the agency's mission as well as the needs of the national education community.

The success of NASA as the world leader in space exploration and aeronautics research is fundamentally dependent upon the health of our national education system. If NASA is to continue to attract the "best and brightest" — while at the same time helping to ensure a more technically literate society in the future — our educational outreach program must target the entire educational pipeline.

NASA's education program is responding to increased demand with increased activity. A program that was born during the Mercury, Gemini, and Apollo years, continues to use NASA's inspiring mission to support the national education reform movement, from grade school through graduate school. As the Nation reassesses and reaffirms its commitment to education, so must NASA.

NASA's Education Vision is to promote excellence in the education system by enhancing and expanding scientific and technological competence. In doing so, NASA strives to be recognized by the education community as the premier mission agency in support of the National Education Goals and in the development and implementation of education standards.

To realize this Vision, three goals have been defined and developed to promote excellence in education:

1. To maintain that segment of NASA's current education program that is judged to be effective, based on internal and external customer measures of success.

2. To implement new strategies and efforts which specifically address NASA mission requirements, national education reform, and FCCSET priorities.

3. To significantly expand the impact of the NASA education program by developing partnerships with external constituencies.

The strategy governing NASA's education vision must target all levels of education. That strategy includes programs designed to capture student interest in science, mathematics, and technology at an early age; to channel more students into science, engineering, and technology career paths; and to enhance the knowledge, skills, and experiences of precollege teachers, college and university faculty, and other educators.

Each NASA program office and field center contributes to and has a specific role within the agency's education vision. However, to ensure a coordinated vision, ultimate responsibility for all of NASA's education programs lies under the leadership of one entity — the Office of Human Resources and Education. The Associate Administrator for Human

Resources and Education, reporting directly to the NASA Administrator, is responsible for the leadership and coordination of NASA's education program. Within the Office of Human Resources and Education, the Education Division has agency responsibility for policy development, management oversight, coordination, evaluation, and direction of NASA's education program.

Although stewardship for NASA's education program rests with the Office of Human Resources and Education, several other offices manage educational programs. For example, the Personnel Division, Office of Human Resources and Education, manages a number of programs that specifically feed the pipeline of potential workers for NASA. The Office of Equal Opportunity develops and manages programs designed to increase the participation of groups traditionally underrepresented in mathematics, science, and technology. The Office of Space Science and Applications, in response to the space science community's expressed interest in conducting educational outreach, has developed a number of educational programs and published a catalogue describing them in detail (see Appendix 4 for additional information).

Each NASA field center has a single individual identified to provide leadership and coordinate the individual education programs of that center. Operationally, each center also has both a Center Education Programs Officer (CEPO) and a University Affairs Officer (UAO). The CEPOs serve as the primary educational contacts for the elementary and secondary school communities in their geographic regions and carry out NASA's precollege programs. The UAOs are often the first point of contact at the centers for university personnel and provide information and guidance on any aspect of NASA/university collaboration, be it research, training, or institutional development.

In 1988, the Education Division produced an inventory of NASA-supported education programs. One hundred sixty-two programs were described in the publication, *NASA and the Educational Community: An Inventory of Programs*.

Since then, mathematics, science, and technology education has taken on a more visible role, not only as part of NASA's mission, but as part of the National Education Goals. These events, coupled with NASA's work on the FCCSET/CEHR, have demonstrated the increasing importance of identifying the totality of NASA's efforts in support of education. Therefore, it became important to update the 1988 inventory in order to achieve a more accurate and comprehensive look at NASA's educational programs, grade school through graduate school.

Survey Analysis

In March, 1992, each NASA field center and headquarters office was asked to supply information on all educational programs managed or funded by the organization in FY 1991 (see Appendix 5 for a copy of the instrument used).

For the purpose of this inventory, educational programs were defined as those activities designed to:

1. Capture student interest in science, mathematics, and technology at the elementary, middle, and high school levels by using aeronautics and space as a theme for demonstrating its applicability to all academic subject areas.

2. Channel secondary and university students into science, technology, and engineering career paths.

3. Enhance and update the knowledge, skills and experiences of teachers and college and university faculty.

4. Emphasize the leveraging of NASA educational resources producing a multiplier effect on targeted groups of students, teachers, other educators, and faculty members.

5. Increase the number and proportion of underrepresented minorities, women, and individuals with disabilities participating in programs.

6. Reach out to and target all students, rather than the traditional 5% who are highly motivated toward science and technical careers.

7. Increase the use of educational technology to deliver programs.

8. Form additional partnerships to better coordinate educational resources.

This definition included only those programs that were external to the agency and therefore, did not include programs for the education, training, and development of current NASA employees. Nor does it include such necessary and important public activities as visitor centers, astronaut public appearances, publications, NASA Select television and radio productions, and other mechanisms for letting the general public know about NASA's activities.

In addition, the survey includes only those programs that were implemented prior to the end of FY 1991.

One final limitation: during collection of program information, a number of inconsistencies were identified in both the program questionnaire and the interpretation by those completing the survey forms. The data collection method differed greatly from the 1988 inventory. Therefore, this report must be recognized as preliminary, pending refinement of the data collection process, to be reported in subsequent versions of this report.

What follows is an analysis of the data collected and a catalogue that briefly describes each program.

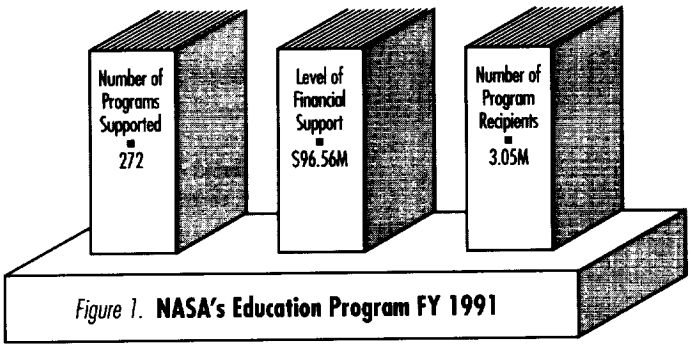


Figure 1. **NASA's Education Program FY 1991**

1. Overview

In FY 1991, NASA headquarters and field center offices managed 272 educational programs at an estimated cost of $96.56 million. These programs reached at least 3.05 million individuals (Fig. 1).

2. Number of programs

The 1988 survey (based on FY 1987 data) inventoried 162 educational programs being conducted throughout the agency. In FY 1991, that number grew to 272 programs, or an increase of 60% over FY 1987 (Fig. 2).

3. Program category

Respondents were asked to choose the primary category that best defined each education program. Cateogories were consistent with those used by the FCCSET/CEHR: precollege, undergraduate, graduate, employment/feeder programs, targeted underrepresented, and public understanding of science and technology (see Appendix 6 for category definitions).

The data in Fig. 3 indicate that 46% of the agency's programs were defined as precollege and 38% were defined as higher education programs (undergraduate and graduate). Programs targeted at underrepresented groups made up 10% of the agency's programs, employment/feeder 8%, and public understanding of science and technology 3%. It is important to note that these last three categories contained programs that can be cross-referenced into precollege and higher education categories.

Figure 2. **Number of Educational Programs**

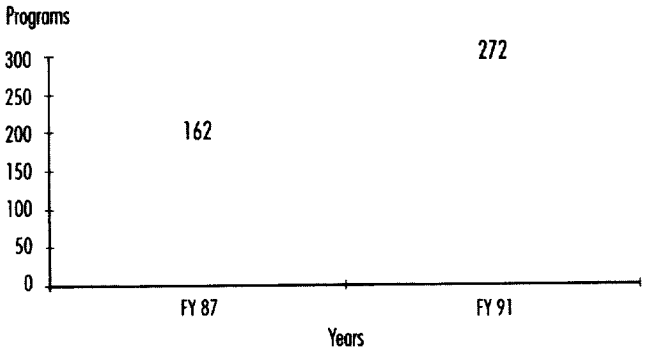
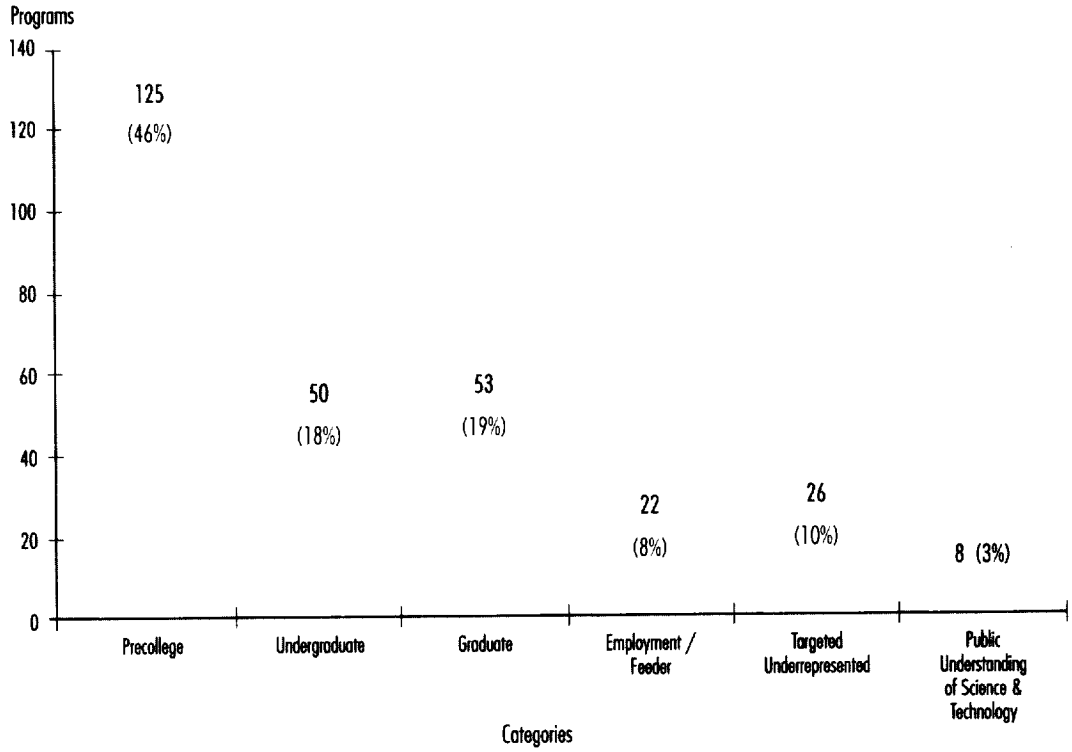
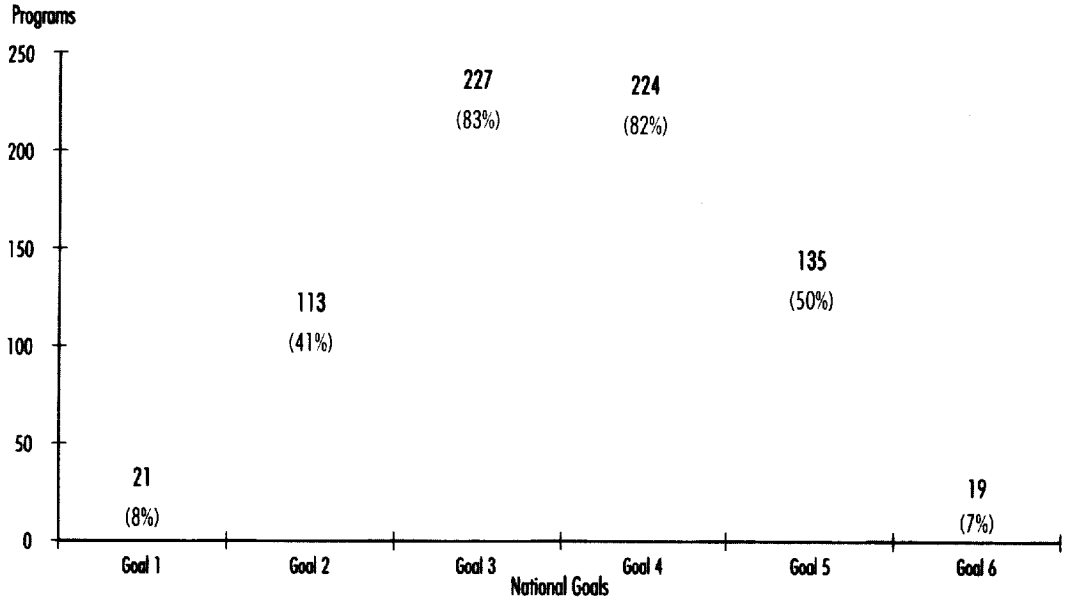


Figure 3. **FCCSET/CEHR Program Categories**



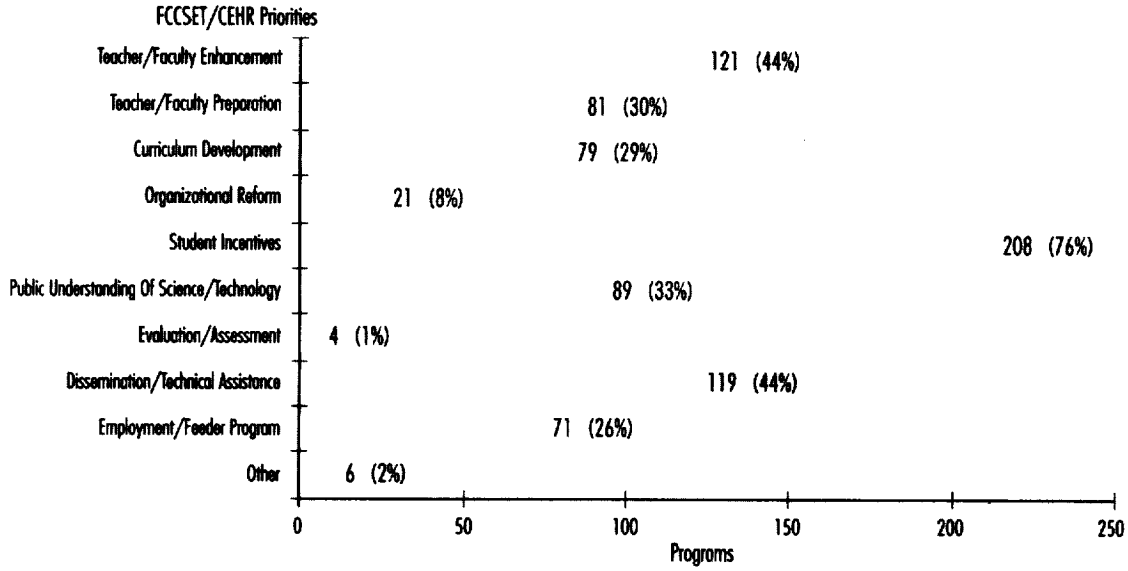
Note: Each percentage is based on the total no. of programs (272). The sum of the percentages therefore exceeds 100% since multiple categories were chosen.

Figure 4. **NASA Education Programs Supporting National Goals**



NOTE: Each % is based on the total no.of programs (272). The sum of the percentages therefore exceeds 100% since multiple goals were chosen.

Figure 5. **NASA Education Programs and FCCSET/CEHR Priorities**



NOTE: Each % is based on the total no. of programs (272). The sum of the percentages therefore exceeds 100% since multiple priorities were chosen.

4. Alignment with national programs

Respondents were asked to indicate all National Goals for Education (see Appendix 1 for description) that applied to each program. Based on the data in Fig. 4, NASA's programs most easily contribute to Goals 3 and 4.

AMERICA 2000 is the strategy designed to achieve the National Goals (see Appendix 2 for further definition). Respondents were asked to indicate whether their programs were part of a designated AMERICA 2000 initiative. Designated initiatives are part of AMERICA 2000 Communities, designated by the Governors, that meet the President's challenge to adopt the six National Education Goals, create a community-wide plan for achieving them, develop a Report Card to measure progress, and demonstrate readiness to create and support a New American School. It is important to note that since the preponderance of education programs captured in this survey were operating prior to the initiation of the AMERICA 2000 strategy in 1990, during the past year eight new initiatives have been undertaken to support AMERICA 2000.

As described earlier, the FCCSET/CEHR was formed to define the role of the Federal government in the implementation of the National Education Goals as they relate to science, engineering, and technology. Realizing fiscal constraints and the

need to prioritize educational programs and activities at the Federal level, the Committee established specific education program implementation priorities. These priorities guide NASA's education programs and are defined in Appendix 3.

Each of NASA's education programs meet at least one of these priorities and is directed at a particular audience. Respondents were asked to indicate all priorities and appropriate educational levels for each program. Fig. 5 shows FCCSET/CEHR priorities met by NASA's education programs.

5. NASA program strategy

In addition to alignment with national education priorities, the strategy governing NASA's education mission must target all levels of the education community. NASA's education policy is shaped by a three-pronged strategy that defines the program. At the early grades, programs are designed to capture student interest in math, science, and technology. Once that interest is captured, programs are designed to channel that interest into career paths or further study in science, math, engineering or technology. Other programs are designed to enhance the skills and experiences of precollege teachers and college and university faculty.

Respondents were asked to indicate the primary strategy that best defines each program. Fig. 6 shows the alignment of programs with each part of the strategy.

6. Target discipline areas

Respondents were asked to indicate the discipline areas relevant to each program. Fig. 7 illustrates that the majority of NASA's education programs are relevant to science, engineering, and mathematics discipline areas.

7. Participant data

NASA's education programs in FY 1991 served at least 3.05 million individuals (students and teachers/faculty) and involved at least 20,861 institutions (schools, colleges, universities). Fig. 8 shows the comparison with FY 1987 data.

Figure 6. **NASA Program Strategy**

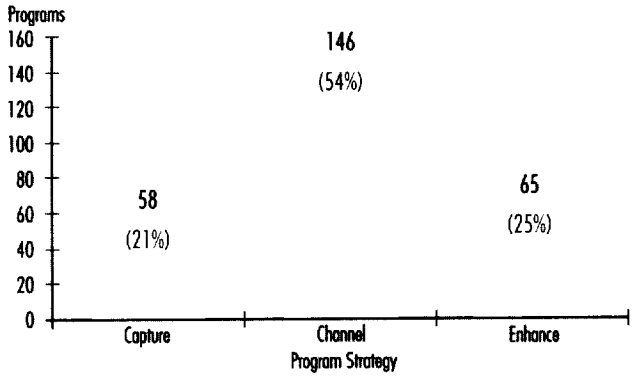
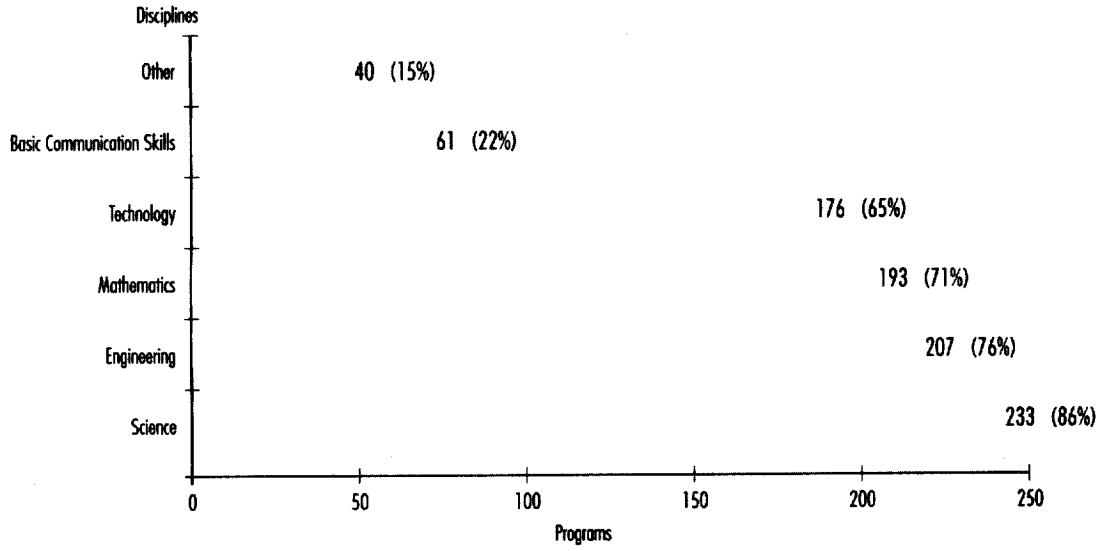


Figure 7. **Target Discipline Areas**



NOTE: Each % is based on the total no. of programs (272). The sum of the percentages therefore exceeds 100% since multiple disciplines were chosen.

Figure 8. **Program Participants**

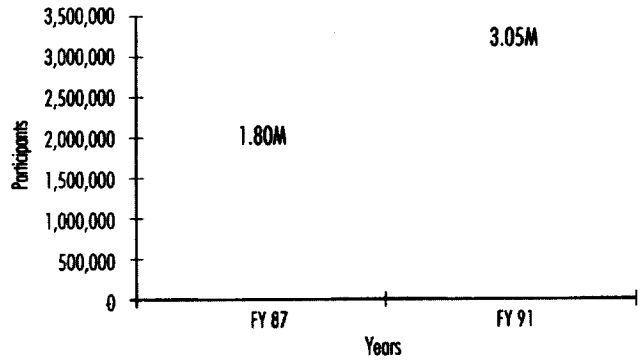
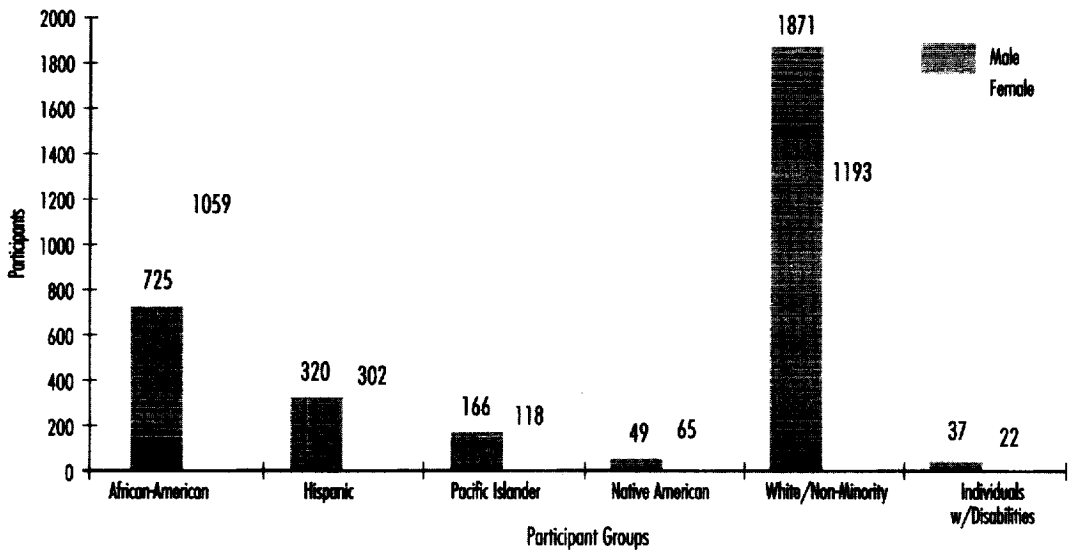


Figure 9. **Individual Participant Data**



Note: Individual participant data collected from 32% of total programs.

In an effort to determine the various populations served by NASA's educational programs, some programs (approximately 32%) have begun to keep individual participant data. Fig. 9 shows the breakdown of individual participants according to gender and ethnic status for those programs that collect data (see Appendix 7 for group definitions). For tracking and evaluation purposes, 46% of programs keep participant names and addresses for at least one year.

8. Geographic targets

NASA's programs range from those that target a specific city or region to those that are national in scope. As shown in Fig. 10 over half of NASA's programs target specific geographic areas— cities, regions, and/or states. These specific geographic regions usually surround the NASA field centers.

9. Center experience

Exposure to the workings of a field center can be an important part of the experience for a participant in NASA's programs. Approximately 73% of these programs include a center experience component where participants spend time at a field center getting exposure to "real life" technical work.

