

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.

Virginia's EETT Competitive Grants

The primary purpose for Virginia's EETT ARRA competitive grant competition was to implement programs to encourage the use of educational technology to improve teaching and learning. Divisions and schools used the funds to develop 21st century classrooms as envisioned by the Educational Technology Plan for Virginia: 2010-15, which encourages the effective use of technology to prepare Virginia students to learn and work in the 21st century.

iLearn Project

Pulaski County Public Schools, Virginia January 2010-September 2012

The iLearn project addressed an increasing need to use emerging technologies to improve fundamental knowledge in core target areas and to increase problem solving skills. In Pulaski County, K-12 teachers integrated iPod Touches and laptops to create engaging and effective learning environments. The Radford University Games, Animation, Modeling, and Simulation (GAMEs) Lab worked in conjunction with Pulaski County Schools and other partners to create apps that aligned with Virginia's Standards of Learning.

Demographics

Pulaski County is located in Southwestern Virginia in the heart of the New River Valley. The population of Pulaski County is 35,000 people. There are five elementary schools, two middle schools, and one high school. Pulaski County benefits from close proximity to Virginia Tech, Radford University, New River Community College, and the cities of Wytheville and Roanoke. Of the participating schools, between 37% and 63% of the students receive free or reduced lunch.

Project Description

The iLearn project, a collaboration among Pulaski County Public Schools, Radford City Public Schools, New River Community College, Apple Inc., and Radford University, included three components: 1) the development and integration of mobile games and simulations; 2) development and integration of iPod Touch applications into the core content curriculum; and 3) professional development for participating teachers. This project employed strategies, which not only reflected the learning styles and personal interests of students but also expanded the current understanding of classroom practices and created 21st century learning environments.

ARRA EETT Grant Details	
Grant Focus	Technology Infrastructure and Professional Learning Communities
Beginning/End Date of Grant	January 1, 2010-September 30, 2012
Locale	Rural
Funding	\$435,000
Grade Level (s)	K-12
Number of Teachers Impacted	17
Number of Administrators Impacted	21
Number of Students Impacted	700

In Pulaski County Schools, the focus on specific content areas was determined by an analysis of state assessment scores for the specific grade level. Two elementary schools, two middle schools, and one high school participated in the project.

Project Implementation

At the onset of this project, two classroom teachers were selected per school. Each school received a cart with 2 sets of 20 iPods each and a cart with 30 laptops. Each teacher also received a laptop and an iPod Touch. Professional development was key to this program's success.

First, the teachers and district trainers engaged in professional development training to learn the functionality of each tool. Next, the training focused more on integrating the iPods and laptops into the curriculum and the overall instructional process. A trainer visited the county four times and provided training in the basic use of devices, iWorks, integration of apps, and curriculum support. The participating teachers also had ongoing support from the county's technology specialists to assist in troubleshooting problems, updating and syncing iPod Touches, and creating class activities and lessons. Through the life of the grant, teachers had an online learning community created through Ning, which provided a

iPod Touches have given us the ability to differentiate instruction. Time on-task has increased greatly.
- iLearn Teacher

social networking platform allowing members to share their experiences and ideas, receive feedback, and decide upon and communicate needed modifications to the project in a secure environment integrating wikis, blogs, and chat rooms.

In addition, apps were developed by the GAMEs lab and shared with teachers. A representative from the GAMEs lab visited the school and worked with teachers to determine their needs for original apps targeting specific content areas. The apps were aligned with Virginia's Standards of Learning (SOL). Integration of these apps was explored with the trainer. Over the course of the project, 20 SOL-aligned apps were developed and have been downloaded over 120,000 times by consumers in seven different countries.

Classroom Examples

- The fifth grade science curriculum includes the study of cells. Students learn the basic structures of a cell and the functions of the structures. In teaching this unit, one of the fifth grade iLearn teachers used an app on the iPod Touch that allowed each student to see a 3D view of the parts of a cell. By tapping each part, the function of each part of the cell was explained. After working through the different parts, the students created their own models of a cell on paper and checked their drawing with the cell app. Before using the technology, students gleaned information on cells from a teacher's presentation, textbook, and/or video.
- To help increase student engagement, seventh grade math students worked independently and collaboratively in stations to review proportions, functions, and integers. At the proportion station, students used an app to help them create their own word problems dealing with proportions. This not only gave them practice applying the concept but also allowed students to share their problems with each other. At the function station, student used a different app to review the concept, and used another app to create their own functions that they shared with each other. At the last station, the students used an app to practice adding, subtracting, multiplying, and dividing integers. Prior to this project, students practiced these math concepts by using pencil and paper. Based on teacher observation, use of the technology tools helped to increase student focus and interest in math. Teachers hope this will translate into increased student achievement.

Evaluating Effectiveness

Teachers responded positively to the classroom use of iPod Touches and laptops. The tools provided opportunities to differentiate the content and delivery to better meet the needs of students. Many apps have different levels that can be assigned to students based on ability. Anecdotally, as reported by teachers, students were more engaged when their lessons included opportunities to use the iPod Touches and laptops.

Moving Forward

Participating teachers were empowered to assume leadership positions by offering to informally support their colleagues through peer-to-peer trainings thereby sustaining the grant's proposed goals beyond the life of the grant. As well, the focus on professional growth increased the level of educational technology integration expertise throughout the region.

Resources

iLearn Website

<http://gameslab.radford.edu/ilearn/>

Pulaski County Public Schools

<http://pcva.us>

Virginia Department of Education

<http://doe.virginia.gov/>

SETDA ARRA Information and Resources

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