

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.

Delaware's EETT Competitive Grants

In Delaware, EETT funds helped to support the state goals in three areas: 1) continued support of the eMINTS (enhancing Missouri's Instructional Networked Teaching Strategies) model to improve instructional strategies and student academic achievement including technology literacy; 2) innovative use of technology to enhance teaching and learning; and 3) upgraded or enhanced existing technology infrastructure to improve instructional strategies and student achievement.

Delaware 21st Century Wireless Consortium Red Clay Consolidated School District, Delaware April 2010-September 2011

The Delaware 21st Century Wireless Consortium used ARRA EETT funds to create a state of the art wireless infrastructure in nine districts across the state with the goal to increase the integration of technology seamlessly. Districts also used funds to create professional development opportunities specific to the needs of the individual districts. Red Clay Consolidated School District managed the project and led the collaborative process.

Demographics

Delaware is home to approximately 103,000 students in 19 districts and was among the first states to develop a statewide online assessment program. Started during the 2010-2011 school year, the new online assessment program is administered multiple times during the school year to provide teachers and parents immediate feedback on student performance. Students follow a testing schedule by grade level and subject area starting in the spring of second grade.

Project Description

The Delaware 21st Century Wireless Consortium grew from a statewide organization called Technology Managers and Coordinators Council (TechMacc). A member from each district is represented on this council, which meets monthly to discuss technical support issues across the state. Members recognized that ubiquitous wireless access was needed to ensure success of the statewide assessment initiative. The Delaware Department of Education provided laptops to assist with test administration of the online assessment program, but not all schools had the wireless infrastructure to use these laptops. The consortium realized that

Delaware would benefit from a consistent approach to wireless infrastructure, and the grant was a catalyst for ensuring wireless capability. Working in a consortium provided an economic advantage in the ability to buy equipment and service in bulk. As well, in standardizing installation and utilization, districts could better support each other. The consortium concentrated on high-need schools to address the digital divide. They also recognized that each individual district had unique professional development needs and therefore created separate professional development plans but linked the plans by sharing resources via the consortium's website and sharing sessions. As part of the program, 83 schools participated (42 Title I schools) with 1,633 teachers participating in professional development. An additional 1,984 teachers were indirectly impacted, benefitting from the wireless infrastructure. Each district in the consortium took advantage of the availability of wireless internet access to meet the needs of teachers and students in their own schools. The professional development opportunities included trainings on multiple technology tools including interactive whiteboards, podcast creation, software, integration of free online internet tools (i.e. Google Apps), and classroom web page development. Despite the variety of activities, all consortium members had the same goal to increase the level of technology integration. Due to the collaborative nature of the consortium, members shared professional development plans, replicated successful strategies, and shared lesson plans and rubrics.

ARRA EETT Grant Details	
Grant Focus	Digital and/or Open Content and High-Access, Technology-Rich Learning Environment
Beginning/End Date of Grant	April 2010-September 2011
Locale	Rural
Funding	\$1,448,284 EETT ARRA Funds \$300,000 Local Funds
Grade Level (s)	K-12
Number of Teachers Impacted (Directly and Indirectly)	3,617
Number of Administrators Impacted	34
Number of Students Impacted (Directly and Indirectly)	51,923

Project Implementation

Beginning in the summer of 2010, the wireless infrastructure was installed in participating schools; bandwidth provided by the installed access points was 54MB for the local LAN. Technical staff in the districts received training on how to manage and support the new infrastructure. In addition to the technical professional development, individual districts designed individual professional development programs, which were implemented in the 2010-2011 school year and continued through September 2011. These plans varied as the access to technology tools and software varied from district to district. For example, in the Red Clay Consolidated School District, classroom teachers were trained to create and maintain useful and informative classroom websites that supported instruction and helped foster communication between teachers, students, and parents. Edline, a content management system, provided teachers an opportunity to post calendars, grades, assignments, and resources as a way of extending the school day. In the Delmar School District, 16 middle and high school special needs teachers participated in podcasting training and professional development under a LoTi model, which was designed to increase student academic progress while fostering digital age professional learning communities. Teachers attended a workshop on podcasting and using iPods in the classroom and developed lesson plans integrating podcasting into the content areas.

Using the wireless infrastructure in combination with an interactive whiteboard, allows students and teachers to display a map, simulation, or other interactive website. Students can design experiments and use simulations to test hypotheses in a center, small group or as a whole class. Companion work can be done individually or in pairs on laptops or mobile devices. Students and teachers are able to take advantage of a multitude of higher level thinking resources.

- Judith Conway, Instructional
Technology Coach

Classroom Examples

- Seventh grade students study watersheds in both the science and social studies class. They learn about the water cycle and use topographic maps. Using the technology provided by this grant, students created podcasts about storm water drainage ponds and the Chesapeake Bay. This project offered students an opportunity to practice their informational reading and writing skills while reinforcing important science concepts. Wireless broadband access allowed them to use the internet to research the Chesapeake Bay watershed and factors affecting its water quality. The teacher led a discussion about storm water ponds. The class then took a walk to a pond on school grounds, noting its location, layout, and surrounding land use. Students answered the research questions of how the school's storm water drainage pond affects water quality in the Chesapeake Bay and recorded their responses. Students then shared their recordings with the teacher and the class.

Evaluating Effectiveness

The data and demographic information below strongly supports the purpose of this grant to provide assistance to schools that serve students from poverty and those with special needs.

Program Data

- Of the 83 schools affected by this grant:
 - ✓ 50% of the schools that received PD and/or wireless equipment were Title I schools
 - ✓ 78% of the schools where a wireless network was installed were Title I schools
- Of the 83 schools involved, the grant affected:
 - ✓ 75% of the instructional staff
 - ✓ 79% of the students
 - ✓ 81% of the low-income students
 - ✓ 78% of the special education students

Each individual district also assessed the impact of the professional development program. For example, in the Red Clay Consolidated School District, teachers strongly believed a classroom website would foster communication (4.28 average out of 5 on teacher survey), and teachers strongly believed classroom websites support instruction (4.13 average out of 5 on teacher survey). The average increase in page views on school websites (where classroom websites are linked) was 270% over the course of the project. In Smyrna School District, 43% of teachers' LoTI scores increased, and a surge in creativity and enthusiasm was noted in the way participants used the instructional technology strategies as explored in their professional development.

The biggest challenge in administering this grant was communicating among a geographically dispersed consortium. A consortium website, conference calls, and email communication helped to distribute information and successfully organize efforts.

Moving Forward

The success of the wireless infrastructure spurred a number of districts to find funding to expand the project. In Red Clay, for example, the district allocated an additional \$300,000 to continue the rollout of wireless infrastructure. In addition, Red Clay found such overwhelming interest in the district's webpage tool, the training will be continued for teachers who were not able to take part in the first training through a train-the-trainer model. In addition, the tool has been utilized for the district's new distance learning labs to serve as an electronic space for sharing, distributing, and collecting work. Other districts also adopted the train-the-trainer model to establish experts in each school on using the interactive whiteboards.

Resources

Red Clay Consolidated School District
www.redclay.k12.de.us

Delaware 21st Century Wireless Consortium
<http://www.redclay.k12.de.us/jc/index.html>

Delaware Department of Education
<http://www.doe.k12.de.us/>

SETDA ARRA Information and Resources
<http://setda.org/web/guest/ARRAresources>