10. Funding data

Respondents were asked to supply FY 1991 program budget data and FY 1992 estimates when possible. Data were submit-

Figure 10. **Geographic Targets**

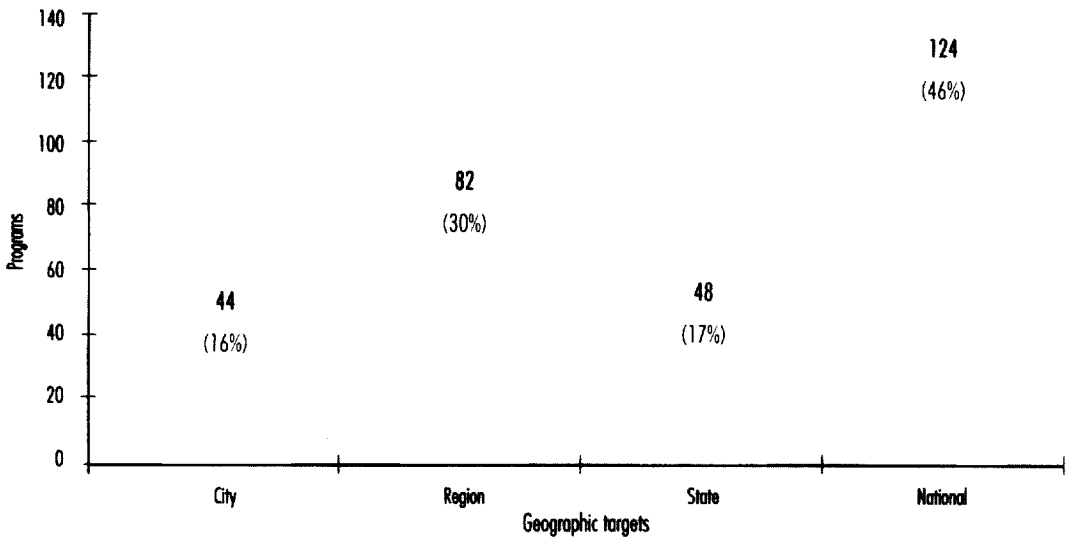


Figure 11. **FY 91 and FY 92 Program Funding**

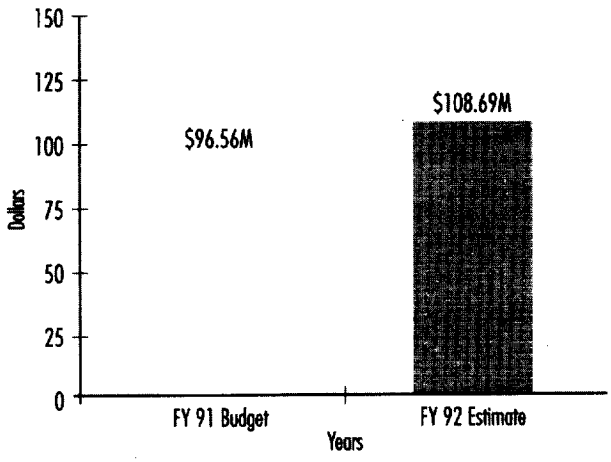
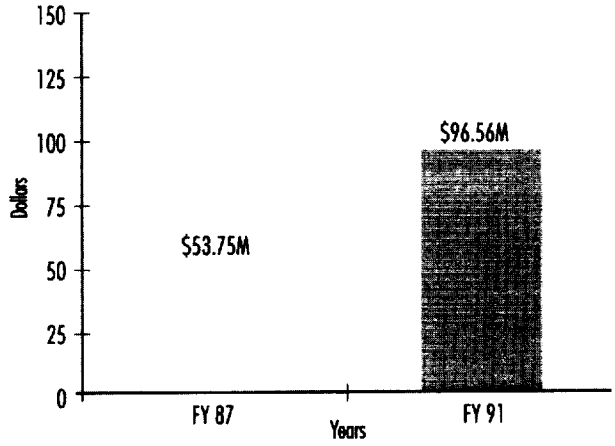


Figure 12. **FY 87 and FY 91 Program Funding**



ted for 39% of the programs. Fig. 11 represents the data collected. Fig. 12 shows the comparison between FY 1987 and FY 1991, representing an 80% increase in program funding over the four-year period.

It is important to note that many of NASA's education programs do not involve appropriated funds. Many programs such as partnership schools, career days, and topical workshops, for example, involve staff time and expertise, but no expenditure of dollars.

11. Catalogue

Respondents provided contacts and descriptions for each program. These are organized in a catalogue section following the report. Each entry contains the program title, participant data when available (see Appendix 7 for descriptions), headquarters or center contact, and description.

Each program entry is organized alphabetically into a category that best describes the program. Those categories are: Precollege Students (K-12); Precollege Teachers (K-12); Undergraduate Students; Graduate Students; Faculty (postsecondary); Postdoctoral Opportunities; Employment/Feeder Programs (designed to provide work experience and/or on-the-job training); Targeted Opportunities (designed to address needs of groups traditionally underrepresented in math, science, engineering and technology — see Appendix 6); Public Understanding of Science and Technology; and Comprehensive Initiatives (designed to reach multiple audiences).

Conclusion

It is clear that NASA has a role in education. All Americans know of NASA as the nursery of new ideas and accomplishments. Citizens point with pride to an outstanding record of global leadership in all areas of aeronautics research and space exploration. Our work force is legendary for their knowledge and understanding of the cosmos. This stature and acclaim carry the responsibility for inspiring our youth and for attracting some of them to the wonders of a career in math, science, or engineering.

NASA's Education Vision is ambitious, but the next generation of science, engineering, technology, and research will only be as good as the next generation of scientists, engineers, technicians, and teachers. To ensure the availability of a well-educated future work force, NASA has committed the agency's unique resources to promote excellence in the education system through enhancing and expanding scientific and technological excellence.

The scope of NASA's role in education is small when compared financially to that of the Department of Education or the National Science Foundation. However, by leveraging the agency's unique resources — its facilities and personnel — NASA has the opportunity to use its inspiring mission as an effective vehicle for teaching and for learning. As a Federal agency with a vested interest in the Nation's scientific and technological health, education is not only an opportunity for NASA, it is an obligation.

It is clear from the information contained within this report that the agency is fulfilling that obligation.

A report of this nature requires the input and work of a number of people. Many thanks go to the Headquarters program office and center education contacts (see Appendix 8) for coordinating the collection and review of data for their organizations. This was truly an agencywide effort.

Catalogue

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Adopt-A-School/Partnership Schools

Contact CEPO's
Installation HQ, all centers

Description
This is a national program in which industry and government agencies "adopt" a local school and provide tours, briefings, and other educational services. The program aims to develop positive attitudes by introducing students to the relationship between school and the business world. It also strives to prepare students to cope with the increasing demands and complexities of the world, especially in scientific and technical fields. Examples of NASA participation include judging science fairs, serving as consultants for career days, and exhibiting NASA programs and information.

Aerospace Awareness Program (ASAP)
see description on page 59

Aerospace Education Services Program
see description on page 25

AIAA/ARC Galileo Memorial Scholarship

Participants
Individuals: 3
Institutions: 3

Contact Mr. Darrin J. Belgarde
Organization Human Resources Development Branch
Installation ARC
Mail code 241-3
Phone (415) 604-6984

Description
The Galileo Memorial Scholarship is open to high school seniors who intend to pursue a career in engineering, mathematics, or physical or natural sciences. Past finalists have grade point averages near 4.0, high SAT scores in mathematics and science, and numerous awards for extracurricular activities. The scholarship program was established in 1973 by the San Francisco section of the American Institute of Aeronautics and Astronautics and NASA Ames Research Center as a memorial to the men who perished with the Galileo 1 in an accident on April 12, 1973. For scholarship applications, students should contact their high school counselor.

Ames Aerospace Encounter

Participants
Individuals: 220
Institutions: 12

Contact Mr. Thomas Clausen
Organization Educational Programs Office
Installation ARC
Mail code T025
Phone (415) 604-5544

Description
AAE is a student program designed to capture students' interest in math and science through hands-on activities and to enhance science and math education through classroom activities. The Encounter facility holds many hands-on learning stations. The target group is 4th-6th grade students. To maximize the experience, teachers involve their students in specially designed classroom activities before a visit to the Encounter.

AstroCamp

Participants
Individuals: 40
Institutions: 40

Contact Ms. Sandy Wilson
Organization Johnson Controls
Installation SSC
Mail code Bldg 1200
Phone (601) 688-2880

Description
Two sessions of AstroCamp are held each summer for children 9-13 years old. Children learn through hands-on activities; lessons on space travel, astronomy, science, and math; and cooperative group techniques. Model rocketry and mission environments highlight the camp. Students participate in several field trips, receive flight suits and have fun while learning.

1) Discovery Club - Science presentations every other Thursday.
2) Study Buddies - Informal math and science assistance to students every Monday afternoon/evening.
3) How to do a science project workshop - Offered at the library 2-3 times a year.
4) NASA Videos - A selection of 54 NASA videotape titles are available for local circulation.

Career Day
see description on page 59

Career Shadowing

Participants
Individuals: 75
Institutions: 9

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Contact Mr. Raymond R. Corey
Organization Education and Awareness Branch
Installation KSC
Mail code PA-EAB
Phone (407) 867-4444

Description
KSC participates in a Career Shadowing program sponsored by the Cocoa Beach Area Chamber of Commerce and the Brevard County School Board. The 11th grade students participate in panel discussions about various careers available at KSC, are assigned to work sites according to expressed career interests, and join in group discussions about their activities at the end of the day.

Comprehensive Math Precalculus/Calculus Program

see description on page 59

Development and Evaluation of Fundamental Skills Intelligent Tutoring

Participants
Individuals: 150
Institutions: 2

Contact Dr. Joseph D. Atkinson, Jr.
Organization Equal Opportunity Programs Office
Installation JSC
Mail code AJ
Phone (713) 483-4831

Description
The goal of this project is to develop intelligent tutoring systems (ITS) in mathematics, writing/reading and basic science. This is an innovative approach to learning, using artificial intelligence technology which incorporates the knowledge and skill of expert teachers. The software forms a tutor responsive to students' individual needs and motivations. NASA funding is being used to support Univ. of Texas San Antonio faculty and students who are developing and evaluating these tutors, and partial support for a test site at Sam Houston High School.

Early Education Monday

Participants
Individuals: 3,223
Institutions: 60

Contact Ms. Cheryl Bennett
Organization Johnson Controls
Installation SSC
Mail code Bldg 1200
Phone (601) 688-2322

Description
EEM is an education program designed by personnel in the Visitors Center at SSC specifically to enhance the awareness of space science in children ages three through six years. This program seeks to motivate young children through the excitement of space adventure and start them on a lifetime search for the scientific and mathematical concepts and skills that are basic to their own participation in or appreciation of the Nation's space program. Information is presented in ways appropriate to the young age level. A lively 4 hour program includes hands-on activities as well as slide shows, stories, lectures, skits and tours.

El Ingeniero

see description on page 60

Exploration Station

Participants
Individuals: 85,930
Institutions: 826

Contact Mr. Raymond R. Corey
Organization Education and Awareness Branch
Installation KSC
Mail code PA-EAB
Phone (407) 867-4444

Description
Space science demonstrations designed to encourage interactive learning and development of critical thinking skills are geared to the student's grade level. Students participate in a variety of hands-on activities utilizing aerospace hardware which complement the teaching of rocketry, human space flight, and space exploration. When no student groups are scheduled, the facility is open to family groups.

Explorer Program

Participants
Individuals: 50
Institutions: n/a

Contact Mr. Roger Hathaway
Organization Office of Public Services
Installation LaRC
Mail code 154
Phone (804) 864-3312

Description
The purpose of the program is to stimulate the interest of secondary students in science, engineering, mathematics and technology by providing the opportunity for them to explore a career in aeronautics and space.

Explorer Post Sponsorship

Participants
Individuals: 31
Institutions: n/a

Contact Mr. William E. Anderson
Organization Education Branch
Installation MSFC
Mail code CA21
Phone (205) 544-7391

Description
The MSFC sponsored Explorer Post curriculum is arranged as a four year program. All aspects of science and engineering from launch vehicle design to science payload definitions are covered. Explorer Post participants begin with the fundamentals of design and development as 9th graders and will gradually progress to more specific and complex activities by the 12th grade. A goal of the program is to encourage Explorer Post seniors to continue their association with MSFC by entering MSFC co-op program.

Future Assets/Student Talent Program (FAST)
see description on page 61

Future Exploration of Mars Educational Workshop
see description on page 27

Get-Away Specials

Contact CEPO's
Installation ARC, GFSC, LaRC

Description
This program is conducted in cooperation with science curriculum specialists and coordinators of the gifted and talented programs in local schools. The center assembles a team of researchers and engineers to serve as consultants to the student researchers and a "clean room" houses the experiments during the developmental phase. LaRC is participating in two Get Away Specials: CAN-DO for K-12 students in SC & VA; and NORSTAR for secondary students in Norfolk, VA. GSFC is participating in two projects, with the Explorer Post and DuVal High School. ARC is working with two students on microgravity projects.

Girl Scouts
see description on page 61

Houston Science Fair Summer Intern Program

Participants
Individuals: 2
Institutions: n/a

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M					1	
F					1	

Contact Dr. Stanley H. Goldstein
Organization University Programs
Installation JSC
Mail code AHU
Phone (713) 483-4724

Description
Graduating high school seniors who have placed first in a category at the annual Houston Science Fair competition work for the summer in the Space and Life Sciences Directorate at JSC. The objective is to interest these young people, who are going on to college, in careers in the aerospace field.

Intelligent Physics Tutor

Participants
Individuals: 100
Institutions: 3

Contact Mr. Robert T. Savely
Organization Information Systems Directorate
Installation JSC
Mail code PA
Phone (713) 483-8105

Description
Artificial intelligence approaches, originally developed to train astronauts and other NASA personnel, have been used to create an intelligent tutoring system for algebra and trigonometry-based physics courses with the goal of assisting students in efficiently acquiring problem solving skills. The tutor, implemented on the Macintosh computer, provides a medium in which students may solve problems and obtain "real-time" coaching. A student model is built and used to select appropriate problems for each student and to aid in providing effective remediation in response to student errors. Teachers may also examine student models, individually or collectively as a means of evaluating student progress.

International Science and Engineering Fair

Participants
Individuals: 35
Institutions: n/a

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M		1	2		24	
F		2			6	

Contact Dr. Eddie Anderson
Organization Elementary and Secondary Branch
Installation HQ
Mail code FEE
Phone (202) 358-1518

Description
NASA participates in the ISEF sponsored by Science Service to stimulate interest in aeronautics and the space sciences among middle school and secondary school students, to involve students and their teachers in aerospace-oriented projects by encouraging the students to investigate problems related to the several fields of NASA programs, and to expose students and their teachers to careers at NASA through the opportunities they have to talk with NASA judges at the ISEF and NASA facilities. Ten students receive an award-trip to a NASA event with their teachers and 15 students receive Honorable Mention.

Introduction to Space Sciences for Middle and Junior High School Students

Participants
Individuals: 24
Institutions: n/a

Contact Mr. Elva Bailey
Organization Educational Programs
Installation GSFC
Mail code 130
Phone (301) 286-7207

Description
Sponsored by the Maryland State Dept. of Education, this program teaches computer programming (BASIC) to students for two weeks in the summer. Students are also introduced to space sciences through lectures and field trips.

KSC Engineers/Education and Awareness Branch Partnership

Participants
Individuals: 15,000
Institutions: 150

Contact Mr. Raymond R. Corey
Organization Education and Awareness Branch
Installation KSC
Mail code PA-EAB
Phone (407) 867-4444

Description
One of the best educational resources at KSC, a large group of its engineers and scientists which includes both civil service and contractor personnel, have formed a partnership with the Education and Awareness Branch to stimulate student interest in careers in aerospace. The KSC employees speak at career days in area schools, assist teachers with such activities as rocket launches, and participate in hands-on demonstrations on such topics as space propulsion, understanding the solar system, aeronautics and human space flight. They also assist with the activities in the Educators Resources Laboratory and Exploration Station.

Lewis Explorer Post 629

Participants
Individuals: 18
Institutions: n/a

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	2				9	
F	4				3	

Contact Ms. Judy Budd
Organization Office of Educational Programs
Installation LeRC
Mail code 7-4
Phone (216) 433-5580

Description
The purpose of the Explorer's Program, a component of the Boy Scouts of America, is to expose students to careers they might later pursue. Post is sponsored to stimulate the students' interest in science, engineering, mathematics, and technology. Explorers are exposed to the scientific and technical environments at LeRC and are provided actual work experiences and the opportunity to interact with scientists, engineers, and technicians. LeRC also conducts lectures, technical projects, field trips, and symposia.

Lewis Shadowing Program

Participants
Individuals: 41
Institutions: n/a

Contact Ms. Judy Budd
Organization Office of Educational Programs
Installation LeRC
Mail code 7-4
Phone (216) 433-5580

Description
Designed to provide selected students with one day to two week career exploration internships under the mentorship of a Lewis scientist, engineer, or technician. Participation is limited to students at least 16 years of age who have demonstrated an interest in science, mathematics, engineering or related technical fields, and have been recommended by a teacher, guidance counselor, or other school official.

Lincoln University Advanced Science and Engineering Reinforcement Program (LASER)

see description on page 63

Lunar Base Mentoring

Participants
Individuals: 25
Institutions: 1

Contact: Ms. Norma Rhoads
Organization: Public Services Branch
Installation: JSC
Mail code: AP4
Phone: (713) 483-0235

Description
This program is designed to give inspiration and guidance to elementary students working on a special space project. The students are brought to JSC to discuss their project, meet their mentors, and be given a tour. After the mentors have provided guidance for the project, the students return to work at school alone. After a month working unassisted, the students are visited at school by the mentors. The project is concluded by the students visiting JSC and presenting their final report and project to the education staff, mentors, and other invited guests.

Mars Mission Seminar

Participants
Individuals: 128
Institutions: n/a

Contact: Dr. Eddie Anderson
Organization: Elementary and Secondary Branch
Installation: HQ
Mail code: FEE
Phone: (202) 358-1518

Description
The Mars Mission Seminar is taught to high school students at several sites via teleconferencing. The semester long course consists of 14 two-hour sessions. Each session is presented by a scientist or engineer. As a culminating activity, the students simulate a Mars Mission.

MATHCOUNTS

Participants
Individuals: 350,000
Institutions: 8,000

Contact: Dr. Eddie Anderson
Organization: Elementary and Secondary Branch
Installation: HQ
Mail code: FEE
Phone: (202) 358-1518

Description
MATHCOUNTS is a national math coaching and competition program that promotes 7th and 8th grade math achievement through grassroots involvement in every state and territory. Year long coaching results in fast-paced competitions at the local, district, state, and national levels. A total of 224 students and 56 coaches progress to the national level. Eight of the top coaches are awarded an expense-paid trip to one of the centers for a four day mathematics workshop that concentrates on math education and curriculum development through hands on workshops, center tours, and sessions with scientists, engineers, and technicians.

Mathematics and Engineering Science Achievement (MESA)

see description on page 63

Minority Engineering Industrial Opportunity Program

see description on page 63

Mississippi Governor's School

Participants
Individuals: 18
Institutions: 18

Contact: Dr. Marco Giardino
Organization: Education Office
Installation: SSC
Mail code: Bldg 1100
Phone: (601) 688-2739

Description
SSC provides the services of its AESP Specialist and selected civil service employees to teach a three week course at the Mississippi Governor's School, which is a residential honors program for gifted high school students. The content of the course is space science and aerospace technology. Specific content varies from year to year in response to current NASA programs.

NASA Alumni League - KSC Chapter

Participants
Individuals: 15
Institutions: 5

Contact Mr. Raymond R. Corey
Organization Education and Awareness Branch
Installation KSC
Mail code PA-EAB
Phone (407) 867-4444

Description
The KSC chapter of the NASA Alumni League assists the KSC Education Office in a variety of educational activities, most designed to motivate students to develop an interest in math, science and engineering-related careers. These activities include speaking to local students and teachers; assisting with hands-on projects in local schools; and helping with technology projects and historical files in the Educators Resources Laboratory and Exploration Station.

NASA/East Tech. Partners in Education Program

Participants
Individuals: n/a
Institutions: 1

Contact Ms. Lucille Rhodes
Organization Office of Educational Programs
Installation LeRC
Mail code 7-4
Phone (216) 433-5579

Description
Under the auspices of the "Partners in Education Program" in 1989 a partnership was established between LeRC and East Technical High School. The objectives of the partnership are to enhance overall student attendance. In-service and fellowship programs are developed and implemented to enhance the skills of the East Tech faculty and a thematic program for students has been established. LeRC's role in the partnership is to provide tutors, advisors, and mentors to work with the students and teachers and to assist with curriculum development for the thematic program.

NASA/OAI Collaborative Aerospace Internship and Fellowship Program

see description on page 39

NASA's Unique Resident Tutoring for Up and Coming Replacement Engineers (NURTURE)

Participants
Individuals: 120
Institutions: 2

Contact Mr. Raymond R. Corey
Organization Education and Awareness Branch
Installation KSC
Mail code PA-EAB
Phone (407) 867-4444

Description
The purpose of this program is to introduce Brevard County, Florida ninth grade students to mathematics, science, and engineering disciplines and to encourage them to pursue careers in these fields. Students are assigned to teams and work side by side with NASA engineers throughout their high school years. They visit the center four times a year. Orange County, Florida was added in 1991 on a pilot basis.

National Engineers Week - Discover "E"

Participants
Individuals: 110,570
Institutions: 558

Contact CEPO's
Installation HQ, all centers

Description
Each February, NASA engineers join other engineering professionals from around the country to volunteer as "teachers for a day" in celebration of National Engineers Week. Outreach efforts emphasize hands-on experiences and include classroom visits, teacher workshops, career days, and student competitions. National Engineers Week is administered through a national committee of professional engineering associations, businesses, colleges, and government.

National Space Club Scholars Program for High School Students

Participants
Individuals: 30
Institutions: n/a

Contact Mr. Elva Bailey
Organization Educational Programs
Installation GSFC
Mail code 130
Phone (301) 286-7207

Description
This student intern program with space scientists and engineers is conducted during 6 weeks of the summer for academically talented students who will be entering the junior or senior year of high school. Participants must be U.S. citizens and must have permanent residence within commuting distance of GSFC. The National Space Club provides a small stipend to help with transportation and lunches. Applications are available in early spring from the Space Club or Goddard Space Flight Center.

New Horizons Technical Center Mentorship

Participants
Individuals: 15
Institutions: n/a

Contact: Ms. Marchelle (Shelley) Canright
Organization: Office of Public Services
Installation: LaRC
Mail code: 154
Phone: (804) 864-3313

Description
As the adopted school for LaRC, New Horizons Technical Center requires the students to have a mentorship experience in a career field of interest. Each September, 15 to 20 students are placed with LaRC scientists or engineers. From September to June, the students spend a minimum of 4-5 hours per week either with their mentors or conducting research related to their mentorship.

New Horizons Vocational Membership

Participants
Individuals: 12
Institutions: n/a

Contact: Mr. Roger Hathaway
Organization: Office of Public Services
Installation: LaRC
Mail code: 154
Phone: (804) 864-3312

Description
Students from the vocational areas of electronics, electricity, machine shop, sheet metal, and welding are selected to participate in the six week spring program at LaRC. The students are exposed and given the opportunity to work in various fabrication and technical support areas at the center.

Ohio Space Scientists of Tomorrow (OSST)

Participants
Individuals: 50
Institutions: n/a

Contact: Ms. Judy Budd
Organization: Office of Educational Programs
Installation: LeRC
Mail code: 7-4
Phone: (216) 433-5580

Description
Fifty students are selected as Ohio's space scientists of tomorrow. The program is designed to reward outstanding ninth, tenth, and eleventh graders for their schoolwork and for participation and leadership in extracurricular youth science activities and to encourage them to consider careers in science and engineering. The academy based its selection of the students on standardized test scores, class rank, grade point average, participation in student activities, participation in science and mathematics related activities and on writing ability.

Pasadena Unified School District Space Academy

Participants
Individuals: 120
Institutions: 1

Contact: Dr. Yvonne B. Freeman
Organization: Minority Science & Engineering Initiatives Off.
Installation: JPL
Mail code: 183-900
Phone: (818) 354-2326

Description
The objectives of this program are to: 1) provide scientists, engineers, and technicians as mentors to high school Space Academy students; 2) introduce students to science as a discipline and a career choice; and 3) introduce students to an inventory of science-oriented academic disciplines and their relationship to JPL flight projects, research, and technical activities.

Physical Sciences and Engineering Internship for Senior High School Students

Participants
Individuals: 24
Institutions: n/a

Contact	Mr. Elva Bailey
Organization	Educational Programs
Installation	GSFC
Mail code	130
Phone	(301) 286-7207

Description
Sponsored by the Maryland State Department of Education, this 2-week program exposes students to the engineering profession through lectures and observation in GSFC labs.

