

Background

The *American Recovery and Reinvestment Act of 2009* (ARRA) included a \$650 million allocation in ESEA Title II, Part D, commonly referred to as the *Enhancing Education Through Technology program* (EETT). This case study was prepared by the State Educational Technology Directors Association (SETDA) – the principal association representing the technology leadership of state and territorial departments of education – to provide an example of ARRA funds working at the district and classroom level that creates effective, viable, and robust reform in education, and improves the way teachers teach and students learn.

Connecticut's EETT Competitive Grants

Connecticut's competitive grant program provided funding to school districts for improving student achievement through the creation and implementation of 21st century, technology-rich learning environments. Professional development opportunities provided training for teachers to transform instruction that included technological tools, and provided students with opportunities to collaborate and connect with relevant content through project-based learning.

Green-Green Wintergreen Wintergreen Interdistrict Magnet School, Connecticut March 2010-August 2011

The purpose of this grant was to engage students in 21st century technology-rich learning focused on the study of the environment. Teachers integrated environmental studies in all areas of the curriculum while transforming the school into a technologically and ecologically fluent community.

Demographics

Wintergreen Interdistrict Magnet School is located in Hamden, Connecticut and managed by Area Cooperative Educational Services. The school provides a liberal arts education, which is supported by technology including a 1-to-1 laptop program. Wintergreen has an extended school year, in session from mid-August to late June. The school population is approximately 640 students from the 5 towns that are eligible to apply to Wintergreen. The five towns bring together a diverse student body, which includes children from the inner city of New Haven, to suburban areas of Hamden and Woodbridge. Students are selected by lottery to attend Wintergreen.

Project Description

The purpose of the Green-Green Wintergreen project was to integrate interactive tools, while engaging students in the practice of environmental awareness. Wintergreen Interdistrict Magnet School established a 1-to-1 laptop program in 2006. With technology integration underway, administrators and teachers sought to build a stronger school community and increase 21st century skills. By exploring the environment and what it means to be “green,” teachers introduced students to a more in-depth study of environmental science. Students learned about scientific theory and the changes to making a positive, sustainable change in the environment. Through these studies, the grant focus was to improve science and technology skills. All teachers and students were included in the efforts of this program. Teachers participated in professional development opportunities that provided resources and instruction on connecting the curriculum to real-life science and using technology to help solve everyday problems. The grant funding also provided interactive whiteboards, science probes, birdhouses, video cameras to film the birds and plants, and one hydroponic garden per classroom. In addition, the school purchased Moodle to provide a content management system and a communication tool for teachers and students.

ARRA EETT Grant Details	
Grant Focus	High-Access, Technology-Rich Learning Environment and Ongoing Professional Development
Beginning/End Date of Grant	March 1, 2010-August 31, 2011
Locale	Urban
Funding	\$140,000 Federal Funds \$14,000 Local Funds
Grade Level (s)	K-8
Number of Teachers Impacted	37
Number of Administrators Impacted	3
Number of Students Impacted	640

Project Implementation

Green-Green Wintergreen started with a team of teachers who volunteered to develop and guide the curriculum activities for renewable and sustainable energy while incorporating the school theme of being “green.” During the school year, all teachers were required to design one research project with a green theme, using the Big 6, a research approach to teaching information and technology skills. All teachers were trained on using the newly installed interactive

This grant empowered our students and teachers to think globally and to act locally. Never before has science been such a hands-on, interactive subject at our school.

-Wintergreen Teacher

whiteboards and the video cameras. In addition, professional development highlighted the use of Moodle in the classroom, technology skills for students, as well as training on content such as how to conduct a scientific study. Teams of teachers met to discuss project ideas with the help of Dr. Lara Smetana of Southern Connecticut State University. Dr. Smetana provided support for teachers for project-based science lessons, which included monthly visits to the school and ongoing, online support for teachers. As a faculty, teachers met weekly to discuss strategies for integrating the technology into project-based science lessons. During these meetings, experts in the field were invited to help teachers craft their projects, including faculty from Yale University and members of the Connecticut Forestry department. Teachers also participated in e-learning workshops using Moodle to help develop student-centered lessons. In January of 2011, a full day of professional development was provided for teachers, spanning the topics of hydroponic gardening, energy sources, community involvement, interactive whiteboard training, and Moodle integration.

