



*Educating, feeding  
and saving lives of  
children; youth, and  
families  
around the world.*

## **MISSION AND HISTORY**

Children & Charity International (CAC) is a Washington DC based non-profit organization with 501(c)3 status. Our mission is to "To embrace humanity and its resourcefulness and provide meaningful opportunities that engage and empower vulnerable people to achieve academic success, healthy lives, and dignity." We hope to 'Make a Difference' in the lives of poor and underrepresented people, in communities throughout the world." As a mentoring organization we utilize charity and education to teach and empower people to take responsibility for their lives. We work to accomplish our mission by partnering with churches, community leaders, community groups and local organizations, and government agencies based on a platform of honesty, integrity and team unity.

CAC supports education, nutrition and healthcare projects in the US, Caribbean and Africa. We work at the grassroots level responding to community needs, fostering community participation, and empowering people through education, training and activities. One of CAC major partners in the United States is the Science and Engineering Center at the University of the District of Columbia (UDC), Washington DC. For the past 25 years we have collaborated on ensuring that children and youth, K-12, in the greater Washington DC area received STEM instruction through the NASA SEMAA program. We also coordinated the Family Café which ensured that parents and caregivers of the STEM participants were engaged in helpful training, mentoring and learning opportunities to support their children's educational goals. Because of the success of the NASA SEMAA program at the SEC, CAC felt other students with barriers should benefit. CAC launched five satellite centers at other Washington DC locations with support from District Government agencies.

At present, CAC classes are conducted year-round Monday to Friday 3:30 pm – 6:00 pm during the regular school semesters and 6 weeks during the summer, from 9:00 am to 3:00 pm, M-F. Many say China is ahead of the US in science and technology because indoctrination starts from as early as 2 years. CAC hopes that by introducing NASA SEMAA, STEM concepts from pre-kindergarten will be advantageous for the US and impact the future generation and the world.

## **ALL ABOUT NASA SEMAA**

The NASA Science Engineering Mathematics and Aerospace Academy, or SEMAA, has been a national, innovative project designed to increase participation and retention of historically underrepresented K-12 youth in the fields of science, technology, engineering and mathematics, or STEM.

SEMAA emerged as a nationally renowned leader in the efforts to increase the participation of historically underserved K-12 youth in the areas of STEM. Established as a joint venture in 1993 between NASA Glenn Research Center and Cuyahoga Community College, the project grew from a single site to a national organization that is supported by Congress and dedicated to improving the academic success of children nationwide.



SEMAA is located at community colleges; Historically Black Colleges and Universities, or HBCUs; Hispanic Serving Institutions, or HISs; Tribal Colleges and Universities, or TCUs; high schools, middle schools and elementary schools; and science centers/museums in urban and rural cities throughout the United States. (For current locations visit the SEMAA locations page.)

### **Establishing the Need**

Students in science, technology, engineering and mathematics fields provide the workforce for vital military, government and industry jobs, as well as supplying the great thinkers needed to maintain U.S. leadership in technology and innovation. There is a serious shortage of young people entering STEM fields today. This fact, coupled with the high-tech workforce needs of the 21st century and the lagging test scores indicating a lack of STEM proficiency among the next generation of explorers, poses a bleak picture of an America left behind.

### **SEMAA's Unique Capacity to Respond to the Need**

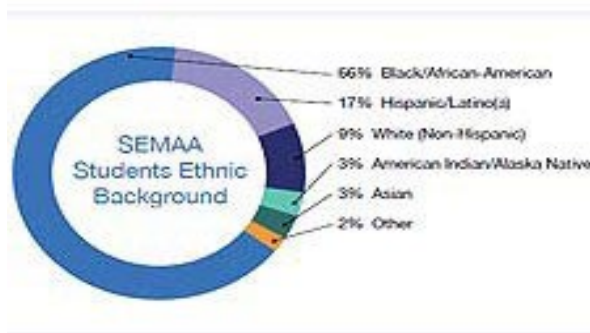
NASA has a unique capacity to revitalize STEM education in America; utilizing its awe-inspiring subject matter, cutting-edge research opportunities, and world-class facilities. NASA is currently investing in a portfolio of educational programs/projects focused on (1) Strengthening NASA and the nation's future workforce, (2) Attracting and retaining students in STEM disciplines, and (3) Engaging Americans in NASA's mission. NASA SEMAA is aligned to NASA Education Outcome 2: Attracting and retaining students in STEM disciplines.

SEMAA harnesses the collective resources of NASA, institutions of higher education, science centers, museums, and primary and secondary schools to bridge the education gap for historically underserved and underrepresented K-12 youth in STEM. The foundation of SEMAA's historical track record of success is centered around the project's unique capacity to build strong relationships with students and families focused on the benefits of STEM literacy.