Pre-Engineering Preparatory Program
see description on page 65

Project LASER Computer Lab
see description on page 31

Project LASER – Discovery Lab
see description on page 31

Project SEE

Participants

Individuals:	2,500
Institutions:	50

Contact	Mr. Thomas Clausen
Organization	Educational Programs Office
Installation	ARC
Mail code	T025
Phone	(415)604-5544

Description
Space and Earth Exploration (SEE) is a cooperative student involvement project with the Catholic Television Network. ARC researchers present lessons via the network to classes throughout the San Francisco Bay Area. Students then develop experiments at their school site, collect data, and exchange information with other students. As a part of the project, students visit ARC and are hosted in lab areas.

Promotion and Awareness of Careers in Engineering (PACE)
see description on page 66

Recycling Center for Educational Materials

Participants

Individuals:	100
Institutions:	2

Contact	Mr. Raymond R. Corey
Organization	Education and Awareness Branch
Installation	KSC
Mail code	PA-EAB
Phone	(407) 867-4444

Description
The KSC Education Office collects used or surplus wire, tiles, woodpieces, plastic remnants, cardboard, and other excess materials that can be readily fashioned into science projects. With imagination and a little hands-on work by a young student, a plastic milk carton becomes a space helmet, a discarded tool becomes a special space application device. The KSC program is part of an area-wide effort to recycle such materials as educational aids.

Regional Summer Institute

Participants

Individuals:	60
Institutions:	n/a

Contact	Mr. Roger Hathaway
Organization	Office of Public Services
Installation	LaRC
Mail code	154
Phone	(804) 864-3312

Description
RSI in an intensive four-week program designed to foster career interest in technical areas, and feature careers in math and science. The program targets average or high-ability, unmotivated students who may otherwise not be interested in pursuing high levels of math or science.

Santa Clara Unified School District Educational Partnership

Participants

Individuals:	53
Institutions:	42

Contact	Mr. Thomas Clausen
Organization	Educational Programs Office
Installation	ARC
Mail code	T025
Phone	(415) 604-5544

Description
A community-business-education partnership targeting the 6 National Education Goals. Representatives from Silicon Valley companies combine energies to identify resources and strategies to answer the goals. Examples of projects include student-parent recognition programs, job-shadowing, in-service sessions, equipment assignments (to schools), and field trips.

Santa Clara Valley Science and Engineering Fair

Participants
Individuals: 741
Institutions: 71

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	6	46			359	
F	2	22			306	

Contact Mr. Thomas B. Clausen
Organization Educational Program Office
Installation ARC
Mail code T025
Phone (415) 604-5544

Description
The science and engineering competition features students, grades 3-12. The projects cover many math, science and engineering disciplines and are judged by teams of professionals from industry. A technical paper competition is offered as well. Two students are awarded summer work fellowships with researchers at ARC.

Science Connection

Participants
Individuals: 10,000
Institutions: n/a

Contact Mr. Gene Vosicky
Organization Public Education Office
Installation JPL
Mail code CS-530
Phone (818) 354-8699

Description
The Science Connection is an educational resource program developed to support and enhance science education for schools within Southern California Edison's service territory. The program is a joint project between Edison and JPL with support from NASA. An important part of the program is a mobile, high technology classroom. This is custom-designed to make science topics come alive for students. Stereo video equipment, a modern interactive laser disc system, microcomputers and a variety of activities allow students to experience the wonders of science they discuss in class.

Science Engineering Fair of Houston

Participants
Individuals: 600
Institutions: n/a

Contact Dr. Robert Fitzmaurice
Organization Public Services Branch
Installation JSC
Mail code AP4
Phone (713) 483-1257

Description
JSC invites the winners of regional science fairs, their teachers, sponsors, and immediate families to a special Science Fair Winners Day at JSC. The students are given a special behind the scenes tour of JSC as an incentive to encourage students to excel in science, math, and technology. JSC also supports the program by providing judges for the engineering and scientific competition.

Shuttle Amateur Radio Experiment (SAREX)

Participants
Individuals: n/a
Institutions: 31

Contact Ms. Pamela M. Bacon
Organization Technology and Evaluation Branch
Installation HQ
Mail code FET
Phone (202) 358-1540

Description
The Shuttle Amateur Radio Experiment (SAREX) objective is to involve radio amateurs world-wide in shuttle missions. The program tries to involve amateur radio clubs at elementary, junior high and high schools in shuttle missions by providing the opportunity for the students to talk to astronaut operators via amateur radio. In addition, astronaut amateur radio operators make contact with individual operators worldwide when they are not talking to the schools.

South Texas Science Outreach Program
see description on page 67

Space Believe

Participants
Individuals: n/a
Institutions: n/a

Contact Ms. Myron Webb
Organization Public Affairs
Installation SSC
Mail code PAO
Phone (601) 688-3341

Description
Developed by the TRC/Visitor Center Employee Team, "Space Believe" is a series of interactive, hands-on exhibits

that teaches children basic scientific concepts. Designed by NASA engineers at SSC and built by Pearl River Community College, "Space Believe" is located in the SSC Visitor's Center and is available to all area children. SSC employees guide school groups through the exhibits and run related assembly programs.

Space Science and Technology Curriculum

Participants
Individuals: 15
Institutions: 1

Contact Mr. William E. Anderson
Organization Education Branch
Installation MSFC
Mail code CA21
Phone (205) 544-7391

Description
The Space Science and Technology Curriculum is being developed as a course for upper middle to high school students. It is designed to acquaint students with the science, math and technology involved in space program endeavors as well as relevant careers. As material was gathered from MSFC personnel, the course was conducted at an area high school using speakers from NASA, hands-on activities and field trips to the Center. Materials are being written up to produce a curriculum guide consisting of background materials, activity and lab guides and resources lists. Supplementary videos are planned.

Space Science Student Involvement Program (SSIP)

Participants
Individuals: 97,440
Institutions: n/a

Contact Dr. Eddie Anderson
Organization Elementary and Secondary Branch
Installation HQ
Mail code FEE
Phone (202) 358-1518

Description
The purpose of this project is to stimulate interest in science and technology by directly involving students in a space research program. Centers support the project by publicizing it within their region and conducting an annual SSIP regional conference for winning semi-finalists.

Space Shuttle Earth Observations

see description on page 32

Student Aircraft Research Program (STAR)

Participants
Individuals: 25
Institutions: 5

Contact Mr. John M. Shaw
Organization Office of Educational Programs
Installation LeRC
Mail code 7-4
Phone (216) 433-5578

Description
The STAR Program puts a T-34 aircraft at the disposal of high school students, who can use it to conduct experiments in basic physics, reduced gravity, and remote sensing.

Student Career Education

Participants
Individuals: n/a
Institutions: n/a

Contact Mr. Raymond R. Corey
Organization Education and Awareness Branch
Installation KSC
Mail code PA-EAB
Phone (407) 867-4444

Description
Upon request from a grade school or junior high school, a career presentation is given to students. This is not a program designed for recruitment but solely to inform students of the type of jobs available currently and in the future. It is a program that tries to make what is being taught in the classroom relevant to aerospace careers.

Student Ground Truth Studies Project

Participants
Individuals: 1,000
Institutions: n/a

Contact Mr. Martin Ruzek
Organization Earth Sciences and Applications Div., OSSA
Installation HQ
Mail code SE
Phone (202) 358-0754

Description
The Ground Truth Studies Project creates a hands-on opportunity for students to learn about their local environment and how it relates to global change. During the initial pilot phase, more than 1,000 K-12 students in 12 states were exposed to ground truth studies materials and draft curricula in their classrooms. The program increases student awareness of the process

and benefits of space; promotes science and mathematics as tools for understanding and addressing real world problems; and encourages careers in science and math.

Student Space and Biology Program

Participants
Individuals: 42
Institutions: 31

Contact Mr. Darrin J. Belgarde
Organization Human Resources Development Branch
Installation ARC
Mail code 241-3
Phone (415) 604-6984

Description
The Student Space and Biology Program is designed to expose students to the challenges of science. It provides an opportunity to be placed in a research organization at ARC. Students apply through their high school science departments. After the program begins in the fall, students work a minimum of six hours per week. One of those hours is dedicated to a weekly lecture series offered by Ames scientists and engineers.

Study of Intervention Program on the Entry of Minority Women into College Engineering Programs

see description on page 68

Summer Employment Program

see description on page 57

Summer High School Research Apprenticeship Program (SHARP)

see description on page 68

Summer Institute

see description on page 68

Summer Youth Employment and Training Program

Participants
Individuals: 39
Institutions: n/a

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	10	5				
F	19	3			2	

Contact Mr. William Nyerges
Organization Office of Educational Programs
Installation LeRC
Mail code 7-4
Phone (216) 433-5576

Description
Lewis has a long history of employing Cleveland area high school students in summer jobs. Many of these arrangements have been cooperative ventures with the Cleveland Board of Education through the School Neighborhood Youth Corps and the Summer Youth Employment and Training Program. The primary objective of these summer jobs is to provide the student with meaningful work experience and an opportunity to earn money for meeting future school costs.

Technical Opportunities for Peninsula Students (TOPS)

Participants
Individuals: 25
Institutions: n/a

Contact Mr. Roger Hathaway
Organization Office of Public Services
Installation LaRC
Mail code 154
Phone (804) 864-3312

Description
Twenty-five local students spend their afternoons under the direction of an aerospace specialist who introduces the students to NASA's R&D programs and activities. The program is problem-centered and requires the students to actively engage in the resolution of the problem. Through these experiences the students are able to acquire a better appreciation for sciences, the scientific process, and aeronautics and space career fields.

Telelectures

Participants
Individuals: 500
Institutions: 7

Contact CEPO's
Installation ARC, JSC

Description
Telelectures enable NASA researchers to communicate directly with student groups via telephone line. Visuals sent to the school in advance are projected and the speaker addresses the students using a conference telephone system. Students can also respond and ask questions.

University of the District of Columbia Saturday Academy

Participants
Individuals: 841
Institutions: 1

Contact Ms. Sheree Stovall-Alexander
Organization Office of Equal Opportunity Programs
Installation HQ
Mail code EU
Phone (202) 358-0973

Description
This is a satellite program run by the University of the District of Columbia to reach out, encourage and augment mathematics, science and computer training for students in grades 4-8. It also has a teacher training component. The program incorporates: 1) math/science teacher training for elementary and junior high teachers; 2) parental involvement; 3) community /role model participation; 4) SAT/PSAT preparation seminar; 5) advanced placement math enrichment programs; and 6) follow-up internship program. Participants engage in a multilevel curriculum on conceptual mathematics, computer science and electrical engineering.

Upward Bound Program

Participants
Individuals: 10
Institutions: 1

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M		3				
F		7				

Contact Mr. Sam Garrett
Organization Affirmative Action Programs Office
Installation JPL
Mail code 114-121
Phone (818) 354-6605

Description
To provide opportunities for the participants. To gain exposure to career options in scientific and high technology occupations available at JPL, by providing meaningful supervised work experience for the participants.

Urban Community Enrichment Program

Participants
Individuals: 31,748
Institutions: 44

Contact Dr. Eddie Anderson
Organization Elementary and Secondary Branch
Installation HQ
Mail code FEE
Phone (202) 358-1518

Description
The UCEP program, conducted in urban areas where minority students are concentrated, is designed to provide aerospace experiences to middle school students. A component of the Aerospace Education Services Program, UCEP Specialists reach two or three urban areas each year and visit 15-20 middle schools in each city. FY 91 programs were conducted in Nashville, TN and Bridgeport, CT.

Virginia Governor's School for the Gifted Program

Participants
Individuals: 15
Institutions: n/a

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M					13	
F					112	

Contact Ms. Marchelle (Shelley) Canright
Organization Office of Public Services
Installation LaRC
Mail code 154
Phone (804) 864-3313

Description
The Governor's School is a residential, 5-week summer program designed to provide challenging and enriching real life-work experiences for intellectually gifted students. Students are assigned NASA mentors who are responsible for the research or engineering experiences of the student. Work experiences are in a variety of the engineering, physical sciences, or mathematics disciplines. The College of William and Mary provides housing for the students. The Virginia Department of Education is the program sponsor and provides the students with food, lodging, and evening and weekend activities.

Visiting Student Enrichment Program

Participants
Individuals: 13
Institutions: n/a

Contact	Mr. David Holdridge
Organization	GSFC Visiting Scientist Program
Installation	GSFC
Mail code	610.3
Phone	(301) 286-3876

Description
To provide high school and college students with exposure to space science careers through temporary summer employment. Students are placed with the Space Data and Computing Division at GSFC for approximately 10 weeks. In addition to meaningful work experience, participants are invited to lectures and field trips to gain a broad appreciation of the mission and activities of GSFC.

Yes-WE CARE (Plan for Permanent Minority Engineering Program)
see description on page 70

Adopt-A-School/Partnership Schools
see description on page 13

Aerospace Education Services Program (AESP)

Participants
Individuals: 1,319,000
Institutions: 2,021

Contact	Dr. Eddie Anderson
Organization	Elementary and Secondary Branch
Installation	HQ
Mail code	FEE
Phone	(202) 358-1518

Description
The Aerospace Education Services Program provides the professional services of specialists in aerospace education. The specialists are qualified educators who are knowledgeable in aeronautics and the space sciences and are able to effectively communicate past, present, and future NASA activities. The key objectives are to: 1) present mathematics, science, and technology concepts relative to aerospace education; 2) model current instructional practices; 3) enhance motivation to pursue related topics; 4) supplement existing curriculum; and 5) encourage participation of underrepresented groups in the fields of science, mathematics, and technology education.

Aspen Global Change Institute
see description on page 48

ATTAC 2000 - Teacher Internship

Participants
Individuals: 2
Institutions: n/a

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	1				1	
F						

Contact	Mr. Roger Hathaway
Organization	Office of Public Services
Installation	LaRC
Mail code	154
Phone	(804) 864-3312

Description
The Teacher Internship Program provides educators an opportunity to gain experience and knowledge on the technical innovations, improvements, and changes taking place in business and industry. As a part of the business "team", interns observe and use the same work-related communication, teamwork, and problem solving skills their students will require for career success.

Challenger Center for Space Science Education

Participants
Individuals: n/a
Institutions: n/a

Contact Ms. Pamela M. Bacon
Organization Technology and Evaluation Branch
Installation HQ
Mail code FET
Phone (202) 358-1540

Description
The purpose of the Challenger Center is to develop curriculum materials that are used by teachers in the classroom. Additionally, it provides workshops and experiences for teachers to enhance their knowledge, skills, and experience in teaching science, math, and technology.

Classroom of the Future

Participants
Individuals: n/a
Institutions: 1

Contact Dr. Malcom Phelps
Organization Technology and Evaluation Branch
Installation HQ
Mail code FET
Phone (202) 358-1540

Description
The Classroom of the Future at Wheeling Jesuit College represents a marriage of education and technology in an experimental initiative. The goal is to improve the way young Americans learn math, science and aerospace studies. The Classroom of the Future is composed of a 21st century classroom, software and multimedia development center, the Challenger Learning Center, satellite/distance learning facilities, and a NASA Regional Teacher Resource Center.

Comfortable Approach to Teaching Science (CATS)

Participants
Individuals: 54
Institutions: n/a

Contact Mr. Gene Vosicky
Organization Public Education Office
Installation JPL
Mail code CS 530
Phone (818) 354-8699

Description
CATS is a joint program of the California State Polytechnic University, Pomona and JPL. Elementary teachers are trained over a year to be comfortable in teaching physical science. An intense summer institute is followed up with programs over the full year. The entire program follows the California State science and math frameworks and also is aligned with the six major national elementary science textbook series. The program is sponsored by the National Science Foundation. The program has been expanded to include teachers from the Navajo, Hopi, Zuni and Ute Indian reservations and teachers from HBCUs.

Cooperating Hampton Roads Organization for Minorities in Engineering Workshop (CHROME)

Participants
Individuals: 25
Institutions: n/a

Contact Mr. Roger Hathaway
Organization Office of Public Services
Installation LaRC
Mail code 154
Phone (804) 864-3312

Description
The CHROME Workshop is held each year for secondary and middle school teachers from the Greater Hampton Roads area. The teachers are introduced to aerospace activities that are designed to provide information and experience in math, science, and technology.

Development and Evaluation of Fundamental Skills Intelligent Tutoring

see description on page 14

Educational Conferences

Participants
Individuals: 3,000
Institutions: 40

Contact Mr. Raymond R. Corey
Organization Education and Awareness Branch
Installation KSC
Mail code PA-EAB
Phone (407) 867-4444

Description
KSC provides two-day programs for groups of educators attending summer conferences at various educational institutions, most located in the Southeast, who plan trips to KSC as a

major part of the conference. Participants attend programs in Exploration Station, take escorted bus tours of KSC and CCAFS, see the IMAX movie, and learn from the numerous exhibits at Spaceport USA.

Educational Satellite Videoconferences

Participants
Individuals: n/a
Institutions: 3,000

Contact Dr. Malcom Phelps
Organization Technology and Evaluation Branch
Installation HQ
Mail code FET
Phone (202) 358-1540

Description
The objective is to update teachers on current developments in NASA programs and demonstrate educational activities for the classroom. These interactive satellite educational broadcasts show various center facilities, operations, and programs. The broadcasts highlight programs like Space Station, Mission to Planet Earth or aeronautics, providing factual information and developing curriculum materials and activities.

Education Working Group

Participants
Individuals: n/a
Institutions: n/a

Contact Dr. Gregory Vogt
Organization Space Shuttle Support Office
Installation JSC
Mail code CA4
Phone (713) 483-3458

Description
The Education Working Group has produced a video series, 'Liftoff To Learning' that explains the scientific, mathematic, and technological concepts that make space flight possible. It also provides examples of the global perspective space flight offers and the new frontiers of research and exploration space flight has created. EWG also produces video teacher's guides, Mission Watch and Mission Highlights publications for each Shuttle mission, classroom curriculum guides, educational and Shuttle crew lithographs, and provides support to education offices at other NASA centers. Periodically, videos and other curriculum materials are tested at national education conventions and regional teacher workshops.

Future Exploration of Mars Educational Workshop

Participants
Individuals: 50
Institutions: n/a

Contact Mr. Joseph Boyce
Organization Solar System Exploration Division, OSSA
Installation HQ
Mail code SL
Phone (202) 358-1588

Description
To enhance the knowledge of teachers through in-depth exposure to a series of NASA planetary science missions. This intensive 5-day workshop provides teachers and students with detailed presentations on mission science objectives and mission design. Participants also work on curriculum development projects resulting in a package of curriculum materials to take back to school districts. Participants are secondary school student/ teacher pairs with an interest in science.

Head Start Educators Program

Participants
Individuals: 150
Institutions: 8

Contact Mr. Raymond R. Corey
Organization Education and Awareness Branch
Installation KSC
Mail code PA-EAB
Phone (407) 867-4444

Description
This program is an introduction to elementary science principles and includes workshops and tours of the Kennedy Space Center for Head Start Teachers from various counties in Florida.

Hubble Space Telescope Education Initiative

Participants
Individuals: n/a
Institutions: n/a

Contact Dr. Ed Weiler
Organization Astrophysics Division, OSSA
Installation HQ
Mail code SZ
Phone (202) 358-0342

Description
To use the discoveries of the Hubble Space Telescope to update and renew teachers' knowledge of mathematics, science, and technology concepts. The program includes teacher workshops, educational products, a computer-based Astronomy Visualization Laboratory, and public lectures and viewings.

Intergovernmental Personnel Act Program

Participants
Individuals: 2
Institutions: 2

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M						
F					2	

Contact Mr. William E. Anderson
Organization Education Branch
Installation MSFC
Mail code CA21
Phone (205) 544-0038

Description
Under the IPA, employees may be assigned to institutions of education, local governments, state and Federal agencies. MSFC has instituted IPA arrangements with Huntsville City Schools, Madison County Schools, Muscle Shoals, AL school district and Oklahoma State University. Teachers from these institutions assist in the management of various elementary and secondary programs conducted by the MSFC Public Affairs Office.

Langley Vocational Teachers Summer Program

Participants
Individuals: 16
Institutions: n/a

Contact Mr. Roger Hathaway
Organization Office of Public Services
Installation LaRC
Mail code 154
Phone (804) 864-3312

Description
The program provides an opportunity for area vocational teachers to work directly with technicians and other support personnel at LaRC. The teachers are exposed to the latest techniques in performing various tasks associated with their jobs.

Life in the Universe

Participants
Individuals: n/a
Institutions: n/a

Contact Dr. John Rummel
Organization Life Sciences Division, OSSA
Installation HQ
Mail code SB
Phone (202) 453-1527

Description
To use the possible existence of life elsewhere in the universe and the subject of the Search for Extraterrestrial Intelligence (SETI) as organizing, integrating and motivating topics to improve the teaching of sciences to elementary and middle schools nationwide. Science curriculum materials are being created that have natural links to languages, arts, math, and the social sciences to provide an understanding of the multidisciplinary nature of science. Guides contain hands-on science activities suitable for 10-12 weeks of study.

Lunar Sample Program

Participants
Individuals: 245,000
Institutions: 500

Contact Dr. Eddie Anderson
Organization Elementary and Secondary Branch
Installation HQ
Mail code FEE
Phone (202) 358-1518

Description
This program makes lunar samples available to science classrooms throughout the country on a free-loan basis. Borrowers receive six samples of lunar material (three soils and three rocks) encapsulated in a 6-inch diameter clear lucite disk. The disk is accompanied by written and graphic descriptions of each sample in the disk, a film, a sound and slide presentation, a teacher workbook, and additional printed material. These materials are designed to be used as science teaching aids in classrooms.

Maryland Pilot Earth Science Technology Education Network (MAPS-NET)

Participants
Individuals: 14
Institutions: n/a

Contact	Dr. Gerald Soffen
Organization	University Programs
Installation	GSFC
Mail code	160
Phone	(301) 286-9690

Description
To provide an innovative, hands-on approach to teaching middle and secondary school students about current Earth observation techniques and technologies. Workshops teach educators how to acquire and use live images captured from meteorological satellites in the classroom. The program plans to establish active ground stations in Maryland middle and secondary schools as well as teacher support networks to ensure a continuing process for introducing Earth science and related technology into the schools.

Math/Science/Business Summer Teacher Program

Participants
Individuals: 16
Institutions: n/a

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M					10	
F					6	

Contact	Ms. Monica Garcia
Organization	Professional Development
Installation	JPL
Mail code	291-105
Phone	(818) 354-3750

Description
This program provides summer work for selected secondary school teachers. The purpose is to familiarize these teachers with current trends in technology and research so they can incorporate this knowledge into their teaching of junior or senior high school students.

MATHCOUNTS
see description on page 17

Mini-Courses — Secondary School Teachers

Participants
Individuals: 23
Institutions: 1

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M					1	
F	18				4	

Contact	Mr. Raymond R. Corey
Organization	Education and Awareness Branch
Installation	KSC
Mail code	PA-EAB
Phone	(407) 867-4444

Description
Centers offer courses to local science teachers in conjunction with the State Department of Education. Courses are presented by center scientists or engineers, covering topics recommended by the State Supervisor for Science.

Mississippi Aerospace Education Working Group

Participants
Individuals: 50
Institutions: 50

Contact	Dr. Marco Giardino
Organization	Education Office
Installation	SSC
Mail code	Bldg 1100
Phone	(601) 688-3965

Description
Fifty educators, chosen by their school districts in Mississippi, were invited to a two day conference hosted by SSC to identify needs, services and assistance which could be provided by NASA. Responding as customers, these educators compiled a list of recommendations submitted to SSC based on the six elements of "AMERICA 2000". Future meetings are planned.

NASA/East Tech. Partners in Education Program
see description on page 18

NASA Educational Workshops for Elementary School Teachers (NEWEST)/NASA Educational Workshops for Math, Science, and Technology Teachers (NEWMAST)

Participants
Individuals: 215
Institutions: n/a

Contact	Dr. Eddie Anderson
Organization	Elementary and Secondary Branch
Installation	HQ
Mail code	FEE
Phone	(202) 358-1518

Description
This is a collaborative effort sponsored by NASA, National Science Teachers Association, National Council of Teachers of Mathematics, and the International Technology Education Association. Each year, 215 teachers are selected to partici-

pate in workshops conducted at the nine NASA centers. Teachers receive resource materials; observe state-of-the-art research and development; meet with scientists, engineers, technicians, and educational specialists; and learn how to use their experiences to enhance the educational curricula within their own district. Each workshop addresses current NASA programs with a special focus on the unique activities specific to each center.

