



BESTsteps

**Bringing Education and Science Together
For
Systemic Training and Empowerment
of
Pre-service Students**

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ABSTRACT

BESTsteps allows Norfolk State University, which provides a large number of African American, teacher candidates, to conduct an innovative, pre-service teacher education program. BESTsteps creates a cohesive, collaborative between Norfolk State University, NASA Langley, seven school systems and a leading organization, CHROME (Cooperating Hampton Roads Organization for Minorities in Engineering) that trains minority teachers to provide exemplary math and science instruction to minority students. This innovative Project matches students taking coursework at the university, with expert African American CHROME teacher mentors who model the process skills of reflective inquiry teaching. In the first two years of the project, seventy-three students have participated in the Project BESTsteps courses. Empowered with this specialized training, BESTsteps students will positively impact the number and quality of employable, certified, science, math, and technology teachers.

Participants in this workshop will receive free BESTsteps curriculum materials and software that can be used in a school or university classroom.

INTRODUCTION

BESTsteps has allowed Norfolk State University, which provides a large number of African American teacher candidates, to conduct an innovative, pre-service teacher education program. This innovative Project includes a mentorship component and a curriculum writing and production component. The BESTsteps Mentor Program matches NSU education majors, enrolled in methods courses, with expert African American math and science CHROME teacher mentors who model the process skills of self-reflective inquiry teaching strategies. The mentor relationship continues throughout the second semester of the school year, whether the student is enrolled in coursework or not.

MEASURABLE OUTCOMES

Among the successful events of the second year, the number of BESTsteps pre-service students (Mentees) recruited increased from 18 to 55. Each of these students was matched with one of the 38 pre-selected BESTsteps Mentors, a substantial increase from the 18 Mentors enrolled last year. These numbers represent 37 more students and 20 more teachers involved in the mentor program than the first year of the project.



Handbooks issued at first Mentor/Mentee Seminar

The ***Mentor/Mentee Handbook***, a publication written specifically for the BEST steps Mentor Program, was used throughout the year. Students (Mentees) and their school-site Mentors collaborated, shared classroom observation reports (management, reflection and teacher/student interaction), attended BESTsteps Seminars together and utilized specially chosen science software and resources for the classroom.



Mentees share clinical observations

During the summer prior to the second academic year of BESTsteps, a comprehensive one-week atmospheric science workshop was offered called “Summer of Seasons.” During this seminar, students, teachers and professors utilized hands on workshops and cooperative learning group research to create lesson plans on various earth science topics. Utilizing the inquiry approach to science investigation, each of the cooperative learning groups produced a Power Point slide show for their science lesson. A curriculum CD ROM was published which included all of the science lessons and a “snapshot collage” of all of the events of the workshop.

A Web Site <http://vigyan.nsu.edu/beststeps/> (now being updated) created for use by participants in the Project and other interested parties is maintained throughout the year. Communication between participants in the BESTsteps Project was monitored electronically, via email, through use of the BESTsteps Web Site and through an established Discussion Board <http://vigyan.nsu.edu/discus> wherein all members of the Project can enter clinical observation data and share classroom and coursework experiences.

The BEST Lab Center of Excellence was a *Train-the-Trainer* Workshop Site for GLOBE (Global Observation for the Betterment of the Environment). Some of the Mentors and Mentees in the BESTsteps Project attended session at Norfolk State University in March, 2001. Another opportunity available to both the Mentors and Mentees was the Summer NASA Langley Preservice Teacher Institute. Several of the Mentees attended the two-week training seminar designed to enhance science teaching as augmented through Problem Based Learning.

A BESTsteps Resource and Software Library was available to participants in the Project. Science curricula and computer materials from this library were given to the Mentor/Mentee teams. Comments about the specific content of the materials, and the way in which they were utilized in the classroom were discussed at the Mentor/Mentee meetings to provide feedback on the usefulness of the resource materials. A list of BESTsteps Materials is at the end of this report.

OUTREACH

The major aspects of the BESTsteps Project were highlighted in presentations at five national and three regional conferences. BESTsteps was featured in papers and workshops presented at; the National Association of Gifted Children (NAGC) in Cincinnati, the National Science Teachers Conference (NSTA) in St. Louis, the NASA PreService Teachers Institute (PSTI) held in Hampton VA, the MASTAP Program Review and Planning Meeting held in Atlanta, the HBCU Faculty Development Symposium held in Norfolk.



