STEM Teacher Roundtable

Lisa Surles-Law

May 3, 2018
Science Education Goals

- Develop local and state partnerships to advance STEM education

- Improve the quality of K-12 instruction by enhancing teachers’ content knowledge

- Immerse graduate, undergraduate, and high school students in a world-class facility research environment to prepare the nation’s next generation of leaders
Local & State Educational Outreach

K-12 programs annually serve >12,000 students and >940 teachers

BEAMS - Becoming Enthusiastic About Math and Science
- Classes of 5th and 6th grade students spend 2-4 days at Jefferson Lab
  1,200 inner-city students, 60 teachers

Science Camp for Deaf & Hard of Hearing
- Week long science and math immersion
  10 students

Community Outreach Programs
- Physics Fest (two-hour activity at JLab)
  5,000 students, 175 teachers
- CHROME (Cooperating Hampton Roads Organizations for Minorities in Engineering)
  Staff interact with >150 students each year
- Other school visits and workshops
  5,000 students, 600 teachers

Web-based Activities
- Frostbite Theater
- Jefferson Lab’s YouTube Channel has >100,000 subscribers
- Puzzles and games used as study and exploration guides
Local & State Educational Outreach

BEAMS - Becoming Enthusiastic About Math and Science
- Classes of 5th and 6th grade students spend 2-4 days at Jefferson Lab
- 1,200 inner-city students, 60 teachers

High School Summer Honors Program (HSSHP)
- Six-week guided research experience
- 10 students

Community Outreach Programs
- Physics Fest (two-hour activity at JLab)
  - 5,000 students, 175 teachers
- CHROME (Cooperating Hampton Roads Organizations for Minorities in Engineering)
  - Staff interacts with >150 students each year
- Other school visits and workshops
  - 5,000 students, 600 teachers

Web-based Activities
- Frostbite Theater
- Jefferson Lab’s YouTube Channel has >100,000 subscribers
- Puzzles and games used as study and exploration guides

**Becoming Enthusiastic About Math and Science (BEAMS)**
- Partnership involving Jefferson Lab and Newport News Public Schools
- Supports inner-city students as they progress from the 5th to the 6th and 8th grades
- Students and their teachers visit Jefferson Lab for periods of two to four days for science and math activities conducted by the Lab’s staff
- Provides teachers with activities based on JLab’s science and technology
- Annually involves ~1,200 students
JSA Teacher Development Initiative: JSAT (JLab Science Activities for Teachers)

- JSAT is a result of the first JSA Initiatives Fund proposal: 20 teachers in 2006
- Sixty teachers learn content and applications at JLab throughout the school year (18 two-hour sessions) => positively impacts ~6,000 students every year
- JSAT places JLab as the community's leader in providing needed professional development for local teachers
- JLab continues to build on the core JSAT program by:
  - Having JLab education staff spend several hours co-teaching with and supporting each JSAT teacher in his or her classroom
  - Offering former participants opportunities to actively participate in events such as the JLab Open House, JSA Teacher Night, and VIP visits
  - Encouraging teachers who have completed at least one year of JSAT to participate in the BEAMS (Becoming Enthusiastic About Math and Science) program
- In an effort to involve as many teachers as possible in the JSAT experience, JLab hosts the Annual JSA Teacher Night in April
  - Current (and former) JSAT teachers demonstrate educational activities and share resources gained from their JSAT experiences
JSAT: Making a Difference in Virginia

JSAT Program Awards include:

1) Recognition in Science Education (RISE) award from the Virginia Association of Science Teachers based on a nomination from a JSAT Teacher for the JSAT8 Manager

2) being named to the Business Honor Roll by the Virginia School Boards Association (June 2014)

3) receiving the DOE Secretarial Honor Award for our work with several programs, of which JSAT was specifically mentioned (October 2012)

4) receiving the Teacher Programs That Work award for JSAT from the Virginia Math and Science Coalition (May 2011)

Two school divisions, Newport News and Norfolk, asked JSAT participants to share their JSAT experiences at district-wide meetings last summer.
The JSAT Program has become an integral part of the Hampton Roads community:

FY 2017: Williamsburg-James City County Middle School Teacher of the Year and school district Foundation Grant Recipient (Jaclyn Miller), National Education Association (NEA) Foundation Horace Mann ($10,000) Award Recipient from Grafton Bethel Elementary School (Carol Bauer)

- FY 2016: Former participant and 5th grade instructor, Travis Humble, became Assistant Principal at Jones Magnet Middle School

- FY 2015: Magruader Elementary School Teacher of the Year (Jayne Taylor), Bay View Elementary School Teacher of the Year (Beverly Wilson), Nansemond Parkway Elementary School Teacher of the Year (Paula Beckett), Mack Benn, Jr. Elementary School Star Teacher Award (Kimberly Nierman)
Jefferson Lab supports ~40 undergraduate students/year

- JLab staff and users encourage and prepare undergraduate students to pursue advanced degrees in experimental/theoretical physics and accelerator science
- 14 Science Undergraduate Laboratory Internship (SULI) students for summer 2017
- 10 NSF-funded Research Experiences for Undergraduates (REU) via Old Dominion University
- Initiatives Fund Supports: Minority/Female Undergraduate Research Assistantship (MFURA), JLab Co-op Program for Engineers, Undergraduate Support in Jefferson Lab Research, Accelerator Physics Education Outreach w/ Universities in Mexico

2017 SULI & REU Students
Workforce Development for Teachers and Scientists

Jefferson Lab supports >100 graduate students/year

- JLab staff and users not only encourage and prepare graduate students, but compete to attract the best graduate students to JLab
- JLab provides data to ~1/3 of the U.S. Ph.D.’s in nuclear physics each year
- Since 1989, almost 200 graduate fellowships have been awarded via SURA, and now, JSA Students are fully immersed in their research and tap into the capabilities of JLab

HUGS

(Hampton University Graduate Studies)

- Summer school for nuclear/particle physics students who have finished coursework and have completed at least one year of research
- Run by Hampton University in collaboration with JLab’s Physics Division and Theory Center –
- In its 33rd year; ~34 students/year
As a world-class research facility, Jefferson Lab is a valued partner to the local, regional and national education community. Jefferson Lab's long-term commitment to science education continues to focus on increasing the number of teachers with a substantial background in math and science, strengthening the motivation and preparation of all students, especially minorities and females, and addressing the serious under representation of minorities and females in science, math, engineering and technology careers.

Office of Science Education
628 Hofstadter Road, Suite 6
Newport News, VA 23606
phone: (757) 269-7567
fax: (757) 269-5065

tyler@jlab.org