NASA Spacelink

Participants
Individuals: 18,000
Institutions: n/a

Contact Dr. Malcom Phelps
Organization Technology and Evaluation Branch
Installation HQ
Mail code FET
Phone (202) 358-1540

Description
NASA Spacelink is a computer information system for teachers and students. The objective of Spacelink is to provide an efficient method for educators to obtain NASA educational materials. The Spacelink database includes current news about NASA missions and programs as well as information resources about such NASA programs as aeronautics, space exploration, space flight, and Mission to Planet Earth. Information about NASA education services as well as classroom materials and software are also included. Spacelink is available directly through commercial telephone lines or the Internet.

NASA - SSC Communication Seminar

Participants
Individuals: 100
Institutions: 3

Contact Dr. Marco Giardino
Organization Education Office
Installation SSC
Mail code Bldg 1100
Phone (601) 688-3965

Description
The NASA-SSC Communication Seminar is a five hour staff development workshop for teachers and administrators dealing with applications of communication research to the school and classroom. SSC AESP support personnel and selected civil service employees conduct the workshop and expose teachers to research done by NASA, industry and other government agencies in the field of human communication.

Partners in Space

Participants
Individuals: 75
Institutions: 10

Contact Ms. Nancy G. Robertson
Organization Office of the Center Director
Installation JSC
Mail code AC2
Phone (713) 483-0628

Description
Partners in Space is a non-profit organization sponsored by JSC for the purpose of developing educational partnerships with local school districts, institutions of higher learning, aerospace contractors, industry and business. Community involvement in the education process is fostered as a part of the AMERICA 2000 strategy. Major projects include elementary level aerospace curriculum development, teacher training, career awareness, educational resources and a speakers bureau. Activities are recognized by the Texas Education Agency.

Planetary Science Teachers Workshop

Participants
Individuals: 80
Institutions: n/a

Contact Dr. Jurgen Rahe
Organization Solar System Exploration Division, OSSA
Installation HQ
Mail code SL
Phone (202) 358-0292

Description
To update teachers' knowledge and increase their understanding of planetary science, to motivate them to include planetary science in their teaching, and to provide the tools to implement concepts in the classroom. Workshops are conducted in conjunction with the annual meeting of the American Astronomical Society's Division of Planetary Sciences.

Pre-service Initiative

Participants
Individuals: n/a
Institutions: 2

Contact Dr. Eddie Anderson
Organization Elementary and Secondary Branch
Installation HQ
Mail code FEE
Phone (202) 358-1518

Description
The Pre-service Initiative Program is a NASA sponsored initiative designed to introduce aerospace concepts and teaching methods to students training to become elementary and middle school teachers. The individual College of Education designs and develops an aerospace curriculum in consultation with other colleges and programs including mathematics, science, and engineering. The curriculum is presented as a semester long course for credit. Workshops, seminars, and training are used to disseminate information about the content of the program.

Pre-Teacher Programs

Participants
Individuals: 147
Institutions: 3

Contact Mr. Raymond R. Corey
Organization Education and Awareness Branch
Installation KSC
Mail code PA-EAB
Phone (407) 867-4444

Description
KSC offers an educational program for college students who plan to become teachers. KSC personnel conduct workshops at regional colleges to brief students on NASA services and programs for educators. The students then come to KSC for on-site programs, usually including a tour of KSC and CCAFS, a briefing on the Educators Resources Laboratory, a session in the Exploration Station, and exposure to the many educational exhibits at Spaceport USA.

Project LASER Computer Lab

Participants
Individuals: 425
Institutions: 23

Contact Mr. William E. Anderson
Organization Education Branch
Installation MSFC
Mail code CA21
Phone (205) 544-0038

Description
The Project LASER Computer Lab is located in the Computer Science building on the campus of the University of Alabama in Huntsville. The lab contains work stations and a laser printer, all donated to the project by Sun Microsystems, Inc. The LASER Computer lab is unique in that it is the first Unix based work station laboratory in the Nation dedicated solely to science, math and computer education for grades K-12. NASA scientists and engineers are trained to make presentations for K-12 teachers or students. The teachers learn to use the computers to conduct classes for their students. The students are trained to use the computers to do individual projects in science, math, computer science or research. The LASER Computer Lab facility is also used to conduct regional and national computational science workshops for teachers and students.

Project LASER - Discovery Lab

Participants
Individuals: 900
Institutions: 302

Contact Mr. William E. Anderson
Organization Education Branch
Installation MSFC
Mail code CA21
Phone (205) 544-0038

Description
Discovery Lab is a hands-on science education facility located on-site at MSFC. MSFC education staff, with assistance from MSFC engineers and scientists, develop, test and evaluate hands-on educational materials and activities. Volunteers from MSFC labs assist in conducting workshop sessions for teachers and students. Discovery Lab educational materials and activities are available to requesting teachers. The Discovery Lab features HAM radios, a photographic darkroom and a SunSPARC work station to access Project LASER Computer Lab at the nearby University of Alabama in Huntsville. The Lab will accommodate up to 25 teachers or students at one time.

Project LASER - Mobile Teacher Resource Center

Participants
Individuals: 7,935
Institutions: 268

Contact Mr. William E. Anderson
Organization Education Branch
Installation MSFC
Mail code CA21
Phone (205) 544-0038

Description
NASA's Mobile Teacher Resource Center (MTRC) unites federal and private sector resources in a program to provide exciting new math and science educational materials to teachers and students throughout the country. A component of Project LASER -Learning About Science, Engineering and Research, the MTRC is a Teacher Resource Center on wheels. Unlike fixed-site TRC's, the mobile TRC can provide special services to communities distant from NASA TRC's and Regional TRC's.

Science Advisor (SCIAD) Program

Participants
Individuals: 79
Institutions: 39

Contact Mr. Pleddie Baker
Organization Propulsion Test Office
Installation JSC White Sands Test Facility
Mail code RD
Phone (505) 524-5522

Description
The Science Advisor (SCIAD) Program is an education outreach program, committed to improving science and mathematics education in the elementary and middle schools. Two science advisors are assigned to each school four hours each week to perform the following: assist the teachers in expanding their knowledge of science and technical concepts; aid teachers in identifying and obtaining resources to complement the math and science curricula; devise classroom activities and experiments that support the curricula; relate what the students are learning to what they need to know to be a scientist or engineer; serve as a role model for the students; and help with curriculum development in mathematics and science disciplines.

Scientific Renewal

Participants
Individuals: 48
Institutions: 2

Contact Ms. Sheree Stovall-Alexander
Organization Office of Equal Opportunity Programs
Installation HQ
Mail code EU
Phone (202) 358-0973

Description
Scientific Renewal is a teacher training program designed to upgrade the mathematics, science and computer science capabilities and instructional skills of elementary and junior high school teachers for the District of Columbia Public schools (5th-6th grades). Through a three-week summer workshop, hands-on training and topic seminars are offered as well as materials for classroom use. Teachers are monitored during the school year and a detailed evaluation is part of the program design.

Space Down to Earth

Participants
Individuals: 26
Institutions: 16

Contact Mr. Garth A. Hull
Organization Educational Programs Office
Installation ARC
Mail code T025
Phone (415) 604-5543

Description
The workshop is designed for teacher/ administrative teams to survey the latest developments in aeronautics and space, to review educational resources and be encouraged to develop individual instructional units and curriculum strategies.

Space Educators Handbook (Hypercard Software)

Participants
Individuals: n/a
Institutions: n/a

Contact Mr. Jared Woodfill
Organization New Initiatives Office
Installation JSC
Mail code IA121
Phone (713) 283-5364

Description
The program consists of an integrated Macintosh HyperCard software program of approximately 40 space education subject areas (STACKS). Extensive use of NASA Teachers Resource Material is resident in the HyperCard stacks. Graphics include NASA photo library pictures and astronaut and mission logo pictures. NASA space education publications are included in adapted HyperCard format easily searched via HyperCard navigation tools. Program resides on 6 Hi-density 3.5" diskettes. Plans are for users to provide diskettes for copying. The program works on all Macintosh computers without the purchase of added application software by the educational user.

Space Science and Technology Curriculum

see description on page 22

Space Shuttle Earth Observations

Participants
Individuals: n/a
Institutions: 200

Contact Dr. David E. Pitts
Organization Flight Science Branch
Installation JSC
Mail code SN5
Phone (713) 483-5066

Description
The sharing of Space Shuttle Earth Observation images enables teachers to incorporate photographs of Earth taken on Shuttle missions by astronauts into the classroom to further students' understanding of global geography and environmental processes. This sharing is accomplished by several methods: 1) contact with school groups to provide explanatory presentations and information on obtaining materials; 2) routine preparation of a frame-by-frame, computerized database of all Shuttle hand-held photography; 3) hard copy catalogs of hand-held photos in the database; 4) laser discs of all photos; 5) CD-ROMS of some Shuttle film; 6) sets of slides with explanatory booklets; 7) lesson plans based on the photos; and 8) outreach to professional educators via refereed journal publication.

SSC-NEWEST Shuttle Hardware Loan Project

Participants
Individuals: n/a
Institutions: n/a

Contact Dr. Marco Giardino
Organization Education Office
Installation SSC
Mail code Bldg. 1100
Phone (601) 688-3965

Description
The SSC-NEWEST hardware loan project was proposed by the SSC NEWEST class of 1990. It is a package of Shuttle hardware containing a sleep restraint, food tray, Shuttle food, Shuttle heat shield tile, tank insulation and other items which may be borrowed by teachers for one weekend then mailed back to SSC. The NEWEST program administered by NSTA is to fund the addition of 3 such packages to the project this year.

Summer Industrial Fellowships for Teachers (SIFT)

Participants
Individuals: 27
Institutions: 1

Contact Mr. Raymond R. Corey
Organization Education and Awareness Branch
Installation KSC
Mail code PA-EAB
Phone (407) 867-4444

Description
This program provides Central Florida K-12 teachers with on-the-job, hands-on experience in real-world industrial situations, including exposure to new technology. The program offers the teachers new ideas for classroom activities, and provides insight into the requirements of a variety of technical careers. The teachers are selected competitively, and work at KSC or local area businesses for six to eight weeks during the summer.

Summer Teacher Enrichment Program

Participants
Individuals: 79
Institutions: 39

Contact Mr. Pleddie Baker
Organization Propulsion Test Office
Installation JSC WSTF
Mail code RD
Phone (505) 524-5522

Description
The Summer Teacher Enrichment Program was created to give New Mexico secondary science and mathematics teachers relevant summer work experience to allow them to better communicate with students about careers in mathematics, science, and engineering and about preparing for those careers. This program stimulates teachers, ideas and enthusiasm and enables them to speak from experience.

Summer Teacher Enrichment Program (STEP)

Participants
Individuals: 12
Institutions: 12

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	1				3	
F	3				5	

Contact Mr. William E. Anderson
Organization Education Branch
Installation MSFC
Mail code CA21
Phone (205) 544-0038

Description
The Summer Teacher Enrichment Program (STEP) offers junior high, middle school and high school math and science teachers an experience in the scientific workplace, working with a NASA mentor in a MSFC laboratory. Participating teachers' scientific and technical knowledge is enhanced by the interaction and experience gained while working in an actual laboratory setting. Interaction with NASA experts and other STEP participants provides an exciting stimulus to exchange ideas that can lead to the development of educational products the teacher can use in the classroom. The STEP experience also provides relevant examples of how science, math and technology are used in the workplace, and how such

knowledge relates to technical careers. STEP teachers are encouraged to share their experience within their school systems and communities.

Teacher Conferences — Launches

Participants
Individuals: 300
Institutions: 100

Contact Mr. Garth A. Hull
Organization Educational Programs Office
Installation ARC
Mail code T025
Phone (415) 604-5543

Description
The conferences provide a forum for teachers to learn from scientists and engineers about the scientific payloads being sent into Earth orbit and the technology used to execute the mission. The government-industry-university team necessary for such work is inherent in the one/two day program in conjunction with the launch at Vandenberg AFB.

Teacher Enhancement in Science
see description on page 69

Teaching from Space

Participants
Individuals: n/a
Institutions: n/a

Contact Ms. Pamela M. Bacon
Organization Technology and Evaluation Branch
Installation HQ
Mail code FET
Phone (202) 358-1540

Description
Teaching From Space uses space as a catalyst to enhance all subject areas and grade levels of the education system. The initial mission of Teaching From Space is to fly a classroom teacher on the Space Shuttle to connect the education community with space in a way no other mission can. The objectives are to: 1) demonstrate that space is an ideal medium for generating educational benefits; 2) initiate NASA's Teaching From Space Program in which astronauts will perform selected teaching duties in addition to their traditonal on-orbit responsibilities; and 3) set the stage for future education initiatives from Space Station Freedom and the Space Exploration Initiative.

Teacher Resource Center Network (TRCN)

Participants
Individuals: 91,422
Institutions: n/a

Contact Dr. Malcom V. Phelps
Organization Technology and Evaluation Branch
Installation HQ
Mail code FET
Phone (202) 358-1540

Description
The objective of the TRCN is to provide educators immediate access to information generated by NASA programs, technologies, and discoveries so that they can encourage students to study math, science, and engineering. The TRCN provides videotapes, publications, slides, and software. The TRCN consists of 12 Teacher Resource Centers, 38 Regional Teacher Resource Centers, and the Central Operation of Resources for Educators (CORE).

Teacher Workshops

Participants
Individuals: 630
Institutions: 30

Contact Dr. Robert Fitzmaurice
Organization Public Services Branch
Installation JSC
Mail code AP4
Phone (713) 483-1257

Description
The Public Services Branch conducts teacher workshops yearround with a concentrated effort during the summer months. These workshops consist of a series of facility tours, aerospace briefings by JSC engineers, scientists, astronauts, and medical doctors. Additionally, the teachers experience "hands-on" workshops with aerospace education curriculum material representing activities that can be used in their respective classrooms. The workshops enhance teacher knowledge of the space program, develop ways of translating this new knowledge into the classroom, and develop new or stronger ties with schools.

Telereach

Participants
Individuals: 2,500
Institutions: 23

Contact	Ms. Anita Solarz
Organization	Office of Educational Programs
Installation	LeRC
Mail code	7-4
Phone	(216) 433-5583

Description
Telereach is a program designed and targeted for the Lewis Research Center NEWEST teacher. Recognition of the NEWEST teacher, students, an emphasis on a sound education, updates on NASA programs and a communication link between NASA and students can be achieved. It involves a speaker phone link up with a school and Lewis Research Center. It is an electronic field trip.

TERRACORPS

Participants
Individuals: 20
Institutions: 5

Contact	Dr. Gilbert Yanow
Organization	Educational Outreach/Public Education Office
Installation	JPL
Mail code	CS-530
Phone	(818) 354-6916

Description
TERRACORPS is a curriculum development program using ecology as the basic theme to develop a strategy to teach middle school science, mathematics, communication skills and a variety of other topics. It is thematic and interdisciplinary in its approach. It uses a high degree of technology, including advanced computer techniques, imagery, image enhancement, data recording, and compilation of information over a long period of time. The program is also being used as a vehicle to develop new proficiency assessment techniques and as part of its normal program, professional evaluation by experts in the field.

Texas Alliance for Science, Technology, and Math Education

Participants
Individuals: 1
Institutions: 1

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M					1	
F						

Contact	Dr. Stanley H. Goldstein
Organization	University Programs
Installation	JSC
Mail code	AHU
Phone	(713) 483-4724

Description
High school science, math, and technology teachers work for an industry sponsor during the summer. The objectives of this internship are to increase the teacher's knowledge and expertise in his/her teaching field; to translate science, math, and technology applicants to students; to establish interactive partnerships between employers and teachers; and to increase the teacher awareness of workplace expectations, career opportunities, and daily operations enabling them to better motivate students.

Texas Science Summit

Participants
Individuals: 125
Institutions: n/a

Contact	Dr. Robert Fitzmaurice
Organization	Public Services Branch
Installation	JSC
Mail code	AP4
Phone	(713) 483-1257

Description
JSC in conjunction with the Texas Education Agency hosted the first annual Texas Science Summit. At the summit a diverse group of individuals from business, industry, government agencies, as well as schools, universities, and students, developed goals to form the framework for Texas science education into the 21st century. JSC will continue to be an active sponsor of the Texas Science Summit and participate in future related activities.

TRC Workshops

Participants
Individuals: n/a
Institutions: n/a

Contact	Ms. Deborah Jackson
Organization	Johnson Controls W.S. Inc.
Installation	SSC
Mail code	Bldg 1200
Phone	(601) 688-1100

Description
Topical workshops for up to 25 teachers are held 26 times each year. Subjects range from science for elementary teachers to archeology. Several resident agencies, contractors, state and

federal experts, including OSU, contribute speakers. The Teacher Resource Center (TRC) coordinates each workshop and teaches several. Workshops are planned for the upcoming year based on participants' evaluations from previous sessions. A "Current Topics in Education" workshop stressing group problem solving, TQM and "AMERICA 2000" was offered for the first time in FY91 and will be repeated.

University of the District of Columbia Saturday Academy

see description on page 24

Vocational In-Service and Business Exchange Program

Participants
Individuals: 2
Institutions: 2

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M					2	
F						

Contact Mr. Raymond R. Corey
Organization Education and Awareness Branch
Installation KSC
Mail code PA-EAB
Phone (407) 867-4444

Description
NASA/KSC has joined with area businesses, government organizations and the Brevard County School Board to offer this program for vocational teachers. Each participating teacher is assigned to an organization within KSC or a participating industrial firm, which then provides a mentor. The teacher works up to 80 hours. Schedules are arranged so they do not interfere with the teacher's regular classroom work. Teachers can develop their vocational skills, as well as share their experiences with students in the classroom.

Undergraduate Students

Academic Part-Time Program

see description on page 54

Aerospace Summer Intern Program

Participants
Individuals: 22
Institutions: 21

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	1		1		14	
F		2			4	

Contact Ms. Susan Harreld
Organization Human Resources Development Branch
Installation JSC
Mail code AH3
Phone (713) 483-3076

Description
Developed to provide participants an opportunity to broaden their background and to interest them in permanent careers in aerospace fields through a combination of academically related work experience at JSC during the summer and appropriate seminars and tours.

Associated Western Universities

see description on page 48

Baccalaureate Co-op Education Program

see description on page 54

CALTECH Summer Undergraduate Research Fellowships (SURF)

Participants
Individuals: 38
Institutions: n/a

Contact Dr. Terry Cole
Organization Office of Technical Divisions
Installation JPL
Mail code 180-500
Phone (818) 354-5458

Description
The primary goal of SURF is to provide opportunities for undergraduates to carry out independent research under the direction of leading scientists and engineers. Students are responsible for both a written and an oral report describing their research.

Cientificos Program

Participants
Individuals: 15
Institutions: 1

Contact Ms. Ester Bugna
Organization Office of Space Research
Installation ARC
Mail code 200-7
Phone (415) 604-6469

Description
This program is conducted by the National Hispanic University and is developing new approaches to involving Hispanic students in math and science disciplines. This is done by using curricula, equipment and facilities that are sensitive to the educational process of Hispanics. ARC personnel provide support as curriculum advisors and faculty on loan to teach science courses.This assures the National Hispanic University that its graduates will be qualified to compete for science and technology related jobs.

Consortium for Aerospace Technical Education (CATE)

see description on page 55

Director's Discretionary Fund (DDF) Student Program

Participants
Individuals: 6
Institutions: 6

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	1				5	
F						

Contact Dr. Philip Sakimoto
Organization Office of University Programs
Installation GSFC
Mail code 160
Phone (301) 286-9690

Description
The Director's Discretionary Fund (DDF) Student Internship Program is open to undergraduates who have an interest in the physical sciences, engineering (electrical and mechanical), mathematics and computer science.

Educational Thin-Section of Lunar Rocks and Meteorites

see description on page 45

Energizing Minorities for Comprehensive Competency (E=MC²)

see description on page 61

Engineering Bridge Program

see description on page 60

Engineering Concept Institute

Participants
Individuals: 27
Institutions: 2

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	16	1				
F	10					

Contact Mr. Jay Diggs
Organization Equal Opportunity Office
Installation KSC
Mail code EO
Phone (407) 867-2307

Description
The Engineering Concept Institute is a residential, six week summer "first-time-in-college" program. The program consists of high-achieving students who have been selected from across the Nation and who have an interest in engineering/technical careers. These students are recruited by Florida A&M/Florida State School of Engineering to pursue technical degrees.The programs objectives: 1) increase the retention and graduation rates and the performance levels of students majoring in engineering; and 2) develop a peer tutoring process that will enable students to use self-help to sustain and enhance the skills acquired during formal instruction.

Engineering Student Groups

Participants
Individuals: 240
Institutions: 7

Contact Mr. Raymond Corey
Organization Education and Awareness Branch
Installation KSC
Mail code PA-EAB
Phone (407) 867-4444

Description
Students from professional organizations in local university scientific/engineering programs visit NASA centers. This program's intent is to expose these young people to the job opportunities and engineering/scientific programs at NASA installations.

Engineering Technician Co-op Education Program
see description on page 55

Federal Junior Fellowship
see description on page 55

Get-Away Specials
see description on page 15

Harvey Mudd Math and Engineering Clinic, Claremont Graduate School Math Clinic

Participants
Individuals: n/a
Institutions: 1

Contact Ms. Cheryl Hanson
Organization Professional Development
Installation JPL
Mail code 605-101
Phone (818) 354-4012

Description
Jet Propulsion Laboratory contracts with Harvey Mudd or the Claremont Graduate School to have student teams, consisting of undergraduate and graduate students, solve real scientific or mathematical problems.

Intelligent Physics Tutor
see description on page 15

Langley Aerospace Research Summer Scholar Program (LARSS)

Participants
Individuals: 91
Institutions: 49

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	1	3		1	51	
F	6	1			28	

Contact Mr. Robert Yang
Organization University Affairs Office
Installation LaRC
Mail code 400
Phone (804) 864-4000

Description
The LARSS Program is intended to encourage high-caliber college students to both pursue and earn graduate degrees and to enhance their interest in aerospace research by exposing them to the professional research resources and facilities of LaRC.

Lewis Engineering Minority Recruitment Initiative
see description on page 62

Lincoln University Advanced Science and Engineering Reinforcement Program (LASER)
see description on page 63

Lunar and Planetary Institute Summer Undergraduate Intern Program

Participants
Individuals: 15
Institutions: n/a

Contact Dr. Bevan French
Organization Solar System Exploration Division, OSSA
Installation HQ
Mail code SLC
Phone (202) 358-0292

Description
To broaden undergraduate students' understanding of space sciences and acquaint them with the excitement that a career in planetary science can provide. Undergraduates learn how research projects are conceived and conducted, how results are tested, and how research projects are presented and defended through exposure to the research environment under the guidance of an experienced LPI scientist. During the 10 week summer program, participants attend weekly seminars and lectures and at the conclusion, present a paper describing the results of the research.

Massachusetts Institute of Technology Engineering Internship Program
see description on page 56

Microgravity Undergraduate Research Opportunities

Participants
Individuals: 3
Institutions: n/a

Contact Dr. Bradley Carpenter
Organization Microgravity Science and Applications, OSSA
Installation HQ
Mail code SNB
Phone (202) 358-0818

Description
To encourage undergrad student interest in science and engineering through research activities conducted with NASA and academic scientists. Undergrads propose, develop, and perform research using NASA ground-based facilities under the guidance of a faculty sponsor. The opportunity is open to undergrad students at selected U.S. colleges pursuing programs within the field of microgravity sciences.

Minority Engineering Industrial Opportunity Program (MEIOP)

see description on page 63

Morgan State University Engineering Enrichment

see description on page 64

NASA College Scholarship Fund, Inc.

Participants
Individuals: 12
Institutions: 1

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M					8	
F					4	

Contact Ms. Teresa R. Sullivan
Organization JSC Exchange Operations
Installation JSC
Mail code AH12
Phone (713) 483-8970

Description
The Scholarship Fund awards 3-4 $1,500 scholarships per year (up to a maximum of $6,000 over 6-calendar years per student) to qualified dependents of NASA and former NASA employees who will major in science and engineering in college. The objective is to channel high-potential students into academic pursuits involving aerospace science and engineering.

