Howard County Public Schools

ARRA case studies

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.

Maryland's EETT Competitive Grants

The ARRA EETT competitive grant funds provided an opportunity for Maryland to implement 21st century classrooms using innovative strategies that enhanced instruction, facilitated teaching and learning, and improved student achievement. ARRA funds helped to stabilize LEAs and eligible local entities to provide new and emerging technologies, and to offer additional training and support for teachers to help increase academic achievement and acquire the skills needed to compete in a global economy.

The College and Career Readiness Support Project
Howard County Public Schools, Maryland
July 2009-September 2011

The College and Career Readiness Support Project provided high-quality professional development and resources to help teachers individualize instruction through the use of emerging technologies in their classrooms and by understanding and applying the principles of Universal Design for Learning. Howard County partnered with nine Maryland districts to develop and offer an array of blended learning opportunities and up-to-date technology tools for teachers. The partnering districts included Baltimore City, Calvert, Caroline, Carroll, Cecil, Dorchester, Prince George's, Somerset, and Worcester.

Demographics

Howard County Maryland is located in the central part of the state, positioned conveniently between Baltimore and Washington, D.C. Howard County is one of the fastest growing regions in the state, increasing its population by 34% in the past 10 years. The public school system manages 71 schools with approximately 49,000 students, 17.6% of whom qualify for free or reduced meals.

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Since Maryland's districts include economically challenged communities as well as wealthier ones, the State required applicants in the former category to include one or more high-need districts in their consortia. Prince George's County Public Schools, in which 53 percent of the 125,000 students are eligible for free and reduced meals, was one of Howard County's 9 partner districts in the consortium described in this case study.

Project Description

ARRA EETT Grant Details	
Grant Focus	Online and Blended Learning and Digital and Open Content
Beginning/End Date of Grant	July 1, 2009-September 30, 2011
Locale	Suburban
Funding	$1,258,663
Grade Level (s)	6-12
Number of Teachers Impacted	319
Number of Administrators Impacted	120
Number of Students Impacted	10,200

The College and Career Readiness Support Project (CCR Project) aimed to support secondary teachers in high-need content areas as identified by the statewide high school assessment program, particularly in the subject areas of algebra, biology, English, and government. The goal of the project was to create and deliver effective professional development courses focusing on open content and support for integrating technology, particularly Universal Design for Learning (UDL) principles. Using a blended model of traditional and technology-infused instruction and resources, teachers were inspired to explore and integrate new online tools and techniques in their classrooms. Additional aspects to this project included the development of a teacher resource app and a research project on 21st century learning. The teacher resource app was developed to run on the technology tool many teachers already own; their mobile phone. Also, software, with accompanying training, was purchased for use by partner districts' online content developers.

Project Implementation

At the onset of the project, efforts focused on the development of professional development courses for integrating technology and using the framework of UDL principles in algebra, biology, English 10, and government content areas respectively. These courses included open materials from, but not limited to, the National Repository of Online Courses (NROC), UDL Center for Applied Special Technology (CAST) content, and Creative Commons (CC) material.

Course Development: In the fall of 2010, training in UDL and a pilot of the preliminary course material were conducted in 3 face-to-face sessions with 29 administrators and 26 teachers from partner districts. Participants were dual-enrolled in a Teaching Online three-credit course offered by the Maryland State Department of Education (MSDE) and were paid with a stipend to participate in the course material pilot.

> One of the things that I valued the most from the UDL course was learning about the three brain networks. This helped me to find ways to offer students more choices to accomplish the same goal.
> – Laura Herbers, Science Teacher

In early spring, the participants viewed the course content via the course sites, conducted usability testing, and provided valuable feedback for the final development of courses. Later in the spring, the Biology Online Professional Development course and Government Online Professional Development course were offered to teachers from partner districts. These online professional development offerings included an online orientation session, two face-to-face modules, and three online modules, each incorporating UDL. The 36 participating teachers interacted online through discussion boards and wikis. These three-credit, hybrid professional development courses supported the use of technology in teaching and learning with an emphasis on the use of the online Maryland High School Assessment (HSA) mastery courses.

During the winter and spring of 2011, 228 teachers and administrators participated in the online professional development course pilots and regional UDL professional development offerings. As a result of the success of the UDL professional development course, MSDE asked the College and Career Readiness Support Project to develop another three-credit course: UDL and Next Generation Learning (http://udl.mdonlinegrants.org).

Mobile Apps: The development of another project, a mobile app, UDLinks, emerged from teacher feedback during the professional development. Participants in the blended and face-to-face professional development indicated that they were in need of specific content resources that were readily accessible, searchable, and correlated to UDL principles. The app currently features a compilation of over 1300 resources and is a free download in the App Store and the Android MarketPlace. The app is currently used by the Center for Applied Special Technologies (CAST) in their UDL professional development offerings around the country.

Instructional Resources: Additional projects took place in 2010-2011, including the development of two sets of instructional resources for teachers and students aligned with the Common Core Standards in algebra and English 12. The Algebra Instructional Resources included 20 lessons and 10 tasks for students, and the English Instructional Resources covered argument, explanatory, and narrative writing in 16 lessons.

