Motivating Undergraduates in Science and Technology (MUST)

PERFORMANCE OUTCOMES DATA SUMMARY

Narratives Only

FISCAL YEAR 2007

Compiled by
NASA Research & Education Support Services

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PROGRAM DESCRIPTION

In response to NASA's Cooperative Agreement Notice (NNH-06-ZNH-001-C) for the Motivating Undergraduates in Science and Technology (MUST) Program, the Hispanic College Fund (HCF), the United Negro College Fund Special Programs Corporation (UNCFSP), and the Society of Hispanic of Professional Engineers - Advancing Hispanic Excellence in Technology, Engineering, Math and Science (SHPE - AHETEMS), have partnered to form the MUST Consortium and provide a comprehensive, integrated management approach to advance NASA's goal to <<engage and retain students to pursue STEM careers>> while raising awareness of NASA's commitment to strengthen our nations workforce.

The MUST Consortium proposes a program that is aligned with NASA's vision and

needs, as well as the needs of our nation. The MUST Consortium incentivizes and supports the best and brightest underrepresented students enrolling or enrolled in STEM with partial-tuition annual scholarships. The MUST Scholars program will help relieve the financial strain underrepresented students face, thus allowing them to concentrate on their studies. Additionally, the students will be part of a group of peers facing similar issues and sharing similar dreams that will help to raise their expectations of themselves and belief that they will succeed in completing their degrees. The program will enrich their education through meaningful summer research experiences and connect them to the NASA Centers and other industry leaders looking for quality interns. To ensure their academic success, the MUST Consortium will provide the MUST Professional and Academic Support System (MUST PASS), an academic enrichment, mentoring, and career development system that will provide the students numerous resources and access to faculty, mentors, tutors, graduate students, and professionals in STEM that can guide them with academics, vision and career. The purpose this program is to attract and retain students in STEM disciplines by providing them a framework of support that while it is all-inclusive, is culturally-sensitive and utilizes existing resources, maximizing the return on investment for previously-funded programs by NASA.

PROGRAM RELEVANCE TO NASA

NASA and other federal agencies continue to be concerned by a rapidly aging workforce. By 2010, approximately 71 percent of the government's permanent employees will be eligible for retirement, and 40 percent of those eligible are projected to retire (the Presidents Management Agenda, 2002. Executive Office of the President, Office of Management and Budget, p.12). Government initiatives to recruit and retain a high-quality workforce with the appropriate skill sets are hindered by the low numbers of students, especially underrepresented minority students, who pursue and obtain degrees in the science, technology, engineering and mathematics (STEM) disciplines. Unfortunately, the current demographic trends pose to create a long-term challenge to our nations ability to recruit and retain talented minority scientists and engineers.

Indicators point to lack of adequate financial support, lack of minority role models, and lack of mentors as some of the reasons minorities are not completing bachelor degrees and pursuing graduate level STEM education. (Bonous-Hammarth, 2000; Mayo, Murguia and Padilla, 1995; Seymour and Hewitt, 2000). In order to maintain its status as the worlds most productive economy, our nation must fully engage the potential and talents of its entire citizenry. It is clear that we can only benefit from increased participation of women, minorities, people with disabilities, and individuals from rural and low-income communities.

NASA's education programs, by inspiring students about NASA-related disciplines and careers, are producing the workforce of tomorrow that will realize and expand NASA's vision of going to the moon, Mars, and beyond. These programs address NASA's priorities and needs by producing vital NASA resources in the form of human capital while positively influencing our education communities and the STEM competence of our country.

PROGRAM BENEFITS TO SOCIETY

The task of solving this employment discrepancy acquires particular urgency when one recognizes that a substantial proportion of individuals from underrepresented groups are now poised to begin their college educations. Unless steps can be taken to identify and uproot existing obstacles to underrepresented groups educational and occupational attainment, the stability of the US economy, assured through their economic integration, stands at risk. Addressing this problem holds clear strategic significance for the US economy; efforts to maximize US economic competitiveness require social policies that tap the productive potential of all groups within the US population. Deepening the pool of talent on which US business organizations and government agencies can depend will require much greater attention to policies and programs that can increase access to educational and career opportunities on the part of these underrepresented groups in STEM related fields.