NASA/OAI Collaborative Aerospace Internship and Fellowship Program

Participants
Individuals: 187
Institutions: n/a

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	23	3	2	1	84	
F	23	8	2		41	

Contact Ms. Dovie E. Lacy
Organization Office of Educational Programs
Installation LeRC
Mail code 7-4
Phone (216) 433-6159

Description
12 or 14 week internships for science or engineering students. The internships are intended to provide students with introductory professional experiences to complement their academic programs. Interns are given assignments in research and development projects under the personal guidance of NASA professional staff members. Assignments are commensurate with the academic level and field of study of the student. Interns are integrated into the day-to-day activities of the center to the greatest extent possible.

NASA Technical Experience for Select Students (NTESS)

see description on page 64

NASA Training Project

see description on page 64

NASA/USRA Advanced Design Program

Participants
Individuals: 1,000
Institutions: 41

Contact Ms. Sherri McGee
Organization Higher Education Branch
Installation HQ
Mail code FEH
Phone (202) 358-1531

Description
The objectives are to strengthen engineering design curricula within universities, heighten university enthusiasm for design, foster NASA/university ties, encourage graduate studies in design, and produce innovative designs. The program is funded by NASA's Office of Aeronautics and Space Technology and managed for NASA by the Universities Space Research Association. This program affords a unique opportunity to contribute innovative and creative concepts for future aeronautics and space systems as well as to expand the nation's talent base in design technology.

National Space Grant College and Fellowship Program

see description on page 73

Planetary Biology Intern Program
see description on page 47

Planetary–Geology Undergraduate Research Program

Participants
Individuals: 2
Institutions: 2

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M						
F					2	

Contact	Dr. R. S. Sanders
Organization	Earth and Space Sciences Division
Installation	JPL
Mail code	183-501
Phone	(818) 354-3815

Description
This program was developed to support and encourage work being done in planetary sciences. Its aims are: 1) to provide incentive for the development of future planetary geologists; 2) to broaden the base of participation in planetary geology; and 3) to introduce traditional terrestrial geologists to planetary studies.

Precollege Trainee Program
see description on page 56

Preserve-California State University, Northridge

Participants
Individuals: 120
Institutions: 2

Contact	Dr. Yvonne Freeman
Organization	Minority Science & Engineering Initiative Off.
Installation	JPL
Mail code	183-900
Phone	(818) 354-2326

Description
This is a program involving undergraduate engineering students at three institutions who were admitted with high SAT scores and GPAs but were unable to compete in majority university engineering programs.

Project IMAGE
see description on page 66

Promotion and Awareness of Careers in Engineering (PACE)
see description on page 66

Quality Education for Minorities Network (QEM)
see description on page 66

Research Opportunities for Undergraduate Students in Laboratory and Space Physics

Participants
Individuals: 19
Institutions: 12

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	4				6	1
F	4				5	

Contact	Dr. Carol Jo Crannell
Organization	Lab for Astronomy and Solar Physics
Installation	GSFC
Mail code	682
Phone	(301) 286-5007

Description
This program, developed in cooperation with the Catholic University of America and the National Science Foundation, brings undergraduate students in physics and astronomy to the center for a 12-week summer research experience in astronomy and solar physics. It provides opportunities for undergraduate and graduate students to be active participants in space physics research with guidance from researchers who are committed to education.

Sacred Mountain Scholars – Northern Arizona University
see description on page 67

San Jose State Work Study Program

Participants
Individuals: 14
Institutions: 1

Contact	Mr. Darrin Belgarde
Organization	Human Resources Development Branch
Installation	ARC
Mail code	241-3
Phone	(415) 604-6984

Description
This college work-study program enables students to earn their way through college with part-time employment, while gaining

invaluable work experience in related fields of study. The eligibility of students is determined by San Jose State University. Students may work up to 20 hours per week when classes are in session and 30-40 hours per week during interim periods. A mentor is assigned to each work study student, who is responsible for overseeing his/her work.

Skilled Trades Experience Program

see description on page 57

Space Life Sciences Training Program

Participants
Individuals: 44
Institutions: 39

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	3	4		2	16	
F	3	1			15	

Contact Dr. Gary Coulter
Organization Program and Flight Missions Branch, OSSA
Installation HQ
Mail code SBR
Phone (202) 863-5253

Description
The SLSTP offers summer exposure and awareness of space-related life science careers to science and engineering students, an experience which promises to attract highly qualified members of underrepresented groups to the field. The central goals of the program are: to emphasize the interdisciplinary and cross disciplinary nature of a successful space program; to recruit qualified minorities to the science and engineering fields by providing an intense, "hands-on" laboratory experience, classroom lectures, and NASA field center exposure.

St. Andrews College Program for the Handicapped

see description on page 67

Strategic Preparedness Advancing Careers in Engineering (Project SPACE)

see description on page 67

Studies in Space Technology for Minority Students

see description on page 67

Summer Employment Program

see description on page 57

Summer Honors Academic Reinforcement Project (SHARP) II

Participants
Individuals: 20
Institutions: n/a

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	4					
F	16					

Contact Ms. Betty Aldridge
Organization Equal Opportunity Office
Installation MSFC
Mail code CE01
Phone (205) 544-0088

Description
The Summer Honors Academic Reinforcement Project II Program at MSFC offers a unique experience to students planning to attend post-secondary, two-year colleges to start off their careers. The program provides an opportunity for students to gain valuable work experience under the watchful eyes of MSFC scientists and engineers who serve as mentors. This program is sponsored through a partnership between MSFC, Alabama A&M University, the Alabama Dept. of Post-Secondary Education, the Governor's Office and various corporations/contractors in the area.

Summer Institute on Computer Applications (SICA)

Participants
Individuals: 15
Institutions: 1

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	3	2	3		1	
F	5	1				

Contact Mr. Dan Krieger
Organization Equal Opportunity Office
Installation GSFC
Mail code 120
Phone (301) 286-7913

Description
The SICA program is a ten-week course that offers both undergraduate (junior or above) and graduate students hands-on computer application experience. Students also gain insight into how their work on various modules of large projects fits into the overall enterprise. Because this program is conducted in part by GSFC, participating students and NASA personnel can develop relationships that could provide employment for

the student and technology talent for NASA. As an equal opportunity program, SICA recruits at minority institutions in order to develop minority participation in technology based disciplines.

Summer Institute on Atmospheric and Hydrospheric Sciences

Participants
Individuals: 14
Institutions: 14

Contact Dr. Earl R. Kreins
Organization Lab for Atmospheres
Installation GSFC
Mail code 910.2
Phone (301) 286-5056

Description
The program is designed to introduce undergraduate students majoring in all areas of the physical sciences to graduate research opportunities in the atmospheric and hydrospheric sciences, both theoretical and experiential. The 10-week program includes a one-week lecture series on atmospheric and hydrospheric sciences covering basic areas of these sciences and are given primarily by the center scientists. The following nine weeks involve research experiences with center scientists.

Summer Minority High School Program
see description on page 57

Summer Program for Academic Careers in Engineering (SPACE)
see description on page 69

Summer School for Planetary Science

Participants
Individuals: 66
Institutions: n/a

Contact Dr. Jurgen Rahe
Organization Solar System Exploration Division, OSSA
Installation HQ
Mail code SLC
Phone (202) 358-0292

Description
To broaden undergraduate and graduate students' understanding of planetary science-related topics. Students representing a wide range of scientific disciplines and different countries participate in a week-long series of lectures and discussions on planetary science-related topics at Caltech.

Technician Apprenticeship Program
see description on page 58

Technician Cooperative Education Program
see description on page 58

Technician Cooperative Training Program

Participants
Individuals: 12
Institutions: 1

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M					9	
F					3	

Contact Mr. Chris Beidel
Organization Systems Training & Employee Development Br.
Installation KSC
Mail code PM-TNG
Phone (407) 867-2737

Description
The Technician Cooperative (Co-op) Training Program with Brevard Community College (BCC), Brevard Co., Florida, provides quality assurance, electrical technology majors at BCC with on-the-job work experience.

Texas Alliance for Minority Participation (AMP)
see description on page 69

Undergraduate Fellowship Program in Planetary Astronomy

Participants
Individuals: 4
Institutions: n/a

Contact Dr. Jurgen Rahe
Organization Solar Exploration Division, OSSA
Installation HQ
Mail code SLC
Phone (202) 358-0292

Description
To provide an opportunity for a limited number of talented undergraduate students to participate in active planetary research. The program provides fellowships for 1-3 years for undergraduate students in astronomy or related sciences at U.S. institutions sponsoring principal investigators in the planetary astronomy program.

Undergraduate Student Researchers Program (Underrepresented Minority Focus)

see description on page 69

University-Based Co-op Program in Earth Systems Science Education

Participants
Individuals: n/a
Institutions: 22

Contact Dr. Ghassem Asrar
Organization Earth Sciences and Applications Division, OSSA
Installation HQ
Mail code SE
Phone (202) 358-2559

Description
To attract undergraduate science majors with solid foundations in relevant sciences to future studies and work in Earth systems science. Participating universities develop and offer an introductory course in Earth systems science and a senior-level interdisciplinary course. In addition, each university is involved in an effort with short-term visiting scientists. The program is targeted for universities with a commitment to developing an interdisciplinary Earth science program.

University of Maryland, Eastern Shore Pre-Engineering/Engineering

Participants
Individuals: n/a
Institutions: 1

Contact Mr. Dan Krieger
Organization Equal Opportunity Program Office
Installation GSFC
Mail code 120
Phone (301) 286-7913

Description
This program, conducted in cooperation with the University of Maryland Eastern Shore (UMES), provides selected high school graduates with academic reinforcement, tuition assistance for their freshman year at UMES, and paid work experience during the summer following their freshman year. Students participating in the program are enrolled for two years at UMES and for three years at the University of Maryland, College Park in meeting requirements for the engineering degree.

Visiting Student Enrichment Program

see description on page 24

Women in Science and Engineering Scholars Program (WISE)

see description on page 70

Academic Part-Time Program
see description on page 54

Aeronautics Post-Baccalaureate Program

Participants
Individuals: 17
Institutions: 17

Contact Dr. Charles A. Smith
Organization Office of the Director
Installation ARC
Mail code 200-1
Phone (415) 604-5113

Description
The objective is to promote and maintain innovative, high-risk, university-based basic research in aeronautics through research and training grants and cooperative research efforts. It is a grant based program where the students involved are at post-baccalaureate level.

Aerospace Medicine Residency Program

Participants
Individuals: 8
Institutions: n/a

Contact Dr. Donald F. Stewart
Organization Life Sciences Division, OSSA
Installation HQ
Mail code SB
Phone (202) 453-1527

Description
To train medical doctors in the specialty of aerospace medicine concentrating in areas related to the health and well-being of pilots, astronauts, and all others who travel in air or space. In addition to 46 hours of graduate course work, this 2year residency program also includes clinical training at Wright-Patterson Air Force Base or other locations. Students with a baccalaureate degree with a strong physiology background may enroll in a non-clinical track emphasizing research.

Aerospace Medicine Clerkship Program

Participants
Individuals: 4
Institutions: 4

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M					4	
F						

Contact Dr. Denise Baisden
Organization Medical Operations Branch
Installation JSC
Mail code SD2
Phone (713) 483-0455

Description
Provides medical students an opportunity to gain one month of unpaid experience in the clinical, operational, and research aspects of space medicine as practiced at JSC. The program involves formal lectures, observation of manned test operations, and tours. The objective is to interest medical students in the field of aerospace medicine.

Aerospace Summer Intern Program
see description on page 36

Associated Western Universities
see description on page 48

Clinical and Research Aspects of Aerospace Medicine

Participants
Individuals: 12
Institutions: n/a

Contact Dr. P. Buchanan
Organization Biomedical Operations Research Office
Installation KSC
Mail code MD
Phone (407) 867-2585

Description
Provides an assignment in the KSC Biomedical Office and includes participation in medical operations activities (occupational medicine, aviation medicine, launch and landing medical support, environmental sciences) and ongoing research activities (aerospace medicine, maintenance of fitness, protective equipment). Teaching methods include seminars, demonstrations, laboratory participation and preceptorships. Student evaluation is based on faculty observation.

Educational Dissertations

Participants
Individuals: 2
Institutions: 2

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M					1	
F					1	

Contact Ms. Janet Storti
Organization Office of Educational Programs
Installation LeRC
Mail code 7-4
Phone (216) 433-5583

Description
The Lewis Office of Educational Programs assists master's and doctoral candidates working on dissertations relevant to NASA's educational activities and programs.

Educational Thin-Section of Lunar Rocks and Meteorites

Participants
Individuals: n/a
Institutions: 56

Contact Lunar Sample Curator
Organization Office of the Curator
Installation JSC
Mail code SN2
Phone (713) 483-3274

Description
A polished thin section of a rock, when studied under a polarizing light microscope, reveals detailed information about mineral composition, origin, and history of the rock. A major portion of a geologist's training involves learning to use and interpret thin sections. This program permits students to greatly broaden their perspectives by allowing direct study of extraterrestrial rocks that can tell much about the history of Earth-like planets. The experience also serves to inspire students toward broad, critical scientific thought and the pursuit of excellence.

Global Change Research Graduate Student Fellowship

Participants
Individuals: 135
Institutions: n/a

Contact Dr. Ghassem Asrar
Organization Earth Science and Applications Division, OSSA
Installation HQ
Mail code SEP
Phone (202) 358-2559

Description
To train the next generation of Earth scientists and engineers to manage data and information generated by the Earth Observing System in support of NASA's Global Change Research Program. Selected students are enrolled in a full-time Ph.D. program in areas relevant to NASA's global change research efforts including EOS, the Tropical Rainfall Measuring Mission, and the Mission to Planet Earth Program.

Graduate Co-op Education Program

see description on page 55

Graduate Degrees for Minorities in Engineering (GEM)

see description on page 61

Graduate Program in Aeronautics

Participants
Individuals: 100
Institutions: 50

Contact Dr. Kristin Hessenius
Organization Aeronautics, OAST
Installation HQ
Mail code RJR
Phone (202) 453-2810

Description
Research grants are awarded to approximately 100 U.S. citizen graduate students at 50 universities. The student participants conduct research in the centers' laboratories under the mentorship of NASA scientists and engineers. Grants are awarded for proposals which meet specific research needs in aeronautical disciplines. The long-term outcome of the program is a cadre of research-trained graduate engineers who will continue the leadership role of the U.S. in aeronautics.

Graduate Research On-Site (GRO)

Participants
Individuals: 3
Institutions: 1

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M					3	
F						

Contact Dr. Stanley H. Goldstein
Organization University Programs
Installation JSC
Mail code AHU
Phone (713) 483-4724

Description
Graduate students (M.S. or Ph.D.) from the University of Houston conduct research at JSC while working on technical projects mutually agreed-upon by JSC and University of

Houston faculty members. The faculty member also performs research on the agreed-upon project. Completion of the project will meet the student's research requirement for his/her degree. The objective is to provide the students and faculty members with meaningful research activities so that university participants and JSC mutually benefit.

Graduate Student Researchers Program

Participants
Individuals: 445
Institutions: 108

Contact Mr. John T. Lynch
Organization Higher Education Branch
Installation HQ
Mail code FEH
Phone (202) 358-1531

Description
This program is designed to significantly increase the number of highly trained scientists and engineers in aeronautics, space science, and space technology to meet the continuing needs of the national aerospace effort. Opportunities are provided for graduate students to conduct their thesis research on a NASA-related topic at a center or their home institutions. Selections are made on the basis of proposals submitted by the students. Selected students receive a stipend for up to three years.

Graduate Student Researchers Program, Underrepresented Minority Focus
see description on page 61

GSFC/USRA Graduate Student Summer Program in Earth System Sciences

Participants
Individuals: 12
Institutions: n/a

Contact Ms. Paula Webber
Organization GSFC Visiting Senior Scientist Program
Installation GSFC
Mail code 610.3
Phone (301) 286-3876

Description
To spur interest in interdisciplinary studies within the Earth system sciences. Students spend 10 weeks working on an intensive research project with a GSFC mentor. Projects are developed in conjunction with GSFC Earth science laboratories. The first six days of the summer program include a lecture series "Studying the Earth from Space" which is open to the general public.

Harvey Mudd Math and Engineering Clinic, Claremont Graduate School Math Clinic
see description on page 38

High Performance Computational Sciences

Participants
Individuals: 7
Institutions: 6

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M		1				
F					6	

Contact Dr. Daniel Spicer
Organization Space Data and Computing Division
Installation GSFC
Mail code 930.1
Phone (301) 286-7334

Description
This program is open to students who have an interest in high performance computational techniques and who have passed their Ph.D. qualifying exams.

In-Space Technology Experiments Program (In-STEP)
see description on page 49

Joint Institute for the Advancement of Flight Science
see description on page 50

Joint University Institutes
see description on page 50

Massachusetts Institute of Technology Engineering Internship Program
see description on page 56

NASA Aerospace History Fellowship

Participants
Individuals: 1
Institutions: n/a

Contact Dr. Roger D. Launius
Organization NASA History Division
Installation HQ
Mail code ADA 2
Phone (202) 358-0383

Description
Program is designed to foster research and writing on the history of aerospace activities broadly considered. It is awarded annually to one individual at either the doctoral or post-doctoral level. The competition is overseen by the American Historical Association.

NASA/GSFC Earth Sciences Graduate Student Program Fellowships

Participants
Individuals: 4
Institutions: 4

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M					3	
F					1	

Contact Dr. Joseph Siry
Organization Earth Sciences Directorate
Installation GSFC
Mail code 970
Phone (301) 286-9013

Description
The program offers opportunities for graduate study in the Earth Sciences. Fellowships are awarded for one year and are renewable, based on progress, for up to three years. Graduate students are selected on the basis of academic qualifications, quality of proposed research and relevance to NASA's program, proposed use of the center's research facilities, and availability of students to accomplish the defined research.

NASA Materials Science and Engineering Program
see description on page 51

National Consortium for Graduate Degrees for Minorities in Engineering (GEM)
see description on page 65

National Physical Science Consortium
see description on page 65

National Space Grant College and Fellowship Program
see description on page 73

Ohio Aerospace Institute
see description on page 51

Planetary Biology Intern Program

Participants
Individuals: 11
Institutions: n/a

Contact Dr. John Rummel
Organization Life Sciences Division
Installation HQ
Mail code SBR
Phone (202) 453-1527

Description
To provide opportunities for graduate and senior undergrad students to participate with investigators at universities and NASA field centers in on-going research project related to the biological aspects of NASA's planetary exploration goals. Interns spend 8 weeks during the summer working with NASA PI's in the areas of global ecology and remote sensing, microbial ecology and biomineralization, CELSS, and the origin and early evolution of life.

Planetary Biology and Microbial Ecology Program
see description on page 54

Public Service Internship
see description on page 66

Quality Education for Minorities Network (QEM)
see description on page 66

Space Medicine Continuing Education

Participants
Individuals: 60
Institutions: 15

Contact Dr. Roger Billica
Organization Medical Operations Branch
Installation JSC
Mail code SD2
Phone (713) 483-7894

Description
This is a multi-faceted educational, training and certification program in the field of space medicine, designed to expose health care professionals to the operational aspects of NASA space medicine at JSC, identify individuals with potential for future involvement in NASA medical operations, and train and certify individuals with existing assignments. Aspects of the program include one or two month medical student rotations, periodic seminars and conferences on specific space medicine topics, externships for aerospace medicine residents, and an annual NASA flight surgeon three-day training course.

Studies in Space Technology for Minority Students

see description on page 67

Summer Institute on Computer Applications (SICA)

see description on page 41

Summer School for Earth Sciences: Processes of Global Change

Participants
Individuals: 100
Institutions: n/a

Contact Dr. Daniel J. McCleese
Organization Public Education Office
Installation JPL
Mail code 183-355
Phone (818) 354-2317

Description
This program provides Ph.D. students and recent graduates with an educational opportunity on topics related to current research in global change. The 5-day lecture series is sponsored by NASA and organized jointly by JPL, Caltech, and the California Space Institute. Course content consists of lectures by leading global change researchers.

Summer School for High Performance Computational Sciences

Participants
Individuals: 8
Institutions: n/a

Contact Mr. David Holdridge
Organization USRA
Installation GSFC
Mail code 610.3
Phone (301) 286-3876

Description
In an effort to promote computational science education, this three-week summer program is designed for graduate students pursuing doctoral degrees in the physical sciences with an interest in massively parallel computing. In addition to lectures, students are divided into small teams to facilitate hands-on computer training and small group interaction.

Summer School for Planetary Science

see description on page 42

Academic Part-Time Program

see description on page 54

Access Agreements

Participants
Individuals: 10
Institutions: 8

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M					7	
F					3	

Contact Dr. Stanley H. Goldstein
Organization University Programs
Installation JSC
Mail code AHU
Phone (713) 483-4724

Description
An Access Agreement is the vehicle used to provide an individual (e.g. student, faculty member) the ability to use JSC facilities and equipment to accomplish certain research when there is no other appropriate formal agreement between the student/faculty member's university and JSC. Access agreements involve no exchange of funds and are generally limited to a 6 - month period of time.

Aspen Global Change Institute Summer Workshops

Participants
Individuals: 478
Institutions: n/a

Contact Dr. Ghassem Asrar
Organization Earth Sciences Division, OSSA
Installation HQ
Mail code SE
Phone (202) 358-0266

Description
AGCI provides a forum for an interdisciplinary exploration of current issues in global environmental change. The science program involves leading scholars in the presentation of their research. Science educators and social scientists are also included. The outreach component fosters a dialogue between science, education, industry and policy communities and develops outreach programs and educational materials.

Associated Western Universities

Participants
Individuals: 7
Institutions: 7

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M			2		4	
F		1				

Contact Dr. Harry Ashkenas
Organization University Affairs Office
Installation JPL
Mail code 183-900
Phone (818) 354-8251

Description
JPL is a cooperating laboratory with the Associated Western Universities. This organization, funded by the Dept. of Energy, supports undergraduates and graduate students, post-doctoral and faculty research in energy-related topics at cooperating government labs. Participants work directly with JPL personnel engaged in energy programs.

Astrophysics Grant Supplements for Education

Participants
Individuals: 45
Institutions: n/a

Contact Dr. Cheri Morrow
Organization Astrophysics Division, OSSA
Installation HQ
Mail code SZ
Phone (202) 358-0380

Description
This program is designed to strengthen the research community involvement in education. Grant supplements for science researchers are designed to foster innovation and experimentation, leveraging small projects for a larger educational impact.

Centers for the Commercial Development of Space

Participants
Individuals: 824
Institutions: 71

Contact Mr. Richard Cooper
Organization Office of Commercial Programs
Installation HQ
Mail code C
Phone (703) 521-3125

Description
The purpose of these centers is to stimulate high-technology research which will take advantage of the characteristics of space and will eventually lead to the development of new commercial products. NASA funding for centers, selected through competitive announcements, range from $750,000 to $1,000,000 annually for a period not to exceed 5 years. There are now 16 centers. Most of these centers are located at universities and students are involved with the research efforts of the faculty.

Compton Gamma Ray Observatory Fellowship Program

Participants
Individuals: 10
Institutions: n/a

Contact
Organization GRO Science Support Center
Installation GSFC
Mail code 668.1
Phone (301) 286-9690

Description
This fellowship program provides young scientists with opportunities for research on problems related to gamma ray astronomy compatible with the interests of host institutions.

FEDIX

Participants
Individuals: 3,000
Institutions: 1,600

Contact Ms. Sherri McGee
Organization Higher Education Branch
Installation HQ
Mail code FEH
Phone (202) 358-1531

Description
FEDIX is an on-line information service that links the education community and the federal government to facilitate research, education, and services. The system provides accurate and timely information to colleges, universities, and other research organizations about agency programs and research opportunities.

In-Space Technology Experiments Program (In-STEP)

Participants
Individuals: n/a
Institutions: 4

Contact Office of Space Experiments
Organization OAST
Installation HQ
Mail code RS
Phone (202) 453-2844

Description
The In-STEP program provides the opportunity for researchers from NASA, universities, and industry to conduct flight experiments that require the space environment. Experiments are competively selected on the basis of merit, as a result of periodic Announcements of Opportunities (AO's). Current university experiments that are under study or development for flight are:

- Emulsion Chamber Technology (University of Alabama, Huntsville)
- Risk-based Fire Safety (University of California, Los Angeles)
- Joint Damping Experiment (Utah State University)
- Middeck Active Controls Experiment (MIT)

Students typically play an active role in conducting research and designing the experiments that will fly in space. Their involvement with the program has in a number of cases served as the basis of their Masters and Ph.D. theses.