The ongoing training and support helped teachers to provide project-based lessons for students with authentic, relevant learning experiences. Teachers and students maintained indoor hydroponic gardens in each classroom and harvested greens and herbs to sell through the school store and at parent meetings. The gardens became a source of pride and accomplishment for the staff and students. All classes in grades 2 to 8 used the Big 6 model for research and explored various topics, such as composting, recycling, and energy sources best suited for the region and globe. Through the various projects, with technology seamlessly integrated, teachers and students increased their understanding of habitats, alternative and renewable energy, wind turbines, solar power, and hydro power. In addition, teachers and students increased their technology skills.

Classroom Examples

- In second grade, students learned about the life cycles of flowering plants including seed germination, growth, flowering, pollination, and seed dispersal. During the Big 6 research project, students used texts and online resources to study seeds and their growth. Students posted blog entries on Moodle describing their particular flower and were able to read and respond to each other's entries. The culminating project was the creation of a multimedia project that combined images and student narration and explained the life cycle of their plant. Students uploaded their projects to Moodle for all students and parents to view. Prior to this grant, teachers typically assigned books and students took notes on a plant's life cycle via their laptops, however, the culminating project was typically a self-drawn picture of the plant.
- An after-school program was developed for students called "Bird Brains." Twenty-five students were accepted to be a part of this group. The purpose of

I feel like a real scientist. I love to see what the birds are doing and know that they are living right here in our own school yard. It's so exciting to see them every day.

-Wintergreen Student

the program was to connect and enrich the curriculum in science, and to understand animal behavior, specifically of birds. Students erected numerous birdhouses throughout the school property. Teachers installed video cameras to capture footage of the birds (bird cams). Students blogged about their bird observations. The Bird Brains program also connected with the first grade science class as they studied living things, animal behaviors, and the fulfillment of basic needs. The Bird Brain students made videos from their bird cam explorations for first grade as well as posting the videos on Moodle for the larger school audience. All students were able to see firsthand what birds needed to build and produce for their nests. Before this grant, students studied animal behavior through the use of pictures and textbook material. The content was not connected to the region, and students could not observe birds in real time. The bird cams allowed students to watch the animals that surrounded their school each day. The Bird Brain students often gave up their recess time to check the birdhouses.

Evaluating Effectiveness

Teachers and students found the integration of science and technology to be motivating. The integration of the online content managements system enabled full interaction for students and teachers and also provided access to parents. One of the major impacts of this grant was in the area of teacher productivity.

School Data

- 100% of teachers created at least one content-rich online lesson.
- 100% of teachers, who received an interactive whiteboard, used them on a daily basis.
- Approximately 80% of teachers made gains in the use of 21st century technologies as measured by Edviation, an online assessment tool.

Moving Forward

The goals, objectives, and tools for this grant are in place and can be easily sustained in the coming years. The interactive whiteboards, cameras, and probes will continue to engage students in all areas of learning. The school community acquired seeds to maintain the hydroponic gardens through the sale of herbs grown in the classroom gardens. Additionally, the assessment tool, which was acquired with grant funds, will continue to be used to measure 21st century skills. The use of Moodle also grows as teachers continue to share lessons and students to post their work, even parent-teacher conferences were scheduled using a Moodle wiki.

Resources

Area Cooperative Educational Services

<http://aces.org/>

Big 6: Information and Technology Skills for Student Achievement

<http://big6.com/>

Connecticut State Board of Education

<http://www.sde.ct.gov/sde/site/default.asp>

SETDA ARRA Information and Resources

<http://setda.org/web/guest/ARRAresources>