PRE-SERVICE
TEACHER PROGRAM

National Partnership Model

NASA/ Norfolk State University
National Model

• NASA & Norfolk State University
  – Shared vision on the need to support pre-service teachers
  – Developed a cooperative partnership - 1995
NASA Vision

- To improve life here
- To extend life there
- To find life beyond

NASA Mission

- To understand & protect
- To explore & search
- To inspire next generation

NASA & Education

- To provide unique resources to inspire next generation of explorers
- To provide unique teaching tools
- To send our professionals to schools to inspire the next generation of scientists, engineers and scientists
Our third mission....

– To inspire the next generation of explorers

– “Our mission of understanding and protecting our home planet and exploring the Universe and searching for life will not be carried out if we don’t have the people to do it.”
Our third mission…. (cont’d)

– Our renewed focus to education means not only inspiring our youth but also providing educators with the tools they need to teach math and science and to improve the country’s scientific literacy -- and we have those tools available today.
NASA Support of Pre-Service Education

“...it is important for us to focus on new opportunities to support initiatives in the pre-service area.”

- NASA’s Strategic Plan for Education-2002, 2004
The PSTP Program is a partnership between NASA LaRC and Norfolk State University. It provides future teachers with resources and skills for the teaching of math, science, and technology. PSTP is the composite of two components:

**Pre-Service Teacher Conference (PSTC)**

**Pre-Service Teacher Institute (PSTI)**
PRE-SERVICE TEACHER PROGRAM GOALS

Support the enhancement of knowledge and skills

Provide exposure and experiences to pre-service teachers and faculty

Provide access to NASA information in science, mathematics, technology, engineering, and geography
PSTP OBJECTIVES

• To provide NASA mission based programs to pre-service teachers and faculty that introduce the application of science, mathematics, geography, engineering and technology for use in student learning activities

• To increase the pre-service teacher and faculty content knowledge in areas of science, mathematics, technology, and geography based on the NASA mission
PSTP OBJECTIVES - (cont’d)

• To encourage a “multiplier” effect to expand the benefits of the pre-service program beyond participants to include additional pre-service teachers and faculty.
EVALUATION, MEASUREMENT, AND ACCOUNTABILITY

Program Evaluation is an integral aspect of the Pre-Service Teacher Program

- External Evaluation (Dr. Susan Frierson, The Bach Center)
- Data Analysis
  - Quantitative
  - Qualitative
- Formative and Summative Evaluation
- Annual Report submitted to NASA by Norfolk State University’s Office of Sponsored Programs
## Pre-Service Teacher Universities

- Alabama A & M University
- Alabama State University
- Alcorn State University
- Arkansas Baptist College
- Benedict College
- Bethune – Cookman College
- Bowie State University
- Cheyney University of PA
- Claflin University
- Clark Atlanta University
- Clemson University
- City University of New York
- Coppin State University
- Dillard University
- Elizabeth City State University
- Fayetteville State University
- Fisk University
- Florida A & M University
- Florida International University
- Grambling State University
- Hampton University
- Harris-Stowe State College
- Houston Tillotson College
- Howard University
- Jackson State University
- Kean University
- Kentucky State Univ.
- Langston University
- Le moyne-Owen College
- Lincoln University- MO
- Lincoln University- PA
- Livingstone College
- Miles College
- Mississippi Valley State Univ.
- Morehouse College
- Morgan State University
- Morris Brown University
- New Mexico Highland Univ.
- New Mexico State Univ.
- Norfolk State Univ.
- North Carolina A & T Univ.
- North Carolina Central Univ.
- Oakwood College
- Our Lady of the Lake Univ.
- Philander Smith Univ.
- Prairie View A&M Univ.
- Rust College
- Shaw University
- Spellman College
- St. Augustine College
- St. Mary’s University-TX
- Sinte Gleska University
- South Carolina State Univ.
- S. Univ. -Baton Rouge
- St. Paul’s College- VA
- Talladega College
- Texas A & M Corpus Christi
- TX A&M University-Kingsville
- Texas College
- Tennessee State College
- Tougaloo College
- Towson State University
- Turtle Mountain Comm.College
- Tuskegee University
- University of Ark.- Pine Bluff
- Univ. of the District of Columbia
- Univ. of Maryland-Eastern Shore
- University of Montana
- University of Texas at El Paso
- Virginia State University
- Virginia Union University
- West Virginia State College
- Xavier University
Conference Objectives

- To model and promote the use of scientific inquiry through problem-based learning for Pre-Service teachers.