Joint Institute for the Advancement of Flight Science

Participants
Individuals: 18
Institutions: n/a

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M					16	
F	1				1	

Contact Mr. Robert Yang
Organization University Affairs Office
Installation LaRC
Mail code 400
Phone (804) 864-4000

Description
The objective of JIAFS is to meet the Nation's ever-increasing needs in the advancement of science, engineering and technology and to prepare qualified students for careers in research, development, design and teaching. The education and research opportunities offered in the program combine the academic resources of George Washington University and the professional research staff and facilities of NASA LaRC. These opportunities enable students to involve themselves in research projects that excite their interest and permit them to associate with faculty from George Washington University, scientists and engineers from NASA LaRC, and prominent visiting members who are working on related problems.

Joint University Institutes

Participants
Individuals: n/a
Institutions: 11

Contact Dr. Kristin Hessenius
Organization Aeronautics, OAST
Installation HQ
Mail code RJR
Phone (202) 453-2810

Description
A joint university institute is established at each of NASA's research centers. The objectives of the institutes are to promote an active NASA/university interchange in the mainstream cooperative,innovative research areas and to prepare qualified students for careers in research, development, design, and teaching. The education and research opportunities offered in the program combine the academic resources of the university and the professional research staff and facilities of the research centers. These opportunities enable students to involve themselves in research projects that excite their interest and permit them to associate with university faculty and scientists and engineers from the research centers. A core of funding is provided for the joint institutes and specific tasks are funded at the institutes as part of the basic research grant program.

JOVE (Joint Venture) Initiative

Participants
Individuals: 60
Institutions: 30

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	2	3	2		47	1
F			1		5	

Contact Dr. Frank Six
Organization University Affairs
Installation MSFC
Mail code DS-01
Phone (205) 544-0997

Description
JOVE concentrates on institutions of higher education which have had little or no involvement in the Nation's aerospace program. The participating universities are expected to use their JOVE research connection as a basis for curriculum development, the enhancement of student research potential, and outreach programs to students at that institution and in the broader community served by that institution. JOVE uses electronic networking to link universities and colleges with the NASA mission database to involve faculty and students in aerospace research.

Memoranda of Understanding

Participants
Individuals: 6
Institutions: 3

Contact Dr. Stanley H. Goldstein
Organization University Programs
Installation JSC
Mail code AHU
Phone (713) 483-4724

Description
Memoranda of Understanding (MOU) are agreements between JSC and an academic institution wherein each party has a mutual interest in accomplishing research or supporting unpaid student internships at JSC. They generally do not involve an exchange of funds and cover periods of times from 1-3 years.

Minority University-Space Interdisciplinary Network (MU-SPIN)

see description on page 64

NASA/ASEE Summer Faculty Fellowship Program

Participants
Individuals: 304
Institutions: 170

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	15	6	20	1	221	
F	5	2	2		32	

Contact Ms. Sherri McGee
Organization Higher Education Branch
Installation HQ
Mail code FEH
Phone (202) 358-1531

Description
In a series of collaborations between NASA research and development centers and universities, engineering and science faculty members spend approximately 10 weeks in the summer working with NASA colleagues on research areas of mutual interest. The program serves to further the professional knowledge of faculty members, stimulates an exchange of ideas between faculty and NASA, enriches and refreshes research and teaching activities of universities, and contributes to the research objectives of NASA centers.

NASA Materials Science and Engineering Program

Participants
Individuals: 60
Institutions: 1

Contact Dr. Darrel R. Tenney
Organization Materials Division
Installation LaRC
Mail code 188M
Phone (804) 864-3492

Description
This ongoing program focuses on fundamental research in disciplines basic to the fields of composite materials, polymer chemistry, and materials engineering. The program is designed to promote cooperative research ventures between NASA scientists and university faculty and make optimum use of the two unique research capabilities. Principal objectives are to provide an understanding of materials behavior and to evolve concepts to achieve more efficient structural materials. The program will enhance the educational experiences of students in materials related curricula and provide education opportunities for Langley staff.

NASA/OAI Collaborative Aerospace Research and Fellowship Program

Participants
Individuals: 23
Institutions: n/a

Contact Dr. Frank Montegani
Organization Office of University Programs
Installation LeRC
Mail code 3-7
Phone (216) 433-2956

Description
This grant provides a summer research appointment that supplements the NASA/ASEE Summer Faculty Fellowship program and is free of the U.S. citizenship requirement and the two-year participation limit. Potential applicants must make contact with potential hosts for a mutually agreed-upon appointment.

NASA/USRA Advanced Design Program

see description on page 39

Ohio Aerospace Institute

Participants
Individuals: n/a
Institutions: 9

Contact Dr. Frank Montegani
Organization Office of University Programs
Installation LeRC
Mail code 3-7
Phone (216) 433-2956

Description
OAI is a non-profit consortium of nine Ohio universities, LeRC, Wright Laboratory, and several private sector companies. The purpose is to create new opportunities in advanced engineering education, increased participation in aerospace research and development and direct involvement in high-technology activities for the mutual benefit of participants. As part of its activities, OAI awards scholarships and graduate fellowships to students enrolled at member institutions, and it involves faculty in collaborative research.

Research Affiliates

Participants
Individuals: 8
Institutions: 8

Contact Dr. Harry Ashkenas
Organization University Affairs Office
Installation JPL
Mail code 183-900
Phone (818) 354-8251

Description
Research Affiliate appointments recognize the working relationship between researchers in the academic community and their scientific counterparts at JPL. Interaction with the academic community is fostered, but without fee, salary, stipend or grants for the academic researcher.

University Space Engineering Research Centers (USERC)

Participants
Individuals: 454
Institutions: 9

Contact Dr. Robert Hayduk, Mr. Michael Weingarten
Organization Space Technology, OAST
Installation HQ
Mail code RS
Phone (202) 453-2962, 453-3563

Description
The goal of the USERC program is to enhance and broaden the capabilities of the nation's engineering community to meet the needs of an expanding space program. The program creates university-based centers to: foster creative and innovative concepts for future space systems; and expand the nation's engineering talent base for research and development. The USERC's conduct focused research in one or more of the traditional space engineering disciplines and in cross-discipline combinations, as well as enhance engineering education. Creation of these USERC's encourages interactions of mutual benefit between these university based centers, other universities, industrial organizations, and the NASA field centers. Another exciting aspect of this program is that students are designing high tech experiments and devices that are flying on the Space Shuttle and being used on other NASA missions.

Gamma-Ray Observatory (GRO) Postdoctoral Fellowship

Participants
Individuals: 6
Institutions: 5

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M					5	
F					1	

Contact Ms. Sandra Barnes
Organization GRO Science Support Office
Installation GSFC
Mail code 668.1
Phone (301) 286-7780

Description
Program provides highly-qualified postdoctoral scientists in residence at a qualified U.S. host institution with fellowship support to conduct an independent program of gamma-ray astronomy research. The program objective is to maximize the scientifc return from the GRO mission by broadening the scientific participation in the analysis of data, expanding the scope of observations, and conducting correlative and theoretical research that is closely tied to the GRO observations.

Hubble Postdoctoral Fellowship Program

Participants
Individuals: 13
Institutions: n/a

Contact Dr. Ed Weiler
Organization Astrophysics Division, OSSA
Installation HQ
Mail code SZ
Phone (202) 358-0342

Description
This fellowship program provides an opportunity for highly qualified, recent postdoctoral scientists to conduct independent programs of HST-related research in association with the permanent staff of a U.S. host institution of their choice.

JPL Postgraduate/Postdoctoral Associates

Participants
Individuals: 25
Institutions: 21

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M			6		13	
F					6	

Contact Dr. Harry Ashkenas
Organization University Affairs Office
Installation JPL
Mail code 183-900
Phone (818) 354-8251

Description
The Postdoctoral/Postgraduate Associate Program provides significant and unique training and professional growth opportunities for the nation's future scientific and technological leaders. Also, additional strength will be provided to Laboratory scientific and technological programs from fresh educational experiences, elements of change and new thinking.

NRC Resident Research Associateship Program

Participants
Individuals: 220
Institutions: n/a

Contact Ms. Elaine Schwartz
Organization Higher Education Branch
Installation HQ
Mail code FEH
Phone (202) 358-1531

Description
This program provides postdoctoral scientists and engineers of unusual promise the opportunity to conduct research and to contribute to the research effort of a NASA laboratory. Applicants are responsible for the selection of a research project that interests them and is related to one of the agency's areas of interest. Applications are received and evaluated by the National Research Council. Associates conduct research in collaboration with a NASA research advisor for a two year period and receive a monthly stipend. Foreign nationals are eligible for this program.

Planetary Astronomy Postdoctoral Fellowships

Participants
Individuals: 3
Institutions: n/a

Contact
Organization Solar System Exploration Div., OSSA
Installation HQ
Mail code SL
Phone (202) 358-1588

Description
To provide an opportunity for a limited number of postdoctoral scientists to conduct planetary research. The proposed host research institution is usually different from the Ph.D.-granting institution and the applicant's present institution. The pro-

gram is open to recent postdoctoral scientists in planetary astronomy.

Planetary Biology and Microbial Ecology Programs

Participants
Individuals: 10
Institutions: n/a

Contact Dr. Mel Averner
Organization Life Sciences Division, OSSA
Installation HQ
Mail code SBM
Phone (202) 453-1527

Description
To provide advanced students and experienced scientists with theory and practice in the assessment of the microbial impact on Earth. This intensive 10-week course consists of lectures, lab, and field work in the general area of biogeochemical cycling of the biogenic elements. The summer course is open to advanced graduate students and postdoctoral fellows with backgrounds in microbiology, atmospheric sciences, geology, or geochemistry.

Space Biology Research Associateships

Participants
Individuals: 6
Institutions: n/a

Contact Dr. Thora Halstead
Organization Life Sciences Division, OSSA
Installation HQ
Mail code SBR
Phone (202) 453-1527

Description
To help develop a cadre of scientists knowledgeable in the emerging discipline of space biology. Associates conduct ground-based research to study the role of gravity in the evolution and adaptation of animals and plants. Eligible candidates are U.S. citizens with doctorates.

Employment/Feeder Programs

Academic Part-Time Program

Participants
Individuals: 199
Institutions: 32

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	6	21	15		67	
F	8	21	15	1	45	

Contact Ms. Linda Rodgers
Organization Professional Development
Installation JPL
Mail code 291-105
Phone (818) 354-3750

Description
The Academic Part-Time Program (APT) affords students and faculty members an opportunity to work in the research and development environment of the aerospace industry and related technological fields. Participants are permitted to work up to 30 hours a week (full time during academic vacations). Since JPL is a technical organization, engineering or math are the preferred majors. Other majors, particularly business administration, may be accepted provided they correspond to the needs of the laboratory.

Baccalaureate Co-op Education Program

Participants
Individuals: 926
Institutions: 150

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	46	59	40	6	471	2
F	48	20	18	4	214	

Contact Ms. Linda Plato
Organization Agency Personnel Policy Branch
Installation HQ
Mail code FPP
Phone (202) 358-1212

Description
NASA's Baccalaureate Co-op Education Program offers undergrad students an opportunity to integrate academic studies with professional work experience at the cutting edge of their fields, in concert with the nation's top scientists and engineers, utilizing the most advanced facilities available. Most opportunities are for majors in engineering — aerospace, aeronautical, mechanical, electrical, electronic — or physical science, life science, computer science, mathematics and related areas.

Students alternate periods of study and work experience. After graduation, co-ops can be noncompetitively converted to permanent employment.

Consortium for Aerospace Technical Education (CATE)

Participants
Individuals: n/a
Institutions: n/a

Contact Dr. Stanley H. Goldstein
Organization University Programs
Installation JSC
Mail code AHU
Phone (713) 483-4724

Description
Purpose of program is to develop and implement a two-year curriculum at various local (to JSC) community colleges leading to an AA degree in Aerospace Technician Operations. Its intentions are to address the need for aerospace technicians for Space Station Freedom's non-stop activity; to create a government/ industry/academic consortium model to address various educational needs of the region; and to identify a career path for students as early as junior high school. Participants will be recruited from local high schools with emphasis on recruiting minorities and women. After receiving their AA degrees, JSC's support contractors may hire the graduates.

Engineering Technician Co-op Education Program

Participants
Individuals: 5
Institutions: n/a

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M					5	
F						

Contact Ms. Linda Plato
Organization Agency Personnel Policy Branch
Installation HQ
Mail code FPP
Phone (202) 358-1212

Description
The Engineering Technician Co-op Program combines periods of study at a community college with study-related employment for qualified students pursuing an AA degree in selected technical support fields. Graduates are eligible for noncompetitive conversion to permanent appointments.

Federal Junior Fellowship

Participants
Individuals: 151
Institutions: n/a

Individual Data:

	BL	HI	PI	NA	W/NM	I
M	38	8	16		25	
F	40	4	5	1	14	

Contact Ms. Linda Plato
Organization Agency Personnel Policy Branch
Installation HQ
Mail code FPP
Phone (202) 358-1212

Description
The FJF program is designed to provide career related employment for students pursuing a bachelor's degree. Students earn money for college while learning about their chosen career through work-related experiences. Junior fellows may work part-time during school and full-time during summer and vacation periods. High school seniors who meet financial need criteria may be nominated by their guidance counselor in the spring of the year. Those with mental or physical handicaps are eligible without regard to financial need. FJFs completing the program may be converted noncompetitively to permanent positions.

Graduate Co-op Education Program

Participants
Individuals: 67
Institutions: n/a

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	5		2		28	
F	8	1	1	3	19	

Contact Ms. Linda Plato
Organization Agency Personnel Policy Branch
Installation HQ
Mail code FPP
Phone (202) 358-1212

Description
The Graduate Co-op Program offers graduate students the opportunity to combine academic studies with professional work experience. NASA employs students in administrative and technical areas that support its science and engineering activities. Graduates may be noncompetitively converted to permanent positions.

Graduate Degrees for Minorities in Engineering (GEM)

see description on page 61

JPL Minority Fellowship Program

see description on page 62

Massachusetts Institute of Technology Engineering Internship Program

Participants
Individuals: 13
Institutions: n/a

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	2	1			7	
F			1		2	

Contact Ms. Kathy Harris
Organization Professional Development
Installation JPL
Mail code 291-105
Phone (818) 354-3750

Description
At the end of their sophomore year, students are employed periodically over a three-year period (three work tours alternating with undergraduate and graduate study). During this time, students develop, in cooperation with their work supervisor and advisor, a thesis based on research work achieved during their work tours. Upon completion of this program, students receive both a Bachelor's and a Master's degree.

Minority Summer Technical Intern Program

see description on page 63

NASA Training Project

see description on page 64

Precollege Trainee Program

Participants
Individuals: 11
Institutions: 3

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	1	1			2	
F			1		6	

Contact Mr. Chris Beidel
Organization Systems Training and Employee Development Br.
Installation KSC
Mail code PM-TNG
Phone (407) 867-2737

Description
The Precollege Trainee Program is designed to attract and employ high-school seniors, particularly women and minorities, who plan to pursue careers in engineering. The program covers the summer months after high school graduation, in which the enrollees are employed as "student trainees" and introduced to the professional work environment. KSC then sponsors the freshman year tuition costs for the trainee, who is expected to file an application for subsequent enrollment in the college's co-op program.

Presidential Management Intern Program

Participants
Individuals: 46
Institutions: n/a

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M					22	
F	1				23	1

Contact Ms. Linda Plato
Organization Agency Personnel Policy Branch
Installation HQ
Mail code FPP
Phone (202) 358-1212

Description
The Presidential Management Intern program provides a means of entry into the Federal service for graduates who have demonstrated an interest in the management or analysis of public policies and programs. Candidates with leadership potential are nominated by their universities and must pass a rigorous screening process conducted by OPM. Interns are appointed into the excepted service at the GS-9 level and serve for two years before they are eligible for noncompetitive conversion into the competitive service as GS-12s. Rotational assignments within their chosen career area as well as related management areas are combined with OPM sponsored training and seminars.

Public Service Internship

see description on page 66

San Jose State Work Study Program

see description on page 40

Skilled Trades Experience Program

Participants
Individuals: 4
Institutions: n/a

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	1	1	1			
F	1					

Contact Ms. Barbara Cline
Organization Professional Development
Installation JPL
Mail code 219-105
Phone (818) 354-3750

Description
The program is designed for craftspeople in selected trades. Participants must be enrolled in an accredited institution or have an approved course plan. In addition, participants must commit to a 6,240 hours on-the-job training program.

Space Medicine Continuing Education
see description on page 47

Summer Employment Program

Participants
Individuals: 174
Institutions: n/a

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	15	6	5		60	9
F	22	3	4	1	58	6

Contact Ms. Linda Plato
Organization Agency Personnel Policy Branch
Installation HQ
Mail code FPP
Phone (202) 358-1212

Description
The Summer Employment Program provides temporary work opportunities during the summer. Positions vary from office support to professional, with pay at regular government salary rates. The initial appointment with NASA is competitive, but participants may be able to return in succeeding summers. Participants receive on-the-job training, orientation to center functions, and other training activities as appropriate.

Summer Employment Program

Participants
Individuals: 192
Institutions: 89

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	29	13	17	6	62	
F	18	5	14	8	20	

Contact Summer Program Coordinator
Organization Recruitment and Placement
Installation JPL
Mail code 249-104
Phone (818) 354-5641

Description
The Summer Employment Program was developed for the primary purpose to assist in the recruitment of college graduates. It has been an effective means of encouraging interest and developing understanding of JPL activities among both faculty and students. It has also established a base from which to draw recent graduates from engineering, science and business, including minorities and women, for regular career assignments.

Summer Minority High School Program

Participants
Individuals: 19
Institutions: n/a

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	2	5		1		
F	2	6		3		

Contact Ms. Linda Rodgers
Organization Professional Development
Installation JPL
Mail code 291-105
Phone (818) 354-3750

Description
Graduated high school seniors interested in pursuing degrees in engineering or computer science are employed during the summer months following high school graduation. Following summer employment, students are placed on leave of absence. After successful completion of their freshman year, they are encouraged to pursue employment in the summer, co-op, or academic part-time programs.

Summer Program for People with Disabilities

Participants
Individuals: 8
Institutions: n/a

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	3				3	
F					2	

Contact Mr. Charles Hoskins
Organization Equal Opportunity Programs Office
Installation JSC
Mail code AJ
Phone (713) 483-0607

Description
Provides temporary summer employment to persons with disabilities to gain work experience. Students work 700 hour appointments in areas corresponding to their academic backgrounds, career goals, and the needs of the center. Certification is made by the Texas Rehabilitation Commission

Summer Youth Employment and Training Program

see description on page 23

Technician Apprenticeship Program

Participants
Individuals: 26
Institutions: n/a

Contact Mr. Don Wolford
Organization Organization and Employee Development Br.
Installation GSFC
Mail code 114
Phone (301) 286-9236

Description
Program combines study at a community college with on the job training for students in selected technical support fields.

Technician Cooperative Education Program

Participants
Individuals: 88
Institutions: 3

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	7		4	1	56	
F	2			1	17	

Contact Mr. Fred Thompson
Organization Employee Development Branch
Installation LaRC
Mail code 309
Phone (804) 864-2595

Description
This program combines periods of study at a community college with periods of study-related employment for qualified students pursuing an Associate of Arts degree in selected technical support fields.

Adopt-A-School/Partnership Schools

see description on page 13

Aerospace Awareness Program (ASAP)

Participants
Individuals: 5,400
Institutions: 12

Contact Ms. Tommie L. Walton
Organization Public Services Branch
Installation JSC
Mail code AP4
Phone (713) 483-8610

Description
ASAP is a pilot program in selected minority Houston Independent School District elementary schools. It is specially designed to capture the attention of minority youth, expose them to the excitement of space, and to motivate them to learn and discover more about aerospace careers. The program consists of a 30-minute presentation for K-3rd grade, and a 45minute presentation for 4-6 grades. Each presentation is planned and organized to benefit and enhance the educational growth and development of the students.

Career Day

Participants
Individuals: 800
Institutions: 15

Contact Ms. Tommie L. Walton
Organization Public Service Branch
Installation JSC
Mail code AP4
Phone (713) 483-8610

Description
Career Day is a program aimed to develop positive attitudes among our youth by introducing them to the relationship between school and the business world. The program also strives to prepare students to cope with the ever-increasing demands and complexities of the world, especially in the scientific and technical fields. JSC professionals share information with students concerning career options and job opportunities.

Cientificos Program

see description on page 37

Community Outreach Program — Black Focus

Participants
Individuals: 800
Institutions: 36

Contact Mr. Charles M. Hoskins
Organization Equal Opportunity Programs Office
Installation JSC
Mail code AJ
Phone (713) 483-0607

Description
Community outreach programs are accomplished through cooperation with various outside organizations such as the Gulf Coast Alliance for Minorities in Engineering, National Technical Association and Prairie View A&M University. JSC employees serve as role models in classrooms, give informative presentations on JSC's missions and opportunities and provide a conduit to other center programs. Support is provided for local and national science fair competition as a means to develop minority interest in scientific careers. Educational and career guidance is provided by professional scientists and engineers.

Community Outreach Program - Hispanic Focus

Participants
Individuals: 20,000
Institutions: 50

Contact Ms. Lupita M. Armendariz
Organization Equal Opportunity Programs Office
Installation JSC
Mail code AJ
Phone (713) 483-0604

Description
Community outreach programs are accomplished with the cooperation and support of various outside organizations such as MAES, SHPE, HENAAC, and the Houston Hispanic Forum. JSC's Hispanic employees serve as role models in classrooms, participate in numerous career and education day activities, provide tutoring and mentor programs, and provide informative presentations about space programs to many community-based organizations. These and other activities are provided as a means to develop an interest in engineering, science, and other technical careers.

Comprehensive Math Precalculus/Calculus Program

Participants
Individuals: 120
Institutions: 2

Contact Dr. Yvonne Freeman
Organization Minority Science & Engineering Initiative Off.
Installation JPL
Mail code 183-900
Phone (818) 354-2326

Description
Objectives of this program are to: 1) provide precalculus/calculus training and skill development to minority, at-risk youth at the high school level; 2) eliminate math anxiety; and 3) increase the preparedness and number of students interested in pursuing math as an academic discipline in college.

Continuous Engineering Science and Technology Advancement for Underrepresented Minorities — University of Texas, El Paso

Participants
Individuals: n/a
Institutions: 1

Contact Dr. Yvonne Freeman
Organization Minority Science & Engineering Initiative Off.
Installation JPL
Mail code 183-900
Phone (818) 354-2301

Description
The UTEP program is geared toward increasing the participation of Hispanic and other minority students and faculty in science and engineering research, problem solving, hardware and research skill development activities. This effort encompasses precollege, college, graduate, and faculty populations. UTEP will develop, track, and evaluate skills that are consistent with NASA and the JPL. This will develop a base of minority talent which can participate in research on flight projects.

Disabled Student Program

Participants
Individuals: 2
Institutions: n/a

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M						1
F						1

Contact Mr. Bill Nyerges
Organization Office of Educational Programs
Installation LeRC
Mail code 7-4
Phone (216) 433-5576

Description
To educate and encourage employment of disabled students in LeRC programs.

El Ingeniero

Participants
Individuals: 21
Institutions: 1

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M		10				
F	1	10				

Contact Mr. Miguel Torres
Organization Office of Equal Opportunity Programs
Installation HQ
Mail code EI
Phone (202) 358-0937

Description
El Ingeniero is a summer, 6-week, intensive academic enhancement and intervention program for 7th and 8th graders designed to ensure the better-than-average completion of math and science curricula and the eventual pursuit of science and engineering careers. The objectives of this program are to increase students' understanding of their values, attitudes, interests and abilities and to reinforce their self-confidence, self-esteem, and positive work-related attitudes.

Engineering Bridge Program

Participants
Individuals: 86
Institutions: 1

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	44					
F	42					

Contact Ms. Sheree Stovall-Alexander
Organization Minority University Research and Education Div.
Installation HQ
Mail code EU
Phone (202) 358-0973

Description
Xavier University's Summer Bridge Program is focused on developing precollege minority students' technology oriented educational options. This is achieved by developing participants' problem solving, quantititive and verbal reasoning, and vocabulary and language arts skills. A primary objective of the program is preparing students for engineering and related areas such as computer science, physics and mathematics. In addition to this summer session, participants are provided opportunities for scholarships, tutoring, counseling and outreach activ-

ities, all designed to further enhance future minority prospects for advanced learning, degrees, and employment in technology-oriented fields.

