

SEMAA

Science, Engineering, Mathematics and Aerospace Academy



**2012 Annual Performance Report
NASA SCIENCE, ENGINEERING, MATHEMATICS AND AEROSPACE
ACADEMY (SEMAA)**

Administered by: Paragon TEC, Inc.
Type of Agreement: Contract

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PROJECT DESCRIPTION

NASA SEMAA is a national education project designed to increase the participation and retention of historically underserved and underrepresented K-12 youth in the areas of science, technology, engineering, and mathematics (STEM).

SEMAA targets students in grades K-12 and their parents/adult caregivers, and offers three core components:

- A NASA-designed, hands on, inquiry based curriculum aligned to national science, math, and technology standards at each grade level, K-12, and connected to research from the NASA mission directorates
- An Aerospace Education Laboratory (AEL), featuring cutting edge aerospace technology that gives students experience with aeronautical and reduced gravity simulations
- A Family Café to promote sustained parental involvement in their child's STEM education

The NASA SEMAA project currently operates at 15 sites located in 14 states across the nation. Site locations include community colleges, four-year colleges/universities, Historically Black Colleges and Universities (HBCUs), Hispanic Serving Institutions (HSIs), Tribal Colleges and Universities (TCUs), primary/secondary schools, science centers and museums.

NASA's SEMAA project is administered at the following locations:

1. Albany State University
Albany, Georgia
2. Cuyahoga Community College
Cleveland, Ohio
3. Fernbank Science Center
Atlanta, Georgia
4. Hartnell College
Salinas, California
5. Martin University
Indianapolis, Indiana
6. Martinsville City Public Schools
Martinsville, Virginia
7. Morgan State University
Baltimore, Maryland
8. New Mexico State University
Las Cruces, New Mexico
9. Oglala Lakota College
Kyle, South Dakota
10. Tennessee State University
Nashville, Tennessee
11. The University of Texas
at El Paso
El Paso, Texas
12. Warren County High School
Warrenton, North Carolina
13. Wayne State University
Detroit, Michigan
14. West Virginia State University
Institute, West Virginia
15. York College/CUNY
Jamaica, New York



PROJECT GOALS

The goals of SEMAA are to:

- **INSPIRE** a more diverse student population to pursue careers in stem related fields
- **ENGAGE** students, parents and teachers by incorporating emerging technologies
- **EDUCATE** students by utilizing rigorous STEM curriculum enhancement activities that meet national math, science and technology standards and encompass the research and technology of NASA's four Mission Directorates

PROJECT BENEFITS TO OUTCOME 2

Attract and retain students in STEM disciplines through a progression of educational opportunities for students, teachers, and faculty.

SEMAA is the only K-12 STEM project in the NASA Elementary and Secondary Program education portfolio providing a seamless NASA pipeline for elementary and secondary age students, families and teachers.

In FY 2012, the SEMAA project contributed to Outcome II with the following accomplishments:

- A total of 70,384 students, parents/adult caregivers, teachers and outreach participants were served in FY 2012
 - SEMAA served 31,897 total students (21,831 direct student participants plus 10,066 indirect student participants)
 - Fifty percent of direct SEMAA students were females
 - The project served 202 students with special needs

PROJECT CONTRIBUTIONS to ANNUAL PERFORMANCE GOALS (APG)

APG	Description	SEMAA Contribution
APG 6.1.1.1: ED-12-3	35,000 educators participate in NASA education programs	In FY 2012, SEMAA contributed to this APG by serving 434 pre-service and in-service educators in NASA education programs
APG 6.1.2.2: ED-12-5	200,000 elementary and secondary students participate in NASA instructional and enrichment activities	In FY 2012, SEMAA contributed to this APG by serving 31,897 (direct+indirect) students

APG 6.1.2.2: ED-12-6	85 percent of elementary and secondary students express interest in STEM careers following their involvement in NASA education programs.	In FY 2012, SEMAA exceeded this APG by achieving an 88% level of interest in STEM careers among SEMAA students (4,665 out of 5,320 respondents) who participated in the NASA SEMAA project
APG 6.2.1.1: ED-12-7	50 percent of educators use NASA resources in their curricula after participating in NASA professional development.	In FY 2012, SEMAA contributed to this APG by serving 434 educators, all of whom use NASA resources in their curricula after participating in NASA professional development