## Goals

- **Inspire** a more diverse student population to pursue careers in STEM-related fields.
- **Engage** students, and parents/adult family members, and teachers by incorporating emerging technologies.
- **Educate** students using rigorous STEM curriculum enhancement activities designed and implemented as only NASA can.

## Significance of the Underrepresented



SEMAA helps to promote STEM education amongst underrepresented ethnic groups.

## Key Components of Service

The NASA SEMAA project is managed by the Educational Programs Office at NASA's Glenn Research Center in Cleveland, Ohio, with contractor support provided by Paragon TEC, Inc. (National SEMAA Office). NASA SEMAA, together with its 200+ STEM partners, continues its work around the country to inspire, engage and educate the next generation of explorers.

## Hands-on, Inquiry-Based K-12 STEM Curriculum Enhancement Activities, or CEA The

NASA SEMAA project uses a series of unique hands-on, inquiry-based classroom curriculum enhancement activities. In addition to being aligned with national math, science and technology standards, these activities encompass the research and technology of each of NASA's four mission directorates (Aeronautics Research, Exploration Systems, Science and Space

Operations). On average, NASA SEMAA students participate for a total of 36 hours each year, 21 hours during the academic year and 15 hours during the summer. NASA SEMAA graduates who have participated in the entire K-12 program will have completed 441 hours of advanced studies in STEM prior to their enrollment in a post-secondary institution.

### **Aerospace Education Laboratory**

Developed by NASA and equipped with 10 workstations, the Aerospace Education Laboratory, or AEL, is an electronically enhanced, computerized classroom that puts cutting-edge technology at the fingertips of NASA SEMAA middle- and high school-aged students. Each computerized research station provides students with real world challenges relative to both an aeronautics and microgravity scenario. Examples of the real aerospace hardware and software contained in the AEL include an Advanced Flight Simulator; a laboratory-grade, research wind tunnel; and a working, short-wave receiver and hand-held Global Positioning System for aviation. In addition to being an extraordinary tool for educating middle and high school students, the AEL serves as an excellent training facility for pre-service teachers on the NASA SEMAA curriculum.

### **Family Café**

Unique to the NASA project, the Family Café is an interactive forum that promotes sustained family involvement at each of the NASA SEMAA sites around the country. The Family Café engages SEMAA parents and adult family members in up to 21 hours of Family Focus Group sessions each year, during which time participants are engaged in dialogue focused on relevant parenting and STEM education information. In addition to Focus Groups, the Family Café hosts a multitude of Family Night activities and other special events that promote parent and adult family member participation in student learning.

### **Participants**

The NASA SEMAA project currently boasts 14 sites located throughout 12 states and the District of Columbia. These site locations include community colleges, four-year colleges and universities, Historically Black Colleges and Universities, Hispanic Serving Institutions, Tribal Colleges and Universities, primary/secondary schools, science centers and museums. Collectively, the SEMAA sites have inspired, engaged and educated over 350,000 students, parents and adult family members and teachers from 2004 through 2008.

### **Partnerships**

Each NASA SEMAA site is required to develop a Sustainability Plan to enhance local project operations, as well as to ensure project sustainability beyond NASA funding. During the 2008 fiscal year, NASA SEMAA sites leveraged a network of 200+ partners that contributed a record number of sustaining funds for SEMAA in excess of \$3.9 million (including both financial and in-kind support).

## **NATIONAL RESEARCH COUNCIL RECOGNIZES SEMAA**

Image Credit: NASA SEMAA



The National Research Council commended NASA SEMAA on its focus for underserved and underrepresented communities.

In response to mounting studies and statistics showing billions of dollars in annual U.S. spending on K-12 STEM education, and at the same time worsening gaps in the preparation of our next generation science, technology, engineering and mathematics, or STEM, workforce, the President issued a directive in 2007 mandating a review of all federally funded K-12

STEM initiatives. As a result, the National Research Council, or NRC, has conducted a review and critique of each federal agency's investments in K-12 STEM education.

In the NRC's final report on NASA's K-12 educational investments, entitled *NASA's Elementary and Secondary Education Program: Review and Critique (2008)*, the NRC stated the following: "The committee commends SEMAA for its focus on underserved and underrepresented populations of students and on inspiring their interest in science and engineering ... SEMAA is an excellent project for reaching the intended participants (historically underserved and underrepresented K-12 youth in STEM)."

In addition to these endorsements, the NRC recommended that SEMAA assess the cost-effectiveness of the Aerospace Education Laboratories and develop a plan to periodically update the SEMAA curriculum enhancement activities to reflect the latest NASA science and engineering activity. The NASA SEMAA leadership has developed and begun implementing a plan to address the NRC's recommendations.

*"The project has developed a number of good strategies for reaching students and their families and has worked hard at raising matching funds to leverage the dollars provided by NASA..."*  
*NASA's Elementary and Secondary Education Program: Review and Critique (2008)*