Energizing Minorities for Comprehensive Competency (E=MC²)

Participants
Individuals: n/a
Institutions: n/a

Contact Mr. Jay Diggs
Organization Equal Opportunity Office
Installation KSC
Mail code EO
Phone (407) 867-2307

Description
The E=MC² program will be conducted by the University of South Florida. This program will enhance the academic preparation of minority pre-engineering students by developing and honing their mathematics and science skills prior to entering the competitive, study-oriented engineering school environment. The underrepresented students involved with this program will be better prepared for an engineering career.

Engineering Concept Institute
see description on page 37

Future Assets/Student Talent Program (FAST)

Participants
Individuals: 10
Institutions: 6

Contact Ms. Shelvie Miller
Organization Equal Opportunity Office
Installation MSFC
Mail code CEOI
Phone (205) 544-0038

Description
FAST is a program designed to provide enriched educational opportunities for talented high school students with disabilities. The goal of the program is to increase the number of disabled high school students who graduate with the necessary math, science and English courses to pursue math/science curricula at the college level. MSFC, in conjunction with the Huntsville Rehabilitation Center, selects students with disabilities to work at the center for 10 weeks during the summer with mentors. This on-the-job work experience challenges the students and helps them prepare for college and professional careers in the government.

Girl Scouts

Participants
Individuals: 60
Institutions: n/a

Contact Mr. Roger Hathaway
Organization Office of Public Services
Installation LaRC
Mail code 154
Phone (804) 864-3312

Description
Day long program designed to encourage females to pursue engineering, math and science careers. Annually the local Society of Women Engineers provides activities, tours and briefings on aerospace information and opportunities.

Graduate Degrees for Minorities in Engineering (GEM)

Participants
Individuals: 3
Institutions: 3

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	2	1				
F						

Contact Ms. Joan McCullough
Organization Personnel Management Branch
Installation ARC
Mail code 241-6
Phone (415) 604-5084

Description
The goal is to increase the number of minority students with advanced degrees in engineering. ARC provides summer work opportunities and helps finance graduate studies towards a master's degree in one of the engineering disciplines for GEM participants. Summer employment is provided each year until graduation, provided students maintain academic and work requirements. Students may be converted to FTE if both employer and student agree.

Graduate Student Researchers Program, Underrepresented Minority Focus

Participants
Individuals: 100
Institutions: 45

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	30	42	3	2		
F	12	7	3	1		

Contact Mr. John Lynch
Organization Higher Education Branch
Installation HQ
Mail code FEH
Phone (202) 358-1531

Description
The purpose is to substantially increase the number of graduate-level scientists and engineers from underrepresented minority groups to meet the continuing needs of the national aerospace effort. Opportunities are provided for graduate students to conduct their thesis research on a NASA related topic at a center or their home institutions. Selections are made on the basis of proposals submitted by the students. Selected students receive a stipend for up to three years.

JPL Minority Fellowship Program

Participants
Individuals: 19
Institutions: 9

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	6	5				
F	7			1		

Contact Dr. Yvonne Freeman
Organization Minority Science & Engineering Initiative Off.
Installation JPL
Mail code 183-900
Phone (818) 354-2301

Description
This program is designed to: 1) provide JPL underrepresented minority employees with an opportunity to acquire a college degree; 2) provide an employment incentive to attract newly graduated minority scientists, engineers, and administrative personnel; and 3) improve JPL's level of interaction with HBCU/MI's through direct contact between JPL employees and HBCU/MIstaff. Programs include the JPL Minority Fellowship Program, the National Physical Science Consortium, and the National Consortium for Graduate Degrees for Minorities in Engineering.

KSC Science, Engineering, and Research Career Help (SEARCH) Crew

Participants
Individuals: 162
Institutions: 5

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	47	6			40	
F	35	5			29	

Contact Ms. Pamela Bookman
Organization Equal Opportunity Program Office
Installation KSC
Mail code EO
Phone (407) 867-2307

Description
The KSC Science, Engineering, and Research Career Help Crew Program is designed to motivate minority and female students in grades 6-9 to stay in school and pursue careers in science, engineering, and technology, particularly at KSC. Kennedy Space Center engineers, scientists, mathematicians and technical experts serve as mentors to the Brevard County students. Besides the one-on-one interaction with the mentor, each student participates in activities such as symposia and field trips. Mentors also try to keep in weekly contact with students, and assist them with homework assignments if appropriate. Students may stay in the program until they matriculate to high school. This program is intended to be a "feeder" program for other KSC educational programs which begin in high school.

Lewis Engineering Minority Recruitment Initiative

Participants
Individuals: 16
Institutions: 3

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	10			2		
F	3	1				

Contact Ms. Dovie E. Lacy
Organization Office of Educational Programs
Installation LeRC
Mail code 7-4
Phone (216) 433-6159

Description
Through grants with Cornell University, Purdue University, and Rensselaer Polytechnic Institute, undergraduate scholarships and summer internships at LeRC are provided for qualified minority students majoring in science or engineering.

Lincoln University Advanced Science and Engineering Reinforcement Program (LASER)

Participants
Individuals: 19
Institutions: 1

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	9	1				
F	9					

Contact Mr. Dan Krieger
Organization Equal Opportunity Office
Installation GSFC
Mail code 120
Phone (301) 286-7913

Description
The LASER program was designed to fulfill the nation's increasing technological workforce needs by encouraging and nurturing selected high achiever, minority precollege students. The LASER program is comprised of five phases. These phases help transition students from high school to college, provide support during their undergraduate education and encourage continuation of student education in graduate and professional areas. Also, by evaluating this program on a continuing basis, Lincoln University will strive to increase the high level of achievement this program has already provided.

Mathematics and Engineering Science Achievement (MESA)

Participants
Individuals: 250
Institutions: 5

Contact Ms. Laura A. Shawnee
Organization Educational Programs Office
Installation ARC
Mail code DEX: T025
Phone (415) 604-3936

Description
This program, conducted in cooperation with San Jose State,San Francisco State, and University of California/ Berkeley, encourages minority students to excel in science and math. Examples of ARC participation include chapter speakers, facility tours and exhibiting NASA programs and information.

Minority Engineering Industrial Opportunity Program (MEIOP)

Participants
Individuals: 1
Institutions: 1

Contact Ms. Dovie E. Lacy
Organization Office of Educational Programs
Installation LeRC
Mail code 7-4
Phone (216) 433-6159

Description
Through a grant with Case Western Reserve University, undergraduate scholarships and a summer internship at LeRC are provided for qualified minorities pursuing degrees in science or engineering. This program also has a precollege component for minority high school students who have demonstrated an interest in and an aptitude for pursuing a career in science or engineering.

Minority Summer Technical Intern Program

Participants
Individuals: 36
Institutions: 14

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	16	2		5		1
F	8			4	1	

Contact Dr. Yvonne Freeman
Organization Minority Science & Engineering Initiative Off.
Installation JPL
Mail code 183-900
Phone (818) 354-2326

Description
The objectives of this program are to: 1) provide research and technical work experience by working with JPL scientists and engineers on actual project-specific problems and activities; 2) enable students to transfer academic training and theoretical underpinning to a program/problem-specific research environment; and 3) introduce underrepresented minority students at HBCU, Hispanic and Native American serving institutions to JPL research mission opportunities, and potential employment opportunities.

Minority University-Space Interdisciplinary Network (MU-SPIN)

Participants
Individuals: n/a
Institutions: 38

Contact Dr. Nagi Wakim
Organization Space Data and Computing Division
Installation GSFC
Mail code 930.5
Phone (301) 286-3409

Description
MU-SPIN is a major networking and education initiative for Historically Black Colleges and Universities (HBCUs), Minority Universities (MUs) and other universities with large minority student enrollment. The main goal of the program is to transfer computer networking technology and its applications to HBCUs and MUs in support of collaborative interdisciplinary scientific research among faculty scientists and students.

Morgan State University Engineering Enrichment

Participants
Individuals: n/a
Institutions: 1

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	20					
F	12					

Contact Mr. Dan Krieger
Organization Equal Opportunity Programs Office
Installation GSFC
Mail code 120
Phone (301) 286-7913

Description
This program was initially conducted during the summer of 1985 with the purpose of assisting Morgan State University in attracting highly-qualified high school graduates to its recently established School of Engineering and preparing them for a smooth transition from high school to the university's engineering curriculum. The students are provided with a ten-week summer internship at Goddard, for which they receive a stipend and practical experience.

NASA Technical Experience for Select Students (NTESS)

Participants
Individuals: 8
Institutions: 5

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M		1			5	8
F			2			

Contact Mr. Michael Hartman
Organization Equal Opportunity Office
Installation GSFC
Mail code 120
Phone (301) 286-5715

Description
NTESS is a ten-week summer program at GSFC for college students with disabilities. These students receive the accommodations, support, and additional training to ensure success in technical careers. Each student is assigned to a special project that draws upon the student's academic and technical background. An evening seminar is offered by a Gallaudet faculty member and students can earn three academic credits. The objectives for the program are to provide college students with disabilities a challenging, career-oriented work experience in scientific/technical fields, provide managers and supervisors the resources and assistance to be competent and comfortable in supervision and integration of employees with disabilities, and to provide a comfortable environment which promotes confidence and development of social skills for each student.

NASA Training Project

Participants
Individuals: 100
Institutions: 1

Contact Ms. Bettie L. White
Organization Minority University Research and Education Div.
Installation HQ
Mail code EU
Phone (202) 358-0949

Description
The purpose of this program, run by the University of New Mexico, is to increase the number of high achieving minority group engineering students from remote areas of New Mexico who are available to participate in NASA's co-op program. Selected students are given tutoring, mandatory study sessions, study and learning skills workshops and scholarship support. In order to remain in the program beyond the freshman level, students must attain at least a 3.0 GPA. Those who succeed are provided continuing support which includes peer tutoring, co-op work experience, monthly graduate school/employment seminars, and continued scholarship support.

National Consortium for Graduate Degrees for Minorities in Engineering (GEM)

Participants
Individuals: 1
Institutions: 1

Contact Dr. Philip Sakimoto
Organization Office of University Programs
Installation GSFC
Mail code 160
Phone (301) 286-9690

Description
A program designed to increase the number of ethnic minority students entering graduate studies and who complete the M.S./Ph.D. degrees annually. The Program is supported through a collaborative partnership of sponsors - 70 university members and 81 employer members. The M.S. fellowship consists of tuition, fees and a $6,000 stipend per academic year for a maximum of two years. Both Ph.D. fellowship programs (engineering and science) provide a $12,000 per calendar year stipend plus tuition and fees. The length of time stipulated for the Ph.D. programs varies with the discipline and requirements of the university. Internships are provided for the fellows by employer members.

National Physical Science Consortium

Participants
Individuals: 7
Institutions: 7

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	4	1				
F	1				1	

Contact Ms. Sherri McGee
Organization Higher Education Branch
Installation HQ
Mail code FEH
Phone (202) 358-1531

Description
The program provides fellowship opportunities for women and minorities who are pursuing a Ph.D. in the physical sciences. Participants receive academic support for up to six years and two summer work experiences at NASA centers. The objective of the program is to broaden the base of women and minorities earning graduate degrees in the physical sciences.

Navajo Community College Summer Institute

Participants
Individuals: 30
Institutions: 1

Contact Ms. Bettie White
Organization Minority University Research and Education Div.
Installation HQ
Mail code EU
Phone (202) 358-0949

Description
The Navajo Community College Summer Institute establishes a direct relationship with elementary, secondary and post-secondary schools to increase disadvantaged student involvement in math and science disciplines. This program involves parents, schools, and the community at large in order to encourage students to stay in school and pursue educations in math and science disciplines. The program specifically offers 60 incoming and current Navajo Nation students the opportunity to attend a three-week science and math career oriented program.

Pre-Engineering Preparatory Program

Participants
Individuals: 20
Institutions: 1

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M		4				
F		16				

Contact Mr. Robert Yang
Organization University Affairs Office
Installation LaRC
Mail code 400
Phone (804) 864-4000

Description
The purpose of this program is to increase the pool of highly motivated and well-trained precollege students entering engineering disciplines. LaRC works with the University del Turabo, Puerto Rico, in this effort.

Preserve-California State University, Northridge

see description on page 40

Project Image

Contact	Ms. Sheree Stovall-Alexander
Organization	Minority University Research and Education Division
Installation	HQ
Mail code	EU
Phone	(202) 358-0973

Description
Project IMAGE, which stands for Increase Minority Access to Graduate Engineering, is a joint project between NASA and Florida A&M University to increase the number of minority students in technical fields. Students are selected for the program before their freshman year. They receive a full scholarship, receive paid internships and become NASA Scholars. Each year a NASA Scholar will spend 10 weeks at a different NASA Center. Both KSC and MSFC participate in this program.

Promotion and Awareness of Careers in Engineering (PACE)

Participants

Individuals:	6,200
Institutions:	1

Contact	Mr. Miguel Torres
Organization	Office of Equal Opportunity Programs
Installation	HQ
Mail code	EI
Phone	(202) 358-0937

Description
The purpose of this program is to increase the number of minority youths preparing for engineering and technical careers. Using the Mexican American Engineering Society (MAES) Chapters on six university sites, student members work directly with minority youths in nearby high schools and junior high schools to provide career exposure and increase students' interests in studying math and science, and to assist them in applying to and being admitted to engineering schools. MAES also helps student members improve their college GPA's and retention, and identifies and disseminates graduate school information to interested school students.

Public Service Internship

Participants

Individuals:	6
Institutions:	1

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	3					
F	3					

Contact	Mr. Dillard Menchan
Organization	Equal Opportunity Office
Installation	GSFC
Mail code	120
Phone	(301) 286-7348

Description
The Public Service Intern Program was established in FY 1986 in conjunction with Howard University and is designed to increase the pool of minorities in the administrative disciplines. Students selected for the ten-week summer program are MBA/MPA candidates and receive practical work experience. This is the only program at Goddard that offers an internship as well as permanent placement in the administrative field. Since its inception, five interns have entered into full-time permanent positions.

Quality Education for Minorities Network (QEM)

Participants

Individuals:	5
Institutions:	3

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	2	1				
F	2					

Contact	Dr. Gerald A. Soffen
Organization	Office of University Programs
Installation	GSFC
Mail code	160
Phone	(301) 286-9690

Description
The QEM Network is designed to provide undergraduate and graduate students with significant exposure to issues, areas of research, and programs related to the education of minorities through two internship programs. The Network Internship Program provides students opportunities to further develop their leadership potential and to enhance their awareness of major issues related to the education of minorities. The Science Student Internship Program provides students with the opportunity to interact with agencies and organizations involved in making science policy. Both internship programs are designed to provide the participating students with significant exposure to scientific issues and areas of research by assigning each intern to a mentor who provides support and guidance throughout the internship.

Sacred Mountain Scholars - Northern Arizona University

Participants
Individuals: 8
Institutions: 1

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M				6		
F				2		

Contact Dr. Yvonne Freeman
Organization Minority Science & Engineering Initiative Off.
Installation JPL
Mail code 183-900
Phone (818) 354-2301

Description
The objectives of this program are to: 1) identify, recruit, and graduate Native American students with an interest in and proclivity for science and engineering; 2) create mentor/mentee relationship between JPL scientists and Native American students; and 3) increase the number and quality of preparation for Native American scientists and engineers.

Scientific Renewal
see description on page 32

South Texas Science Outreach Program

Participants
Individuals: 120
Institutions: 2

Contact Ms. Lupita M. Armendariz
Organization Equal Opportunity Programs Office
Installation JSC
Mail code AJ
Phone (713) 483-0604

Description
The Texas Southmost College in collaboration with the Gorgas Science Foundation, Inc. will improve science and math-based education awareness and proficiency for Hispanic high school students in South Texas. This program will achieve Hispanic participation by working with students, parents, six local high schools, college faculty members, and the Gorgas Science Foundation. Educational strategies include outreach and opportunity seminar components designed to build a background of academic excellence in science, mathematics, engineering, medicine, and fields of study.

Space Life Sciences Training Program
see description on page 41

St. Andrews College Program for the Handicapped

Participants
Individuals: 18
Institutions: 1

Contact Mr. Raymond R. Corey
Organization Education and Awareness Branch
Installation KSC
Mail code PA-EAB
Phone (407) 867-4444

Description
This program provides three weeks of intensive indoctrination to KSC programs for handicapped college students from St. Andrews College, most of whom are in wheelchairs.

Strategic Preparedness Advancing Careers in Engineering (Project SPACE)

Contact Ms. Sheree Stovall-Alexander
Organization Minority University Research and Education Division
Installation HQ
Mail code EU
Phone (202) 358-0973

Description
Project SPACE is a joint program between NASA Headquarters (Code E) and Morehouse College in Atlanta, Georgia. The goal of the program is to increase the number of Morehouse graduates who will pursue graduate degrees and careers in science and engineering by a minimum of 20 students per year beginning in 1994. It is a 3-2 program in which the students spend three years at Morehouse and the last two years in an engineering school. At the end of five years, the student earns two degrees - a bachelors of science from Morehouse and a bachelors in engineering from one of four engineering schools associated with the program. ARC, LaRC and LeRC participate in the program.

Studies in Space Technology for Minority Students

Participants
Individuals: 14
Institutions: 1

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M		7		1		
F	3	3				

Contact Ms. Lupita M. Armendariz
Organization Equal Opportunity Programs Office
Installation JSC
Mail code AJ
Phone (713) 483-0604

Description
The purpose of SISTMS is to assist the nation in achieving its goal of increasing the number and diversity of American students graduating in science and engineering. SISTMS will achieve its specific purpose through a program of academic studies supported by scholarships and fellowships for qualified minority students. The program will provide students with hands-on experiences relevant to the nature and scope of the aerospace industry. Students will participate in summer intern programs at NASA and contractor support facilities.

Study of Intervention Program on the Entry of Minority Women into College Engineering Programs

Participants
Individuals: 318
Institutions: 6

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M						
F	155	91	17	13	42	

Contact Ms. Maureen Yagodka
Organization Office of Equal Opportunity Programs
Installation HQ
Mail code EI
Phone (202) 358-0936

Description
The Society of Women Engineers (SWE), through its local student chapters at nationwide engineering and technology universities and its 67 professional member sections, is conducting investigation on the long term effects of four different early intervention programs that include: A Higher Education Outreach Program that includes an annual Apprentice Day with professional women engineers and a one-week residential engineering program on a college campus; a Great Women in Science and Engineering Essay/Space Campership Contest; A Science Fair Space Campership Contest; and a Big Sister Program that provides SWE mentors for high school juniors and seniors.

Summer High School Research Apprenticeship Program (SHARP)

Participants
Individuals: 186
Institutions: n/a

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	38	11	12	2	16	
F	59	12	12	5	19	

Contact Dr. Eddie Anderson
Organization Elementary and Secondary Branch
Installation HQ
Mail code FEE
Phone (202) 358-1518

Description
The Summer High School Apprenticeship Research Program (SHARP) offers a select group of high school students who have shown an aptitude for an interest in science and engineering careers the opportunity to participate in an intensive apprenticeship program during the summer. High school students are hired under the Stay-in-School Program, but waiving economic needs criteria. Upon graduation, they may continue in SHARP, if they pursue a degree or diploma program, under the Federal Junior Fellowship Program, again without regard to financial need.

Summer Honors Academic Reinforcement Project (SHARP) II

see description on page 41

Summer Institute

Participants
Individuals: 44
Institutions: 1

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	16				2	
F	25				1	

Contact Mr. Robert F. Lawrence
Organization Office of Equal Opportunity Programs
Installation LeRC
Mail code 500-311
Phone (216) 433-2323

Description
The Summer Institute prepares targeted ethnic middle school students to excel in their math and science courses and enhances their problem-solving skills. Students participate in a LEGO/logo computer laboratory to experience hands-on mathematics, science, and engineering applications. Students are pre-tested and longitudinally tracked to ensure that program goals are met.

Summer Institute on Computer Applications (SICA)

see description on page 41

Summer Minority High School Program

see description on page 57

Summer Program for Academic Careers in Engineering (SPACE)

Participants
Individuals: 12
Institutions: 1

Contact Mr. Jay Diggs
Organization Equal Opportunity Office
Installation KSC
Mail code EO
Phone (407) 867-2737

Description
The Univ. of Central Florida is providing this summer program for underrepresented incoming freshmen who are interested in pursuing a degree and a career in the engineering field. This program will prepare these students for engineering disciplines by providing a structured summer learning environment which will develop group cohesiveness and collaborative learning. This program will also provide academic credit for English and engineering related courses. High achievers will be provided with scholarship opportunities. Students going through this program will be supported during their freshman and sophomore years to further their engineering career opportunities.

Teacher Enhancement in Science

Participants
Individuals: 20
Institutions: n/a

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M				4		
F				12	4	

Contact Ms. Bettie L. White
Organization Minority University Research and Education Div.
Installation HQ
Mail code EU
Phone (202) 358-0949

Description
The American Indian Science and Engineering Society conducts a one-week summer workshop for teachers of Native American students where the integration of cooperative learning strategies, skills and knowledge in the mathematics and science classes, problem solving abilities, and environmental science content provide the framework for holistic, culturally appropriate activities during the teacher training session. The workshop is designed: 1) to develop cooperative learning skills in teachers and apply these skills in culturally appropriate ways; 2) to assist educators to develop an awareness of and responsibilities for their communities' environmental issues; and 3) to develop teacher-created action plans and lesson plans for classroom and community use.

Texas Alliance for Minority Participation (AMP)

Participants
Individuals: n/a
Institutions: n/a

Contact Dr. Stanley H. Goldstein
Organization University Programs
Installation JSC
Mail code AHU
Phone (713) 483-4724

Description
The purpose of the Texas Alliance for Minority Participation (AMP), supported by a National Science Foundation five-year grant, is to increase the number of minority students earning degrees in engineering, mathematics, and the sciences. Summer internships are an integral part of the program. Students work at JSC prior to their junior or senior year of college and perform duties similar to those of a cooperative education student.

Undergraduate Student Researchers Program (Underrepresented Minority Focus)

Participants
Individuals: 74
Institutions: 25

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	12	23	1	4		2
F	15	13		2		2

Contact Dr. Samuel Massenberg
Organization Minority University Research and Education Div.
Installation HQ
Mail code EU
Phone (202) 358-0970

Description
The purpose of this program is to increase the number of underrepresented minorities and persons with disabilities pursuing degrees in areas of science and engineering compatible with NASA's programs in space science and aerospace technology. Emphasis is placed on faculty/student relationships so that these students are inspired to pursue graduate degrees and

research related careers. These students are provided scholarships throughout their undergraduate careers contingent on the maintenance of a 3.0 GPA. During the summers, students conduct research relevant to their field of study on a university campus, at a NASA installation, or at a private corporation.

University of Maryland, Eastern Shore Pre-Engineering/Engineering

see description on page 43

Urban Community Enrichment Program

see description on page 24

Women in Science and Engineering Scholars Program (WISE)

Participants

Individuals:	56
Institutions:	6

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M						
F	56					

Contact	Ms. Sheree Stovall-Alexander
Organization	Minority University Research and Education Div.
Installation	HQ
Mail code	EU
Phone	(202) 358-0949

Description

In cooperation with Spelman College, the WISE Scholars Program provides scientifically talented students from groups underrepresented in scientific and engineering fields with the opportunity to pursue undergraduate studies in these fields. The program's objectives are to: 1) enhance the science and mathematics backgrounds of prefreshman students who have the potential for scientific and engineering studies; 2) enrich the undergraduate academic experience for talented students majoring in science and engineering; 3) provide research experiences for students at NASA centers, JPL and at Spelman College; 4) provide students with information on career opportunities and activities at NASA; and 5) motivate and encourage students to earn graduate degrees.

Yes-WE CARE (Plan for Permanent Minority Engineering Program)

Participants

Individuals:	60
Institutions:	1

Contact	Mr. J. Albert Diggs
Organization	Equal Opportunity Programs
Installation	KSC
Mail code	EO
Phone	(407) 867-3382

Description

The Univ. of South Florida involves 6th-12th grade underrepresented students in the engineering and science-oriented YES-WE CARE program. This program prepares these students to compete for and pursue technology-related fields of study. Students receive this educational experience by attending a well-established and highly successful Saturday morning "enrichment" program. A center is operated with 30 volunteer students for 26 Saturdays during the school year.

