



The Computerworld Honors Program

Honoring those who use Information Technology to benefit society

Final Copy of Case Study

LOCATION:
United States

ORGANIZATION:
National Aeronautics and Space Administration (NASA)

YEAR:
2011

ORGANIZATION URL:
<http://www.nasa.gov/>

STATUS:
Laureate

PROJECT NAME:
NASA Explorer Schools Project (NES): <http://www.explorerschools.nasa.gov>

CATEGORY:
Training/Education

PROJECT OVERVIEW

The NASA Explorer Schools Project (NES) is NASA's classroom-based gateway for middle and high school students (grades 4-12). It provides authentic learning experiences designed around NASA's unique missions while promoting student engagement in science, technology, engineering, and mathematics (STEM). Through partnerships with national educational organizations and use of best educational practices, the NES project's goal is to inspire students to participate in NASA missions and develop their interests and abilities in STEM. The NES project features a virtual platform that provides a wealth of highly engaging, inquiry-based NASA classroom resources designed to inspire students' interest in STEM disciplines. These unique and authentic NASA resources provide students with a sense of relevance and involvement by linking STEM classroom topics to real-world NASA activities. NES has developed a series of teacher-oriented electronic professional development activities that provide middle and high school teachers with effective implementation tips for their selected classroom resources. NES also harnesses the power of social media tools such as blogs, social networking sites, and online discussion forums to build a community of educators where NES participants share educational best practices and classroom strategies with fellow STEM teachers nationwide. NES extends its reach beyond the classroom by recognizing innovative integration of NASA educational resources and exemplary use of best practices designed to inspire student interest in STEM. Highly engaged teachers, students, and schools participating in the project can apply to receive NES Recognition and the opportunity to participate in a unique NASA educational opportunity, such as a workshop at a NASA center. NES Recognition aims to recognize excellence and enable NES participants to continue expanding their STEM knowledge. NES engages in a variety of data collection efforts to evaluate the effectiveness of the NES resource offerings and delivery mechanisms. In addition to collecting feedback through conventional tools, such as focus groups, user satisfaction surveys, and phone interviews, NES has built a robust website user tracking tool into its Virtual Campus to support project evaluation. The tool allows NES to collect

real-time data on project activities and participation rates. This data is then continuously analyzed to make data-driven improvements to project features on an ongoing basis, rather than at the conclusion of the yearly project cycle (which had been the norm for NASA educational projects). This tool has significantly altered the way that NES approaches project evaluation. The NES Project plays a unique role in NASA's education project portfolio as the gateway for classrooms in grades 4-12 to gain access to the Agency's wealth of educational content and STEM expertise. NES has minimized the barriers to participation so that teachers and students—regardless of school type, geographic location, or student demographics—can take advantage of unique learning opportunities designed to inspire student interest in NASA, STEM topics, and related careers.

SOCIETAL BENEFITS

- Provides teachers with free access to high-quality NASA educational resources and materials that support classroom implementation and teacher efforts to inspire students' interest in STEM disciplines
- Delivers all project materials on a virtual platform, enabling broad access of NES resources regardless of geographic location and building 21st-century skills

PREVIOUS PROJECT UPDATED/EXPANDED?

- Development of the NES project began in May 2009
- NES ran a small-scale pilot of the project to test the model in spring 2010
- NES conducted a thorough evaluation of the pilot using teacher feedback collected through surveys, interviews, and focus groups, as well as website analytics that tracked participation and usage rates throughout the four-month pilot
- NES used this evaluation to identify lessons learned and improvement strategies; NES staff made updates and modifications to project features over the summer 2010 before launching the project nationwide in September 2010
- The NES project was officially launched on a nationwide scale on September

PROJECT IMPLEMENTATION COMPLETE?

Yes

PROJECT BENEFIT EXAMPLE

NES has had a demonstrable impact on Middle School and High School science, technology, engineering, and math classrooms across the country. NES allows for all middle and high school teachers—regardless of geographic location, school type, or student demographics—to have access to free, high-quality NASA classroom modules and associated educator training resources. NES's educational resources provide teachers with engaging, academically sound activities that utilize every day, inexpensive resources and offer implementation strategies for use in the classroom. The activities are designed to increase student interest and aptitudes in STEM topics. Teachers have been profuse in their praise: • "In my technology class, we study rockets. We usually pay about \$400.00 for the rocket kits. When I saw the stomp rocket project, I was just amazed because it was so inexpensive. I always make one class participate in rockets and for the first time, I was able to allow all three grade levels make rockets. After years of paying so much money, this was one thing that really hooked me." • "Sometimes when you have junior high school students you don't always know what they're excited about internally because they don't necessarily say it in school. It was really neat to have parents come back and tell me that their son or daughter was so excited about all the NASA stuff and that they had all these great discussions about it at home." • "Before we started this program in January, I had seven students that were unsatisfactory on the science portion. When they took the test again in April, all seven students passed either basic or ultra-basic. None of them failed." NES broadens



student perspectives on STEM careers and provides students with a sense of relevance and involvement by linking STEM classroom topics to real-world NASA activities. Teachers explain: • “Giving my fourth graders a hands-on experiment and showing them pictures of what NASA astronauts were doing in space and that they were really growing plants allowed them to make that real world connection. They realized they can be a scientist at a young age too.” • “I had a little girl who all she wanted to do was write. In fact, she was gifted through the language department, but math-wise she had tunnel vision because she just wanted to write. In one of our projects, someone had to write the modules that had science content background. She realized she could use her writing skills in the future to do something related to science and NASA. At first she totally did not see NASA as a fit for her because she wanted journalism, but there is obviously journalism in NASA. So that was very satisfying for me to see her make that connection because she definitely has a bright future.”

IS THIS PROJECT AN INNOVATION, BEST PRACTICE? Yes

ADDITIONAL PROJECT INFORMATION

NES has created a recognition program that rewards high-performing participants with unique NASA experiential learning opportunities and incentivizes participant behavior that benefits the NES Project. NES has set recognition eligibility requirements that encourage teachers to increase their level of engagement with project resources. NES also developed a recognition application that collects key data from teachers regarding educational best practices and use of NES resources in their classrooms in order to identify the ways in which NES can better align project offerings to classroom needs.