2011 Annual Performance Report
K12 Cooperative Agreement Notice (CAN)
Administered by GSFC Education Office
Type of Agreement - Cooperative Agreement(s)
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Project Description

The K-12 Cooperative Agreement Notice (CAN) is a competitive effort that identifies proposed projects that incorporate innovative approaches for development and delivery of instructional materials and experiences that capture the interest of learners and actively involve them in relevant, NASA science, technology, engineering and mathematics (STEM), STEM-themed and career development at the high school level.

A Congressional appropriation was established in 2008 to improve STEM teaching and learning at the high school level. NASA'S Office of Education, Elementary and Secondary Division established and delivered the competitive grant opportunity. The first awards were granted in 2008. Solicitations were modified in 2009 and 2010 to capture the most recent research in the areas of focus.

The three competitive opportunities between 2008 and 2010 awarded grants to 33 formal and informal education organizations linking to secondary institutions: awards range from $400,000 to $1 million totaling $27.5 million dollars. Awards have been made in the following 17 states, some states have more than one awarded project: California, Delaware, Florida, Georgia, Idaho, Illinois, Louisiana, Maine, Maryland, Massachusetts, Missouri, New Jersey, New York, North Carolina, Ohio, Texas, Virginia, and Washington, D. C.

NASA Education released the last request for proposals in 2010. In 2011, the focus was on monitoring and providing technical assistance to support existing projects.

The K-12 CAN effort sought innovative approaches to using NASA-themed content in support of secondary level teaching and learning. Each funded proposal leverages NASA's unique contributions to science, technology, engineering and mathematics (STEM) to enhance students' academic experiences and/or to improve educators' abilities to engage and stimulate their students. Funded work is grounded in education research and/or best practices, and incorporates formative, summative and other evaluations, as appropriate. The three competitive opportunities focused on funding projects clearly aligned with NASA's diversity focus and education framework. The GSFC Education Office will review the evaluations, data and project summaries to identify project impacts, best practices and lessons learned from grantees. This information will be useful to NASA's Office of Education in continuing to develop and deliver STEM programs and services to diverse audiences to promote STEM careers, improve the effectiveness of STEM teachers and positively impact student achievement in STEM.

K-12 CAN Project Goals

- Provide innovative projects in STEM to improve teaching and/or student achievement
- Employ practices that promote STEM careers
- Leverage NASA resources to increase the visibility of the funding opportunity nationwide
- Promote use of new technologies in STEM teaching and learning

Project Benefit to Outcome 2

- Increased use of NASA education resources at the high school level
- Increased number of students exposed to STEM careers
- Improved STEM instruction

Project Accomplishments

The full performance period will end for the 2008 awards this year. Two awards requested and received a one year no cost extension, Integrating Assets NASA Digital Education (IDEA), from National Science Teachers Association, DI-NAMIC, from Delaware Department of Education and one award, Mission Interdisciplinary, Independent Study, from Council of Chief State School Officers did a revision to make the project more relevant to NASA.

Other noted accomplishments included:

- The 2011 Symposium hosted 43 participants, a 10% increase from 2010 at GSFC and non-attending grantees utilized Ellumination. Principal investigators (PI's) and project managers actively helped framed the agenda for the 2011 Symposium through increased communications.
- Closes out processes began with 9 of the 12 2008 awardees approaching the three (3) year anniversary date. A full session was devoted to close out process during the 2011 Symposium to stress the importance of capturing lessons learned, documenting suggestions for future projects, historical records, and a sustainability plan.
- An updated overview of the Office of Education Performance Management (OEPM) data collection system continued to provide training for PI's/designee to enter data into OEPM (Outcome 2.3) as the system was modified.

-Training sessions continued via telecom and a formal presentation at the 2011 Symposium for PI's/designee and samples of surveys were forwarded electronically and during the Symposium to familiarize users with the instrument and identify the importance of the data collection process

- Funded projects include a Sustainability Plan to implement and continue program strengths to support STEM achievement, teaching and promoting STEM careers (Outcome 2.2 and 2.4)

- Supported the revision of the scope of one project and approved two no-cost extensions in collaboration with the Technical Advisors. - The Virtual Learning Magnet (VLM) Interdisciplinary Independent Study, revised project and requested an extension to build online media for students and educators. Technical Advisors continue to assist projects in navigating throughout NASA and identifying resources to meet the needs of the project. (Outcomes 2.1, 2.2, 2.3 and 2.4)

- K-12CAN awardees are collaborating and supporting other projects to ensure quality and sustainable projects. Virginia Aerospace Science and Technology Scholars (VASTS) shared project highlights with Idaho and supported a shadowing experience by the PI and project manager.

- Increased use of NASA facilities by grantees visiting Centers

- Increase use of technology in the classroom using NASA resources increasing the access nationwide for educators and students.

  -Distance Learning was provided for 455 participants

  -Increase use of Online Learning Communities providing demonstrations of individual projects to the GSFC Education Office for feedback and disseminating efforts. New Frontiers: Journeying to Mars with Interactive Technologies is using new technology, iPad, portable social media and iPhones and is being piloted in Washington, D. C.,

  -Real-World/In-World NASA Engineering Design Challenge, NIA completed a student demonstration of project at GSFC.