Public Understanding of Science and Technology

Community Involvement Programs

Contact	Dr. Eddie Anderson
Organization	Elementary and Secondary Branch
Installation	HQ
Mail code	FEE
Phone	(202) 358-1518

Description
Community Involvement Programs describe a concentration of NASA educational services in a particular community or state. They are planned and implemented at the invitation of and in cooperation with local school districts and community and state leaders. Recent Community Involvement Programs have been held in Portsmouth, VA, Lincoln County, NC and the entire state of Tennessee.

Community Outreach Programs - Black and Hispanic Focus

see description on page 59

Computer Bulletin Board

Participants

Individuals:	500
Institutions:	n/a

Contact	Mr. Leonard Cobbs
Organization	Office of Educational Programs
Installation	LeRC
Mail code	7-4
Phone	(216) 433-2033

Description
The Computer Bulletin Board supports educators/ students within the six-state area served by Lewis. Astronomy enthusiasts are also supported.

Education Working Group

see description on page 27

Exploration Station

see description on page 14

NASA Spacelink

see description on page 30

National Engineers Week - Discover "E"

see description on page 18

Partners in Space

see description on page 30

Project LASER Library Programs

Participants

Individuals:	1,200
Institutions:	n/a

Contact	Mr. William E. Anderson
Organization	Education Branch
Installation	MSFC
Mail code	CA21
Phone	(205) 544-0038

Description
Project LASER provides these programs to the Huntsville Public Library through MSFC volunteers: 1) Discovery Club - Science presentations every other Thursday; 2) Study Buddies - Informal math and science assistance to students every Monday afternoon/evening; 3) How to do a Science Project workshop - Offered at the Library 2-3 times a year; and 4) NASA Videos - A selection of 54 NASA videotape titles are available for local circulation.

Project LASER Volunteer Data Base

Participants

Individuals:	394
Institutions:	26

Contact	Mr. William E. Anderson
Organization	Education Branch
Installation	MSFC
Mail code	CA21
Phone	(205) 544-0038

Description
Project LASER staff maintain a database of about 400 Marshall employees, contractors and family members who serve as volunteers to schools within a 40-mile radius of Huntsville, AL. The database is used to fill teacher requests for a number of educational services, including speakers, presentations and science fair judges.

Santa Clara Unified School District Educational Partnership

see description on page 20

Santa Clara Valley Science and Engineering Fair

Participants

Individuals:	741
Institutions:	71

Individual Data:

	BL	HI	PI	NA	W/NM	ID
M	6	46		359		
F	2	22		306		

Contact Mr. Thomas B. Clausen
Organization Educational Program Office
Installation ARC
Mail code T025
Phone (415) 604-5544

Description
The Science and Engineering competition features students, grades 3-12. The projects cover many math, science and engineering disciplines and are judged by teams of professionals from industry. A technical paper competition is offered, as well. Two students are awarded summer work fellowships with researchers at ARC.

Science Engineering Fair of Houston
see description on page 21

Shuttle Amateur Radio Experiment (SAREX)
see description on page 21

Special Educational Programs

Participants
Individuals: n/a
Institutions: n/a

Contact Dr. Lynn Bondurant
Organization Office of Educational Programs
Installation LeRC
Mail code 7-4
Phone (216) 433-5583

Description
The Lewis Research Center's Office of Educational Programs participates with orchestras, schools, theaters, and museums to cosponsor educational programs. Some of the programs include Cosmic Concerts, A Midsummer Night's Dream set in space, partnerships in education, simulated Shuttle missions, Lewis open houses, special recognition/award programs, Moonbase America, John Glenn's 30th Celebration of the Flight of Friendship 7, Marsville, and NEWEST reunions.

Texas Science Summit
see description on page 35

Continuous Engineering Science and Technology Advancement for Underrepresented Minorities – University of Texas, El Paso
see description on page 60

Educational Empowerment of Families

Participants
Individuals: 850
Institutions: 3

Contact Ms. Sandy Walters
Organization Office of Educational Programs
Installation LeRC
Mail code 7-4
Phone (216) 433-6319

Description
The Office of Educational Programs is fostering a new educational initiative in collaboration with Cleveland Public Schools, and Cuyahoga Metropolitan Housing Authority. The focus of this project is educational empowerment for families in public housing. All programs are designed for total family involvement and support a vital key to achieving science and math literacy. The Office of Educational Programs has developed innovative approaches and educational programs and activities for families in math, science and technology. All activities are being conducted at Anton Grdina Primary Achievement School. Parents actively participate with the in-school and after school activities, which is a true measurement for the need and worth of such an educational initiative.

NASA Industry Education Initiative (NIEI)

Participants
Individuals: 92,331
Institutions: 581

Contact Dr. Malcom Phelps
Organization Technology and Evaluation Branch
Installation HQ
Mail code FET
Phone (202) 358-1540

Description
NIEI conducts an inventory of existing NASA/industry education programs and subsequently assesses the extent of support currently provided towards the national education goals. The NIEI will be the mechanism through which NASA and its industry partners will coordinate education programs to ensure effective use of resources by eliminating unnecessary duplication and alignment with the national education goals.

National Space Grant College & Fellowship Program

Participants
Individuals: n/a
Institutions: 373

Contact Dr. Julius Dasch
Organization Higher Education Branch
Installation HQ
Mail code FEH
Phone (202) 358-1531

Description
The Space Grant Program was mandated by Congress in 1987 to increase the understanding, assessment, development, and use of space resources. All 50 states, Puerto Rico and the District of Columbia have Space Grant Consortium programs in which more than 300 academic institutions participate. These institutions form a truly national network of colleges and universities with interests in aerospace research and training, and related subjects. Each consortium receives a yearly grant of $170K - $345K, depending on the degree to which the consortium is involved with the NASA research program offices. In 1991 these programs disbursed 1175 fellowships, conducted more that 300 K-12 and public service programs, and implemented many curricular innovations in interdisciplinary science and technology subjects.

Navajo Community College Summer Institute

see description on page 65

Tri-State Education Initiative

Participants
Individuals: n/a
Institutions: n/a

Contact Dr. Malcom Phelps
Organization Technology and Evaluation Branch
Installation HQ
Mail code FET
Phone (202) 358-1540

Description
The objective is to create quality education systems, for all learners in the Tri-State Consortium, that meet or exceed world class standards. The initiative is designed to promote and support the efforts of communities, within a 50-mile radius of the NASA ASRM facility, in developing a quality education system that will permit their citizens to obtain the necessary skills for gainful employment into the 21st century in America's high technology economy.

University Management Information System (UMIS)

Participants
Individuals: n/a
Institutions: 354

Contact Dr. Malcom Phelps
Organization Technology and Evaluation Branch
Installation HQ
Mail code FET
Phone (202) 358-1540

Description
UMIS is the Agency's primary source of information and data on the NASA/university relationship. The objectives are to: 1) measure program office involvement with colleges and universities; 2) measure state by state higher education involvement with NASA; 3) measure individual university involvement with NASA; 4) measure center/university involvement; and 5) all of the above as they relate to HBCU's and minority universities.

Appendix 1:

National Education Goals

Goal 1:
By the year 2000, all children in America will start school ready to learn.

Goal 2:
By the year 2000, the high school graduation rate will increase to at least 90 percent.

Goal 3:
By the year 2000, American students will leave grades four, eight and twelve having demonstrated competency in challenging subject matter including mathematics and science; English, history, and geography; and every school in America will insure that all students learn to use their minds well, so they may be prepared for responsible citizenship, further learning, and productive employment in our modern economy.

Goal 4:
By the year 2000, U.S. students will be first in the world in science and mathematics achievement.

Goal 5:
By the year 2000, every adult American will be literate and will possess the knowledge and skills necessary to compete in a global economy and exercise the rights and responsibilities of citizenship.

Goal 6:
By the year 2000, every school in America will be free of drugs and violence and will offer a disciplined environment conducive to learning.

Appendix 2:

AMERICA 2000

1. For today's students, we must radically improve today's schools, all 11,000 of them -- make them better and more accountable for results.

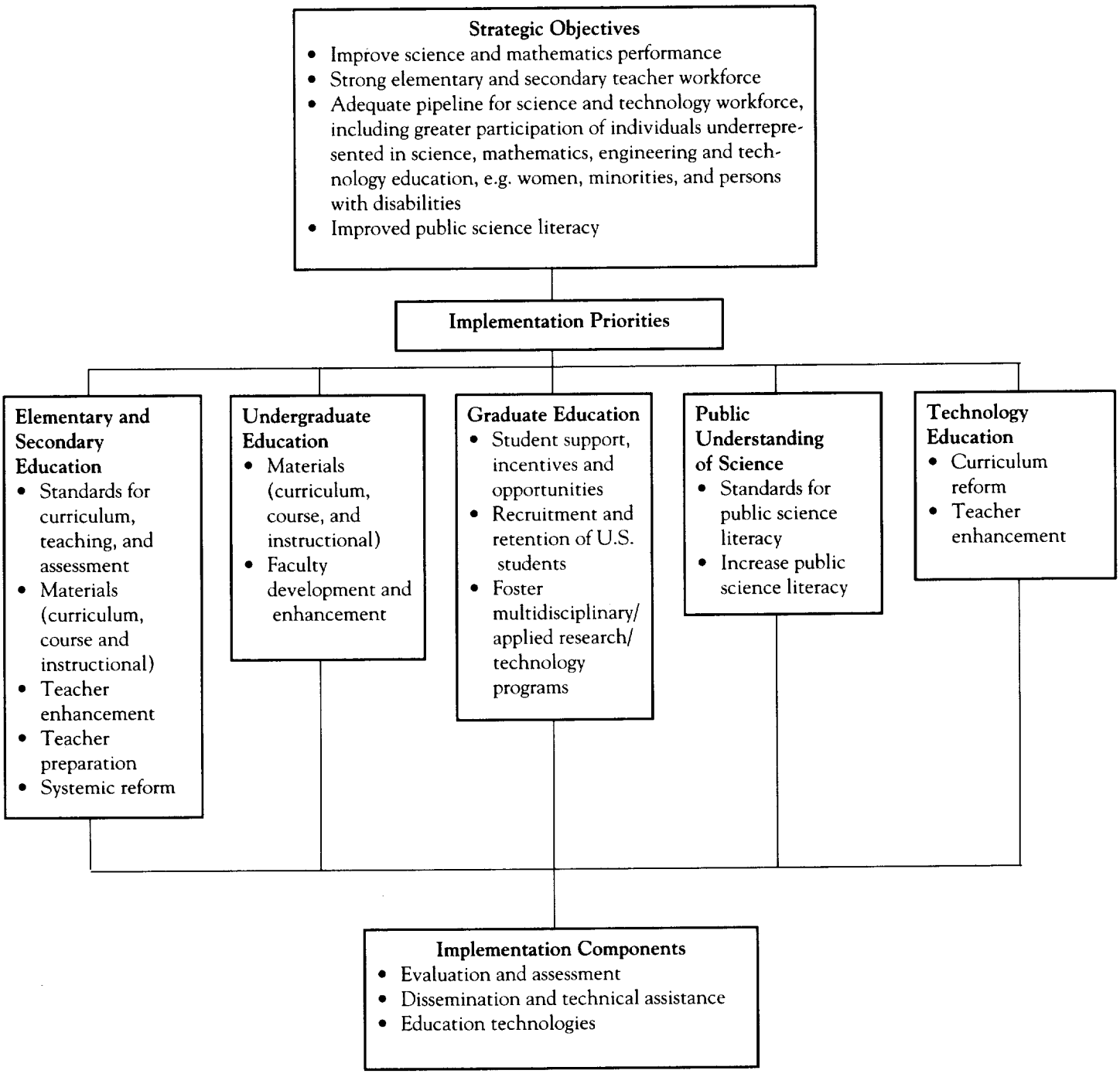
2. For tomorrow's students, we must invent new schools to meet the demands of a new century -- a New Generation of American Schools, bringing at least 535 of them into existence by 1996 and thousands by the decade's end.

3. For those of us already out of school and in the work force, we must keep learning if we are to live and work successfully in today's world. A "Nation at Risk" must become a "Nation of Students."

4. For schools to succeed, we must look beyond their classrooms to our communities and families. Schools will never be much better than the commitment of their communities. Each of our communities must become a place where learning can happen.

Appendix 3A:

Federal Science, Engineering, & Mathematics Education Strategic Planning Framework



Appendix 3B:

FY 1994 Federal Science, Mathematics, Engineering and Technology Education Priority Framework

Base Program

- Maintain and capitalize on current world-class programs (e.g., graduate education, student incentives, and opportunities, education technology)
- Expand opportunities for underrepresented groups (e.g., women, minorities, disabled)

Tier I Priorities: Reforming Formal Education System

Elementary and Secondary: System Reform

- Curriculum, teaching, and assessment standards: development and implementation
- State curriculum frameworks: development and implementation
- Curriculum, course, and instructional materials: development and implementation
- Teacher enhancement and preparation

Undergraduate: Revitalization

- Curriculum, course, and instructional materials: development and implementation (lower-division)
- Undergraduate faculty enhancement

All Education Levels: Evaluation

- Evaluation of federal agency programs

Tier II Priorities: Expanding Participation and Access

- Increase participation of groups underrepresented in science, mathematics, engineering and technology: all education levels
- Identify, disseminate, and promote adoption of exemplary program strategies and materials: all education levels
- Identify federal strategies to employ educational technologies more broadly

Tier III Priorities: Enabling Activities

- Public understanding of science
- Promote formation and strengthening of partnerships between two-year institutions and other sectors

Appendix 3C:

FCCSET/CEHR PRIORITY DEFINITIONS:

Teacher/faculty preparation: Programs targeted at pre-service preparation (disciplinary and pedagogical) for instruction in science, math, engineering, and/or technology. Activities include development and evaluation of innovative approaches to teacher preparation, creative materials for teacher education, and research on factors affecting the recruitment and preparation of teachers.

Teacher/faculty enhancement: Continuing education, in-service programs that update skills, as well as enrich and strengthen the theoretical and practical basis for classroom and laboratory instruction.

Curriculum development: Programs leading to development and/or implementation of

- new or improved courses, curricula, laboratory experiences, instructional materials (e.g. print, computer software, video materials) and delivery mechanisms.
- educational technologies (e.g. computer software, videodiscs, CD/ROM, telecommunications, videotape, television and radio).
- research in teaching and learning to identify significant factors affecting how children learn; how to best meet the learning needs of underrepresented groups; and how to effectively transmit knowledge to children at all grade levels
- assessment of student learning skills and knowledge as applied to development of improved curricula.

Organizational reform: Programs designed to make changes in education systems with the dual objective of increasing the number of students studying science, math, engineering, and technology and improving the quality of instruction received. Reform programs generally affect all aspects of an educational system including teachers, curricula, and administrative practices and generally involve collaborative partnerships among members of the science and engineering enterprise (e.g. legislative and education officials, schools, higher education institutions, the research establishment, business and industry, professional organizations, community groups).

Student support, incentives and opportunities: Programs providing direct student financial assistance (e.g., fellowships, traineeships, scholarships) in isolation or coupled with research experiences (e.g. research and teaching assistantships, stipends to participate in research experiences and cooperative work-study) or facilitating the transition (bridging) from one educational level to another (e.g., high school to undergraduate, two-year to four-year college, undergraduate to workplace, undergraduate to graduate).

Public understanding of science and technology (science literacy): Programs specifically focused on increasing public understanding and knowledge of science and technology and their impact on society. These programs educate audiences of

all ages about the principles underlying scientific methods and processes.

Evaluation and assessment: Programs and activities designed to generate data and analyses that provide information on the operation of an agency's educational program. Relevant activities include development of databases for monitoring project performance and related evaluation and assessment studies that indicate the effectiveness of projects and/or entire programs in meeting stated goals and objectives.

Dissemination and technical assistance: Programs and activities that encourage the widespread dissemination, exchange and use of knowledge, materials, and practices to improve science, math, engineering, and technical education. Include support for activities and programs that provide technical assistance to educators that encourages adoption and utilization of the products of educational programs.

Employment and feeder program: Programs involving the employment of high school and college students. Programs provide work experience and on-the-job training in clerical, technical support, and professional administrative, science, and engineering occupations.

Other: Include activities not appropriate for categorization under other program elements. Examples could include awards to schools, students or teachers/faculty for demonstrated excellence in scientific and technical fields.

Appendix 4:

Office of Space Science and Applications

Looking to the Future: 1992 Catalog of Space Science and Applications Education Programs and Activities

Office of Space Science and Applications
Office of Human Resources and Education

Space science offers exciting content and unique applications to educational programs and activities. In response to the space science community's expressed interest in conducting education outreach and the Nation's need for scientific and technical human resources, the Office of Space Science and Applications (OSSA) is involved in a variety of programs and activities focusing on education. OSSA's education objectives are to: 1) assure an adequate supply of scientists and engineers for the OSSA workforce; 2) help maintain U.S. leadership in science and technology; 3) increase participation of under-represented and non-traditional academic institutions and groups in OSSA programs; 4) extend OSSA academic community involvement to the precollege level; and 5) improve public space science literacy.

This catalog, developed in cooperation with the Office of Human Resources and Education, provides descriptive information on those current, ongoing, and pilot space science and applications education programs which are primarily funded or managed by OSSA. It does not list the numerous NASA education programs that emanate from other NASA Program Offices and Field Centers.

To receive a copy or additional information, contact:
OSSA Education Liaison
Office of Space Science and Applications
Code SPS
National Aeronautics and Space Administration
Washington, DC 20546

Appendix 5:

NASA and the Educational Community FY 91 Program Data Sheet

1. Organization Name: _____

Headquarters/Center: _____

Program Title _____

2. This program is: (check one)

❑ not described in the 1988 NASA and the Educational Community Inventory of Programs.

❑ revises the program description on page ____ of the 1988 NASA and the Educational Community Inventory of Programs.

3. Program Category (Indicate the primary category with "P", indicate any other categories that apply with an "S" for secondary)

____ Precollege programs
____ Undergraduate programs
____ Graduate programs
____ Employment and feeder programs
____ Targeted underrepresented programs
____ Public understanding of science and technology (science literacy)

4. National Goals Targeted: (check all that apply)

❑ 1. All children in America will start school ready to learn.
❑ 2. U.S. high school graduation rate will increase to 90%.
❑ 3. American students will demonstrate competency in challenging subject matter including science and mathematics.
❑ 4. U.S. students will be first in science and mathematics achievement.
❑ 5. Every adult will possess knowledge and skills to compete in a global economy and exercise the rights and responsibilities of citizenship.
❑ 6. Every school in America will be free of drugs and violence and will offer a disciplined environment conducive to learning.

5. Is this program part of a designated America 2000 initiative?

❑ Yes ❑ No

6. FCCSET (CEHR) Priorities/Target Audience:
For each priority that applies, place an "X" in all appropriate educational levels.

	Elem	Mid Sch/ Jr High	High Sch	Under Grad	Post Grad	Grad
Teacher/faculty enhancement	___	___	___	___	___	___
Teacher/faculty preparation	___	___	___	___	___	___
Curriculum development	___	___	___	___	___	___
Organizational reform	___	___	___	___	___	___
Student support, incentives, opportunities	___	___	___	___	___	___
Public understanding of science/ technology	___	___	___	___	___	___
Evaluation & assessment	___	___	___	___	___	___
Dissemination and technical assistance	___	___	___	___	___	___
Employment & feeder program	___	___	___	___	___	___
Other (please specify)						

_____

7. Program Strategy:
(Indicate the primary strategy with "P" . Indicate any other strategies that apply with "S " for secondary.)

____ Capture - elementary, middle, junior high students
____ Channel - middle, junior high, high school, undergraduate, graduate students
____ Enhance teachers, faculty
____ Not applicable

8. Target Discipline Area: (check all that apply)

❑ Science
❑ Engineering
❑ Mathematics
❑ Technology
❑ Basic Communication Skills
❑ Other (please specify)

9. Participant Data:

a. Please fill in the FY 91 number of individuals participating in the program and/or the number of institutions represented.

Individuals: _____ Institutions: _____

b. Breakdown the individual participant data according to gender and minority/non-minority status. If data is not collected, please indicate.

	Male	Female
African American	_____	_____
Hispanic	_____	_____
Asian/Pacific Islander	_____	_____
American Indian	_____	_____
Alaskan Native	_____	_____
White/Non-Minority	_____	_____
Individuals with disabilities	_____	_____

Data not collected ❑

c. Do you track name and address of the participants for at least one year?

❑ Yes ❑ No

10. Geographic Target:
Is this program aimed at a particular geographical region? If so, please indicate below. If not, please indicate that it is a national program.

❑ City (specify) _____
❑ Regional (specify) _____
❑ State(s) (specify) _____
❑ National

11. Center Experience:
Does this program include actual center experience for the participant?

❑ Yes ❑ No

12. Funding Data:
a. Please provide funding information for this program.

FY 91 funding _____ FY 92 estimate _____

❑ No NASA funding allocated to program other than civil service salaries

b. What kind of money is used for this program?

❑ R&D _____
❑ R&PM _____
❑ Other (specify) _____

c. Who funds this program?

❑ NASA Headquarters (specify funding organization)

_____

❑ NASA Center(s) (specify center)

_____

❑ Other(specify)

_____

13. Program Management: Please indicate the following
Individual point of contact: _____
Organization: _____
NASA Installation: _____
Mail Code: _____
Telephone Number: _____

Is the management of this program assisted by an outside organization?
❑ Yes ❑ No

If yes, please name the organization. _____

14. Center participation: Is this program administered (please indicate below)
❑ at your center only?
❑ at yours and other centers (please specify which other centers)? _____
❑ agencywide?

15. When was the program initiated? (month/year)_____

16. Provide below a description of the program (Include program objectives. Please limit your entries to 100 words.

_____
_____
_____
_____
_____
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_____

17. Does this program have specific written educational objectives and an evaluation plan to measure the attainment of objectives?
❑ Yes ❑ No

Thank you for completing this survey. Please return to Sherri McGee, Code FEH, by April 27.

Appendix 6:

Program Category Definitions

Precollege program: Science and mathematics educational programs directed at students below the post secondary level (i.e., preschool and kindergarten, as well as elementary, middle and high school). Include pre- and in-service training for precollege teachers even if such training is received at colleges and universities.

Undergraduate program: Science, mathematics, engineering and technology programs directed at students and faculty at the baccalaureate level and below but beyond secondary school. Relevant institutions include two-year (both for terminal as well as preparation for baccalaureate degrees); four-year college; and comprehensive and graduate institutions offering baccalaureate degrees.

Graduate program: Science, mathematics, engineering, and technology programs directed at students, faculty, and researchers beyond the baccalaureate level.

Employment and feeder program: Programs involving the employment of high school and college students. Programs provide work experience and on-the-job training in clerical, technical support, and professional administrative, science, and engineering occupations.

Targeted underrepresented program: Programs specifically designed to address the needs of groups traditionally underrepresented in math, science, engineering and technology. Underrepresented groups include ethnic minorities (e.g. American Indians, Alaskan Natives, African Americans, Hispanics, Pacific Islanders), females, and persons with disabilities. See Appendix 7 for further definitions.

Public understanding of science and technology (science literacy): Programs specifically focused on increasing public understanding and knowledge of science and technology and their impact on society. These programs educate audiences of all ages about the principles underlying scientific methods and processes.

Appendix 7:

Participant Definitions and Abbreviations

BL: **African American:** A person having origins in any of the black racial groups of Africa.

HI: **Hispanic:** A person of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish culture or origin, regardless of race.

PI: **Pacific Islander:** A person having origins in any of the original peoples of Hawaii; the U.S. Pacific Territories of Guam, American Samoa, and the Northern Marianas; the U.S. trust Territiory of Palau; the islands of Micronesia and Melanesia; and the Philippines.

Asian: A person having origins in any of the original peoples of the Far East, Southeast Asia and the Indian subcontinent. This area includes, for example, China, India, Indonesia, Japan, Korea and Vietnam.

NA: **American Indian or Alaskan Native:** A person having origins in any of the original peoples of North America, and who maintain cultural identification through tribal affiliation or community recognition.

W/NM: **White:** A person having origins in any of the original peoples of Europe, North Africa, or the Middle East.

ID: **Individual with disabilities:** A person having a physical or mental impairment which substantially limits one or more major life activities; has a record of such impairment; or is regarded as having such impairment.

Appendix 8:

Education Coordinators

Headquarters

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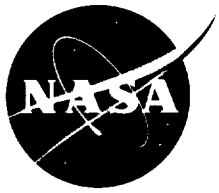

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