PROGRAM GOALS

The goals and objectives of the MUST Program are to:

1. Develop STEM expertise leading to eventual degrees among groups that are currently underrepresented in the workforce, including women, minorities, persons with disabilities, and individuals from rural and low-income communities;
    - Provide 100 scholarships to students from underserved and underrepresented groups in an undergraduate STEM program at an accredited two or four-year institution by September 15, 2006, 2007 and 2008;
    - Have 90 percent of MUST Scholars persist in a STEM major through the end of the academic year.

2. Provide culturally-sensitive support services such as tutoring and mentoring to ensure that students successfully complete their coursework and encourage degree completion;
    - Match MUST Scholar with at least three mentors by September 15 in 2006, and for new students in 2007 and 2008;
    - Maintain weekly contact with each MUST Scholar by email, and by phone monthly to ensure satisfactory progress and facilitate tutoring
    - By the end of the grant period, each mentor will assist their MUST

scholar in identifying at least one source for additional educational funding.

3. Provide hands-on research experiences that broaden interests in the aerospace industry;
    - 90% of MUST Scholars will participate in a research experience at a NASA Research Center or at an approved STEM facility in the summer of 2007.
    - Each MUST Scholar that participates in a research experience will develop an article that describes their experience, the results of the research work, and how the experience has impacted their future educational and career plans.
    - The MUST program will develop a publication that includes the research experiences of the MUST scholars.
    - Prepare students for a career in STEM by engaging them in holistic professional development experiences.
    - At least 30% of MUST Scholars will attend a career-focused professional conference by the spring of 2007.
    - At least 30% of MUST Scholars that had a research experience will submit a technical paper, presentation, or poster to an appropriate publication or conference.

PROGRAM ACCOMPLISHMENTS

In 2006-07 the MUST Consortium awarded a total of $545,000 in scholarships to 100 talented students, underrepresented in the STEM disciplines throughout the United States.

In the two years of applications, we have received a total of 1,793 applications.

For the first year of the NASA MUST Program (2006-2007):

- The average award given was $5,000
- The average GPA of the NASA Must scholars is 3.5
- 30% had already participated in NASA programs.
- 97% of the scholars will be participating in summer internships at one of ten NASA centers across the country.
- 100% of the NASA MUST scholar cohort continues to pursue majors in the STEM disciplines.

For the second year of the NASA MUST Program (2007-2008):

- The average GPA of entering scholars is 3.6
- The average scholarship award is $5,500
- 38% had already participated in a NASA program.

After notification of their selection, each MUST Scholar received orientation information that contains an overview of the MUST Program and NASA, a copy of all program requirements, information on MUST PASS, contact information for MUST program administrators and MUST PASS mentors, and other relevant information. Students will be given a schedule, log-in ID, and password so that they can participate in a web-streamed orientation session which will be scheduled for mid-September of each year. This interactive session will allow students to hear from NASA and MUST representatives and ask questions via phone and email that will be immediately answered during the orientation. This cost-effective medium will provide the students with a thorough understanding of the program's goals and the support systems that have been put in place to help them succeed. As the cohort grows to include prior-year MUST Scholars and new MUST Scholars, the orientations will provide an opportunity for the experienced MUST Scholars to present and inspire the incoming class of scholars.

STUDENT ACCOMPLISHMENTS

The 2006/2007 NASA MUST scholarship recipients are an exceptional group of students pursuing degrees in the STEM disciplines. They are attending some of the nations best universities (including Columbia, Harvard, MIT and Stanford) and have an average grade point average of 3.51.

97% of the students from the first NASA cohort completed an internship at one of ten NASA Centers where they conducted research and presented their findings either in poster, power point, or written forms. They have received stellar letters of recommendation from their NASA center mentors, demonstrating the caliber of the MUST scholar cohort.

PICTURES (none)