

# **SCIENCE FEST PROJECT**

## **EL CAMINO COMMUNITY COLLEGE**

**(NSF DUE 02-10981) [[WWW.SCIENCE-FEST.ORG](http://WWW.SCIENCE-FEST.ORG)]**

### **PROJECT DESCRIPTION**

Science FEST (Future Elementary School Teachers) was an enrichment project for highly motivated future teachers at El Camino Community College in Torrance, California. The project which ran for six years (2002-2007) was initially funded by the National Science Foundation Advanced Technological Education Program and later supported through corporate sponsorship by Northrop Grumman Space Technology. Seventy future teachers participated during the six years of the project, making over a thousand teaching presentations in two dozen schools in the Los Angeles area. A number of participants also presented their modules in informal educational settings such as the Sally Ride Festival, Festival of Flight, and Space Saturday at Northrop Grumman Space Technology. Project participants developed comprehensive curriculum materials in space or physical sciences which were inquiry based reflecting both the national and state science content standards. Modules also artfully incorporated technology into instruction to increase student understanding. The participating future teachers developed creative assessment instruments and strategies to measure what students learned. Science modules spanned a variety of topics and grade levels as evidenced in the following selection: *Coming To A Planet Near You* (solar system - 3<sup>rd</sup> grade); *It's Just A Phase* (Earth's moon - 3<sup>rd</sup> grade); *Mission Possible: Voyage To The Stars* (stars - 3<sup>rd</sup> grade); *Tilting Into The Seasons* (Earth's seasons - 3<sup>rd</sup> grade); *Is It Magic Or Magnetism* (magnetism - 4<sup>th</sup> grade); *The Essence of Fluorescence* (light and fluorescence - 9<sup>th</sup> grade). Complete modules may be found at the project's website - [www.science-fest.org](http://www.science-fest.org). A Science FEST participant spent about eleven weeks developing her/his science module and taught that module at least ten times in the K-12 classrooms. College faculty observed each participant during her/his first few teaching experiences, providing feedback about the content and offering specific strategies to improve teaching. This project offered future teachers the opportunity to gain a greater understanding of the science content, increase their pedagogical knowledge, design and pilot test curriculum materials, experience being a "science teacher" in the K-12 classroom, understand how teachers reflect on their own work and how to improve their own teaching, and share their work with other educators at professional conferences. We are most proud of our Science FEST participants who not only developed their own science modules but demonstrated that great science teaching is a blend of high-quality instructional materials, engaging pedagogy, and the notion that all students can learn science!

### **INDICATORS OF SUCCESS**

There are a variety of indicators which demonstrate a project's success within the project and in the larger educational community. The following is a list of some of the successes of the Science FEST project.

During the project's six years, there were 74 participants who taught their modules more than 950 teaching hours in elementary, middle, and high school classrooms.

Eighty-five percent of the Science FEST participants were hired as K-12 classroom teachers in the public and private schools in the greater Los Angeles area. The other participants are continued their baccalaureate and post-baccalaureate course work.

Science FEST participants seeking to teach on the elementary grades completed, on average, 35% more college units in science as compared to other future elementary school teachers at the college.

Science FEST participants scored 15% higher on the Astronomy Content Knowledge Indicator Exam than the general student population enrolled in astronomy courses and equivalent to the students enrolled in the honor's sections of the astronomy courses.

Science FEST participants exhibited a 19% (average) improvement in their attitudes (i.e. more positive attitude) about science and teaching science in the K-12 classrooms as evidenced in a pre/post test attitude assessment.

A quote from the principal of the elementary school in which Science FEST made its debut captures the impact of the project on the elementary school students who were recipients of the Science FEST participants' teaching experiences. *"I thought I'd share a little bit of good news with you.... just in case you had not heard as yet. The STAR testing came back from the State and our 5th grade science scores were the highest in the Hawthorne School District. I am sure this success was due in a large part to the Science FEST program that you provided to these students when they were in the third grade."* [Ken Jacobson, Principal Jefferson Elementary School]

Two Science FEST future teachers were hired by Northrop Grumman Space Technology to facilitate workshops and plan and host tours of the facility for K-12 students.

Five Science FEST participants applied and were accepted for the Department of Energy summer internships at Princeton University, Berkeley Laboratories, and the Lawrence Hall of Science.

Eight Science FEST participants wrote and were accepted to make presentations at the California Science Teachers Association annual conference in 2008.

As community college students, twenty-five participants presented their work at conferences hosted by National Science Teachers Association, California Science Teachers Association, National Council of Teachers of Mathematics, and WaMu Future Teachers Conference. Twenty participants were asked to present their science instructional materials at a variety of informal educational settings as Festival Of Flight, The Sally Ride Festival, Weatherfest, Space Saturday, and Space Days.

Ten participants reported that their principals shared that they were hired for their first teaching position because of their strong science background and work they completed as part of Science FEST.

Two participants who are classroom teachers are considered the science specialists at their schools.

The project began with five elementary school teachers who generously opened their classrooms for our participants to teach their modules. Word spread to many classrooms and teachers and Science FEST impacted more than 300 classrooms during the project's six years.

High quality science instructional materials were developed and are available at no cost to other teacher and prospective teachers at the project's website – [www.science-fest.org](http://www.science-fest.org).

Science FEST was received sponsorship from Northrop Grumman Space Technology post NSF-funding.

Science FEST Kids, a project for elementary school students modeled after Science FEST, was developed by a Science FEST participant once she became a 5<sup>th</sup> grade teacher. Science FEST Kids was funded by Northrop Grumman Space Technology.

The BEST (Beginning Elementary School Teachers) Project which is an extension of the Science FEST project is corporate sponsored by Northrop Grumman Space Technology.

Most of the Science FEST participants, many of whom are now classroom teachers, still stay in contact with the project director and more importantly, want to be role model teachers in other projects like Science FEST. Their ultimate goal is to become a project director and change the lives of college students who plan to become teachers.

Three participants were selected to teach English in Korea as a result of their experiences in Science FEST.

Some thoughts from our participants who are now classroom teachers:

*Science is something that should make you exclaim, "WOW!" Whenever I think about my lessons, I think about his advice and the motto that everyone in Science FEST was so very fond of, "Science is a WOWIE!"*

*During the Festival of Flight at the California Science Center, a gentleman from the Science Center Museum approached me with an offer for a full-time teaching position at the Alexander Science Center School. At the time I was working on obtaining my Bachelors Degree and did not have a teaching credential and I made it my goal to one day to be able to accept his offer. I am now in my second year of teaching first grade at this school. I thank Science FEST and lots of hard work for making this happen!*

*Among helping me become a more well rounded person and giving me the opportunity to see more of the world through a variety of pre-professional experience, the most valuable thing that I will take from my experiences in Science FEST is the confidence I now have in my own teaching.*

*I asked my principal the other day what she saw on my resume that lead to an interview. She said she was looking for someone with a strong science background and she was impressed by my internship at Berkeley and the science modules I have developed. Her response proved my point, I would not be teaching today without all the vast teaching experiences and benefits I was fortunate enough to receive because of Science FEST.*

The Science FEST Project received six years of external funding. The first three years were funded by the National Science Foundation and the subsequent three years were corporate sponsored by Northrop Grumman Space Technology.