- Increase use of NASA resources by educators and students (Outcome 2.3)

  -K-12 CAN students and educators, totaling 2829 reported using NASA resources in the classroom for students and educators

  - Inspiring STEM Educators: The NASA Physics and Engineering Collection on VITAL/Teachers Domain, Project Director, WNET spent a day working closely to identify NASA resources with GSFC's Wade Sisler, Producer, Office of Communications

-PI for New Frontiers: Journeying to Mars with Interactive Technology presented a demonstration lesson for the GSFC education staff as well as visited GSFC to interview scientist to complete the project and will complete a final presentation this Fall

- Maximizing use of NASA facilities, scientist, engineers and education employees. (Outcome 2.3)

  -A total of 420 participants under K-12 awardees visited a NASA facility during FY11

  -Site interviews with 7 scientists/engineers were conducted at GSFC by K-12 CAN PI's and/or project managers

  -Astrology-Scientific Ballooning: An Innovative Learning Instruction and Field Experience Model to Increase the Aspirations of High School Students in STEM Careers Contracted with Ames Research Center scientist for expertise.

- Underrepresented/underserved students are being expose to NASA mission science (Outcomes 2.1, 2.2, 2.3 and 2.4)

  -Exposed to career awareness during project activities

  - Students Preparing to Advance into Careers in Engineering (SPACE) served 202 students during summer enrichment and 181 were identified as underrepresented or underserved

- Increase use of NASA astronomy resources in the curriculum (Outcomes 2.2 and 2.3)

  -Georgians Experience Astronomy Research in Schools (GEARS) developed of a comprehensive curriculum/program in astronomy for high schools and provided professional development for 50 teachers this su

- NASA resources included in graduate level courses for educators (Outcome 2.3)

  -Development of graduate courses available using NASA resources for science teachers at Georgia Southern University in Statesboro, GA and Columbus State University in Columbus, GA

- Use of undergraduate students pursing STEM careers as mentors for underrepresented groups (Outcome 2.4)

  -Continuous use of undergraduate students mentoring high school students

- NASA/NC-MSEN Student Preparing to Advance into Careers in Engineering (SPACE) K-12 award provided learning experiences for 104 parents to support career development in STEM fields during FY 11(Outcomes 2.2, 2.3 and 2.4)

  - Virginia Aerospace Science and Technology Scholars (VASTS) project was recognized within state, Commonwealth of Virginia for contributing to STEM education and received additional funding, Virginia Aerospace Science and Technology Scholars (VASTS) (Outcome 2.4)

Project Contributions to PART Measures

The K-12 CAN was developed to offer a competitive opportunity to external organizations to improve STEM instruction and achievement. The K-12 awards are aligned with Outcome 2 of the NASA Education Framework and contribute to accomplishing the PART measures. The available data in the Office of Education Performance (OEPM) system indicate that the awards are supporting the objectives of NASA Education and positively contributing to Outcome 2.

- 2.1 Educator Professional Development – Short Term
  29 educators participated in short duration education experiences

- 2.2 Educator Professional Development – Long Term
  113 participated in long duration training programs

- 2.3 Curricular Support Resources
  113 educators used NASA resources in classroom instruction

- 2.4 Student Involvement K-12
  403 students involved in NASA instructional and enrichment activities

Data supporting Outcome 2 and Part measures is continuously being input into the OEPM system. In addition, quarterly, annual and final evaluations are submitted by awardees allowing continuous monitoring and feedback.

The K-12 CAN is a critical investment to ensure NASA content is incorporated in STEM programs at the high school level to improve student learning and instruction. Funded projects include a Sustainability Plan to continue program efforts and support for STEM achievement and teaching promoting STEM careers.

Improvements Made in the Past Year

The following areas are where improvements have been instituted during fiscal year 2011:

- Collected pertinent program data through the new Office Education Performance Management (OEPM) system to show the how many students and teachers NASA funded projects reached

- Established theme committees, technology, professional development and student learning for awardees to increase networking opportunities, positively impact project visibility and increase success. Increasing awardees opportunities to network, dialogue about project and the possibility of connecting to a resource or another project out of their service area. The three committees were instrumental in framing the 2 day Symposium to meet project needs.

- Bi-monthly telecoms continued and were effective in increasing synenergy, providing project updates, sharing opportunities and an avenue to work through challenges together

- Delivered a 2 day Annual Symposium, May 2011

- Awarded projects took advantage of showcasing projects to the GSFC Education Public Outreach (EPO) and public during "Explore@NASA Goddard", May 13-14, 2011

Project Partners and Role of Partners in Project Execution

Many awards established partners to support the projects during the funded period. These partners are encouraged and have investments in the project increasing lasting relations, ownership and increased sustainability. Several NASA Centers have partnered with a project and one has shown their support by adding additional funding. Identifying partners and building business relationships was reinforced during the Symposium as the GSFC Education Office works to close out programs and identify sustainability efforts to continue funded projects beyond the funded period.

Projects are continuously developing and expanding partnerships to increase the likelihood of sustainability. The VASTS project has the support of 7 industry partners as well as the state.

-University of North Carolina (UNC) NASA / NC-MSEN
Students Preparing to Advance into Careers in Engineering (SPACE)

- Other Industry Partnership/Collaboration – 5
- Museum/Planetarium – 3
- Non Profit – 3
- Higher Education Institution – 8
- K-12 School – 41
- Other NASA HQ Program Office – 1
- Professional Society – 1
- State Government – 2
- Online Communities – 1

Partnerships are required for each award and many awards continue to identify partners and establish collaborations and relationships to support the sustainment of the project. Many projects have aligned with area college/universities, museums, planetariums, school districts and

other local organizations. These efforts continue to promote, expand and support the sustainment of the project.

The Sustainability Plan presents program highlights and challenges since implementation, and, based on these results, how they will refine their strategies, expand on successes, and plan new initiatives to continue the NASA investment. Awarded projects nearing close out, are in the process of submitting plans describing how the project will continue. Projects closing out are seeking guidance, summarizing pilots, seeking guidance on planning to move programs forward without funding.