- To enhance Pre-Service elementary and middle school teachers’ knowledge, skills, and strategies for teaching mathematics and science.

- To promote enthusiasm and self-confidence for teaching science and mathematics for Pre-Service teachers for young children.
Conference Objectives - (cont’d)

• To provide Pre-Service teachers and faculty with a variety of alternative instructional strategies utilizing scientific inquiry and problem based learning

• To provide Pre-Service teachers with an opportunity to use computers and other communication technologies as a resource with peers
FEATURES

- Annual, 3-Day
- General Sessions
- *Recruit for Institute
- Career Fair
- Workshops
- National Speakers
Workshops

International Space Station Docking Challenge

NASA Distance Learning Programs: Integrating Math, Science, and Technology into the Elementary & Middle School Classrooms

Creating and Measuring Impact
Craters on the Moon

The Astrobiology Curriculum

Inquiring into Science Teaching & Learning
Featured in

March 14, 2002 • Volume 19, No. 2

BLACK ISSUES IN HIGHER EDUCATION
www.blackissues.com

‘Leave No Child Behind’

Will the Bush administration deliver on the rhetoric? Q&A with U.S. Secretary of Education Dr. Roderick Paige

- Demystifying science and math, pg. 12
- Howard launches $250 million fund-raising campaign, pg. 16
- Race in the college classroom, pg. 32
Pre-Service Teacher Institute (PSTI)

A PARTNERSHIP AMONG COLLEGES, UNIVERSITIES AND NASA
OBJECTIVES

• Participants will develop a more positive attitude toward the teaching of mathematics, science, and technology.
• Participants will understand the value of team work/collaboration.
• Participants will develop a deeper understanding of mathematics and science concepts.
• Participants will learn to use technology to teach effectively
OBJECTIVES

• Participants will design and deliver a lesson that effectively integrates mathematics, science, and technology using an inquiry-based teaching model.

• Participants will become familiar with and utilize NASA facilities, personnel, materials, and curricula.
STUDENTS PARTICIPATE IN:

- Technology Integration
- CLASSES
- TOURS

TEACHING ACTIVITY
DESCRIPTION

• Annual
• Two Weeks
• Residential
• Three University Credits
• Core Faculty
• NASA Adjunct Faculty
• NASA Problem Using Problem Based Learning
• Class Taught To Elementary/Middle School Students
FEATURES

- Computer Technology
- Museums & Science Centers
- NASA Research Facility Tours
- Educator Resource Centers
- Distance Learning
- Self Assessment
- Presentations
The Institute’s problem tends to be shaped by the focus of the associated NASA installation:
- Langley: aeronautics
  - Sitting Bull: earth science
  - Sinte Gleska: space science
- Johnson: biological science
- Kennedy: space science
- AMES: aeronautics
- Marshall: space science
- Stennis: space science
TEACHING ACTIVITY

Students in the institute are given a group of fourth grade students to present a science and math lesson using the resources they were exposed to over the previous week and a half.
(PHASE II) SUMMER 2002

TWO LOCATIONS:

NASA MARSHALL Space Flight Center (Oakwood College)

NASA STENNIS Space Center (Xavier University)
(PHASE III) SUMMER 2003

THREE LOCATIONS:

NASA JOHNSON Space Center
(PrarieView A&M University)

SINTE GLESKA UNIVERSITY
(Langley Research Center)

SITTING BULL COLLEGE
(Langley Research Center)
(PHASE IV) SUMMER 2004

TWO LOCATIONS:

NASA KENNEDY Space Center
(Bethune – Cookman College)

NASA AMES Research Center
(Cal State University - Fresno)
Seeking To

..expand student participation in the conference & institutes.

..establish more summer institutes across the nation with enhanced technology capabilities.

..increase subsidies for travel cost (conference attendees)

..increase the number of faculty & to provide more professional development workshops for those involved in the institutes.
Collaborative Efforts with Earth and Space Science Communities could include:

- Partnering with Goddard and members from Earth science community to establish an institute at Goddard that uses Earth Science as the context for Problem-based learning.
- Incorporating mini-workshops on Earth and space science at the Pre-Service Teacher conference.
- Tracking PSTI participants (Earth and Space Science institutes) and assess how they use their understanding in these discipline areas in their classrooms.
CLOSING REMARKS

The Pre-Service Teacher Program is an innovative, exciting, and growing program.

Our educational partnership model which incorporates problem-based learning can be replicated among universities, federal agencies, and other school districts.

Questions