PROJECT ACCOMPLISHMENTS

- In FY 2012, the SEMAA project served a total of 70,384 students, parents/adult caregivers, teachers and outreach participants representing an overall 14% percent increase over the number of participants served in FY 2011
- In 1st Qtr., FY 2012, the SEMAA project hosted its Annual SEMAA Director's Meeting in Cleveland, OH. During this three day event, SEMAA Site Directors and AEL Coordinators participated in a series of meetings and workshops designed to discuss shared observations, best practices, and next steps utilizing the framework created and designed by NASA. Workshops also focused on strengths, weaknesses and opportunities as well as strategies and tactical approaches to successful project management and long-term planning and sustainability. Potential project re-designs and models for STEM education and workforce development were established for proposal to NASA's Office of Education. Consequently, SEMAA's Project Management Team continues to work with Headquarters Leadership at NASA's Office of Education to refine and realign the project with the new vision for Education at NASA
- Texas Instruments presented Martin University with a donation of technology equipment worth \$20,000 at the 2012 National Science Teachers Association (NSTA) Conference the site is able to use the equipment to provide Math and Science tutorial support to students in the after school program
- Boeing donated Remote Aerial Refueling Operator (RARO) demonstrator to SEMAA at Wayne State University. The demonstrator, worth \$500,000, will be a part of the site's academic enrichment program. This equipment allows SEMAA participants to work with local engineers, gaining hands-on experience with this exclusive piece of commercial equipment

- Members of the SEMAA Management Team, at GRC and the NSO, were awarded Certificates of Recognition “for extraordinary work” by Senator Shirley L. Huntley, 10th Senatorial District, NY
- During 1st Qtr., FY12, SEMAA at West Virginia State University (WVSU) held teacher training workshops offering AEL training and Star Lab workshops for primary and secondary education teachers. As a result, more than 100 teachers/instructors in the state of West Virginia have now been thoroughly trained on the Star Lab and the AEL. Non-SEMAA teachers across the state will now be able to deliver SEMAA content to their students
- During FY 2012, SEMAA at Cuyahoga Community College received grant funding in the total amount of \$75,000 to be used to further site operations
- SEMAA at New Mexico State University received a total of \$172,000 in grants during FY 2012. Additional funding is used to further enhance STEM learning for SEMAA participants at NMSU
- SEMAA at York College/CUNY received a grant in the amount of \$11,000 from Con Edison of New York to further augment NASA funding levels
- SEMAA at the University of Texas at El Paso hosted its official dedication and ribbon cutting ceremonies to commemorate the newly established NASA SEMAA site and Aerospace Education Laboratory (AEL). The UTEP AEL houses the latest state of the art aerospace equipment in the most current blue print of a SEMAA AEL. More than 300 Students, parents, partners, and members of the community attended this event with keynote speaker, Dr. Mason Peck, NASA’s Chief Technologist
- SEMAA at the University of Texas at El Paso received a grant in the amount of \$15,000 from the Texas Space Grant Consortium as well as a \$15,000 grant from the University of Texas. The Additional funding is used to support site operations and STEM curriculum learning
- The city of Albany, GA declared May 13th, 2012, as “SEMAA Day” by mayoral proclamation

IMPROVEMENTS MADE IN THE PAST YEAR

- The development of advanced troubleshooting instructions for the Advanced Flight Simulator and Reduced Gravity Drop Tower, along with the successful beta test of a remote AEL Assessment process

- In FY 2012, the SEMAA site's annual review process was streamlined to include a virtual meeting component, thereby creating greater efficiency and reduced cost

PROJECT PARTNERS AND ROLE OF PARTNERS IN PROJECT EXECUTION

SEMAA sites are required to develop partnerships annually that will both enhance and sustain STEM project services beyond NASA funding. During Fiscal Year 2012, SEMAA leveraged over \$2.7 Million dollars in partnership funds (including both financial and in-kind support) for K-12 STEM education, constituting more than a 100% match to the total project budget provided by NASA. SEMAA has leveraged over \$27.6 Million dollars in funding for K-12 STEM education from 2004 – 2012

ROLES AND RESPONSIBILITIES OF SEMAA STAKEHOLDERS AND PARTNERS

Organization	Responsibility
NASA HQ	Provides funding for the SEMAA Project
NASA Glenn Educational Programs Office	Serves as the SEMAA Project Manager providing guidance and overall project management
NASA Center Education Offices	Support the SEMAA sites in their region
NSO Contractor Paragon TEC, Inc.	Manages the National SEMAA Office (NSO); oversees the day-to-day operations of the SEMAA sites. Works with NASA to establish new SEMAA sites as well as installation of AELs
NASA Glenn – On Site Contractors, SGT, Inc./Paragon TEC, Inc.	Support Service Contractors who support the project management efforts of the SEMAA project
SEMAA Sites	Deliver the SEMAA project to students, families, and teachers. Key personnel at the SEMAA Sites include the Site Director and the AEL Coordinator
Partners/Stakeholders	Provide financial and/or in-kind contributions to enhance and sustain SEMAA beyond NASA funding