To model low- to high-tech access to technology, an interactive wheel was developed as an online resource (http://udlwheel.mdonlinegrants.org/). This resource's display of UDL principles and guidelines helps educators design flexible lessons and curricula that reduce

barriers to learning and provide innovative and supportive learning to meet the demands of all learners. It also helps educators evaluate existing curricula goals, materials, methods, and assessments.

21st Century Learners Research Study: The final project developed was a collaborative research study with IDEO, a design, thinking, and engineering company, Howard County Public Schools, and the largest district partner, Prince George's County Public Schools. In the spring of 2011, the two districts and research partner conducted a collaborative investigation to discover the characteristics of the 21st century learner with the purpose to guide policy and instruction. The study included a one-week workshop and interviews in the field centered around two focus questions: what does it mean to be a 21st century learner today and how might technology enable 21st century learning? The study and synthesis workshops conducted with teachers, administrators, central office leadership, and partner representatives resulted in seven design principles and seven insights. The seven guiding principles identified were intended to help inform how teachers and administrators should design for today's learning environment.

Web 2.0 Integration: Throughout all aspects of the project, numerous Web 2.0 tools were integrated into the professional development courses, including a blog for the UDL training, twitter postings (@nextgenlearners) and a website for quick dissemination of content, including video and web conferencing for course orientations. Teachers were required to explore and implement at least one Web 2.0 collaborative tool in their classroom as part of their training.

Classroom Examples

- In an English lesson on narrative writing, students learned to write realistic, effective dialogue with correct punctuation. Students first created a comic strip using dialogue between two characters using an online cartoon generator. Once students finished their comic strip organizers, they shared their work with peers and requested feedback. Students made edits based on the peer critique. Next, as a class, students listened to an audio recording of a dialogue excerpt from *The Story of an Hour* by Katie Chopin. Students discussed the mood created by the dialogue and the characters' feelings and reactions as revealed by dialogue. Additional lessons and activities in this narrative writing unit included punctuating dialogue, and plot and character development through dialogue. In the culminating activity, students used their initial comic strip to write a narrative, which had to include dialogue to advance the action of the story and reveal traits of the characters. Students first completed a digital Story Map. Next, students worked in pairs and shared story maps, by switching computers, to gain feedback and critique. Students revised their story maps, wrote their narratives, and submitted final products to their teacher electronically.
- In a science class, utilizing the UDL principles of engagement, exploration, explanation, extension, and evaluation, students learned the mechanism of evolutionary change and were able to explain how new traits may result from new combinations of existing genes. Students first explored the concept of evolution by

watching videos online. As a class, students compared their hand-spread measurements and discussed the variables that exist (gender, age, number of students in sample) to identify if the average hand measurement of the class was a good representation for the school. Next, students used the website, http://www.bighugelabs.com to create a mosaic of pictures that showed variations in organisms. Upon completing this activity, students responded to the teacher's blog posting on the relationship between evolution and variation. To extend the learning, they completed a peppered moth lab, a simulation of moths to identify the variation and conditions affecting the survival of moths. To assess learning, students were given a choice of three activities: to complete a podcast, concept map, or lab design. Students showed improvement in collaborative activities and had extended opportunities for independent learning and self-expression.

Evaluating Effectiveness

In an end-of-the-course evaluation, teachers enrolled in the initial UDL workshops were asked how they planned to apply what they had learned into their classrooms, while other educators were asked how they planned to apply what they had learned to their current positions. Nearly all of the teachers attending the workshops indicated that they planned to develop or implement a lesson that incorporated UDL the following school semester. They planned to incorporate UDL into their lessons by providing more student choice, utilizing the websites provided on the UDL checklist, creating engaging lessons, and integrating Web 2.0 tools. Other educators said they would use what they learned from the workshop in their current roles by providing additional professional development to teachers and administrators, collaborating with staff in lesson planning, improving and revising curriculum, and aligning UDL principles with the Common Core Standards. Having completed the workshop, participants felt most strongly that they could support teachers in developing lessons using the UDL framework and in creating engaging lessons for students.

Participant Data

- All teachers participating in the UDL professional development strongly agreed or agreed that UDL principles will help in developing more engaging lessons.
- Ninety percent of teachers felt prepared to develop lessons using the UDL framework.

Moving Forward

In moving forward, Howard County Public Schools continues to use the UDL course with its Media Specialists and Technology Teachers as part of their professional development offerings. Howard County Public Schools is also working on a systemic plan to incorporate UDL into next generation curriculum design. In the spring of 2012, the online professional

development courses will be offered to all districts in Maryland for teachers to receive continuing professional development credits.

Resources

The College and Career Readiness Support Project
http://ccr.mdonlinegrants.org

Biology Online Professional Development Course
http://biology-pd.mdonlinegrants.org/

Government Online Professional Development Course
http://government-pd.mdonlinegrants.org/

Algebra Instructional Resources
http://algebra.mdonlinegrants.org

English Instructional Resources
http://english12.mdonlinegrants.org

Maryland State Department of Education
http:// marylandpublicschools.org/msde

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