Students and Project Directors at NSTA in St. Louis



Dr. Anderson-Miller presents a lesson on the relative position of the atmosphere

Pre-Service students from BESTsteps also demonstrated hands-on science lessons for parents in the Hampton Roads area at the Annual NSU Parent Clinic for Parents of Gifted Children, held in Virginia Beach. The BESTsteps PI was interviewed as the featured guest speaker for the National Futures Channel website.

SCHOLARSHIP/STUDENT RESEARCH

Six graduate students and three undergraduate student researchers were provided financial support through the BESTsteps project. Research topics for their coursework included, data collection on the shortage of minority science and math teachers, effective teachers and teaching strategies for minority children in the classroom, a comparison of pre and post earth science concepts and knowledge base, and the needs of culturally diverse children as a sub-population of gifted children.

EVALUATION

Surveys and questionnaires were collected from the participants in the Project to obtain clinical observation data, identify established science misconceptions, gage the effects of the mentor relationship, and evaluate the effectiveness of the overall program by its participants.

Some direct narrative comments from the Mentors:

I loved the sharing and activities to implement in the classroom

The importance of exposure to scientific experimentation.

I have learned how to use the reflection time for a journal where my students write about their science experiments.

The mentoring experience has been very rewarding for me to demonstrate different techniques that are employed in my classes.

The CHROME meeting was the most positive experience because the girls as well as the boys were filled with excitement and curiosity.



I learned that children are very interested in science. We just have to teach them that science is all around them.

This has been one of the most exciting organizations I've ever been associated with.

Meeting such energetic, positive young people. We have not lost our youths.

That I do have a purpose. That my years of classroom experience can help motivate/drive a person.

She is going to be a dedicated teacher.

The meetings at NSU are my best experiences. I enjoy discussing current Science teaching practices and networking with professional teachers/professionals



My mentee stated that I explained a lot of instructional concerns that she had not been told in teacher preparation courses

I was impressed with the willingness and pleasant personality of the mentees. Mentees desire to work at teaching techniques. I also enjoyed being given the opportunity to help people wanting to become effective teachers.

How much I enjoyed helping mentees. New science content and experiences that the BEST Lab has shown me.

Reflection with the student (mentee) helped me to understand to what their comfort level is.

The lesson plans, the BEST activities and helping BEST students.

Basic foundation of working with mentees. The integration of science, helpful points on classroom management and looking back.

Opportunities to meet and confer with others in the program. Collaborative interactions give impetus to the program and actualization of goals.



Some direct narrative comments from the Mentees:

I have learned class management skills, implementing classroom lessons, how to teach the children appropriate wait time, program development, meetings, activities in the CHROME development program.

Every child can learn. Those who felt like they couldn't learn or did not like science has a new outlook.

BEST Steps provides you with great hands on experience.

My mentor was willing to adjust her schedule to work with me. She was always available to answer my questions.

I've learned what is effective and what is not effective in classroom management.



The most positive experience I have had as a team member of the BEST Steps program was meeting my mentor and other professionals in the field of education. I enjoyed conversing and working with them to acquire more information on teaching.

I have learned many things about the use of wait time, the necessity of classroom management and the need for balance between discipline and a fun educational atmosphere.

Program Evaluation Results

The second-year initiative to place more emphasis on student recruitment and commitment to the Project proved worthwhile. Student participation in the Project was presented as an avenue to complete the required 20 hours of observation, a part of each of the designated BESTsteps methods courses. The professors awarded BESTsteps Mentees extra credit for their participation in the Project and most of the Mentees spent more observation time than the twenty-hour course requirement while participating in the Project.

Syllabi for the courses that students enrolled in for the second year of BESTsteps included the actual Clinical Observation Forms established in the first year of the BESTsteps Project.



SUMMARY

The BESTsteps Project has made a difference for the conscientious students seeking a better way to become trained to teach in hard-to-staff classrooms. They and other students who are waiting to become a part of BESTsteps will succeed as they become minority-minded teachers in the science math, and technology classrooms of tomorrow.

Using Project BESTsteps, we intend to broaden NSU's *inter-professional* partnerships with NASA Langley, the surrounding Virginia School Systems and *intra-professional* partnerships within the Schools of Science & Technology and the School of Education.

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