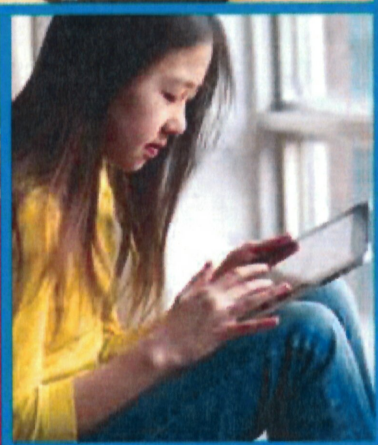


July 2012



Strategy Boosters

**Lessons Learned from
Department of Defense Education Activity
Educational Partnership Grants**



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Lessons Learned from the DoDEA Educational Partnership Grants

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Technology in the Classroom: **Integrating Technology into the** **Curriculum**

Putting 21st Century Technology in Students' Hands

Project Overview

The Clover Park School District wanted to improve science and math achievement in one high school and two middle schools. Before receiving the DoDEA funds, Clover Park began revising the math and science curricula. Because both the SAT and ACT now allow calculators during the test, as does the state's standardized assessment program, the district wanted to integrate more calculator use into the curriculum. After being awarded the DoDEA grant the district developed an overall strategy to infuse 21st century technology such as the TI-Nspire Handheld® calculators into math and science classes.

Clover Park School District, WA

Project Title: Technology and Student Support at Three Secondary Schools

Cohort: 2010

LEA/District: Clover Park School District

Military Installation Served: Joint Base Lewis-McChord

Number of Participating Schools/Sites: 3

Project Focus: 6-12 STEM

Implementation

The TI-Nspire Handheld® calculators include advanced math and data functions and graphing capabilities. The Navigator System® is an add-on that allows the calculators to be networked⁵. The networking allows teachers to monitor students' work and to work with an individual student or groups of students by transferring the display to an interactive whiteboard. Additionally, a partner company⁶ makes a range of compatible, plug-in science probes such as thermometers and CO₂ sensors that extend the utility of the calculators into other areas of the science curriculum.



Many school districts have added similar technology without experiencing a commensurate rise in student achievement. To avoid this, Clover Park first integrated technology into their curriculum. Then, they provided professional development to teachers and implemented the project incrementally.

As noted above, the curriculum review and adaptations started prior to purchasing the equipment and training. Part of the curriculum review involved updating standards and assessments. During the first year of the project, math teachers implemented the classroom activities and the science department reviewed their curriculum. In the second year of the project, the science department began classroom implementation. The project director selected one teacher from each high school to serve as the on-site coordinator and teacher-facilitator. This individual received nine additional days of

training from Texas Instruments (TI) to become certified to facilitate implementation and lead professional development opportunities. The training included how to troubleshoot common problems and issues with the TI technology. The teacher-facilitators who are TI-certified instructors supplemented the TI training for teachers. Additionally, TI systems engineers, technicians, and software engineers provided additional support to address the technology challenges experienced by Clover Park teachers.

To help plan each successive year's PD, teachers completed a year-end survey about their comfort level with the technology and how they used the technology in the classroom. The project director reports that,

⁵ The TI-Nspire Handhelds, Navigator system, and software to use them are products of Texas Instruments, Incorporated.

⁶ Vernier Software & Technology.

as expected, the first year implementation proceeded slowly. As teachers felt more comfortable with the technology, they assisted the district's curriculum writing team with developing and sharing lesson plans. The sharing helped increase the rate of implementation exponentially in the second year.

Lessons Learned

Proof of the successful adoption of the technology is shown in the way calculator use is expanding both at the project schools and beyond. At one participating DoDEA middle school, four math teachers and a math consultant teacher are piloting the TI-MathForward program, where they are receiving personalized coaching from TI and working to develop and share more lesson plans and improve instructional delivery with the technology. The district's Assistant Superintendent heard about the enthusiasm and successes generated by the project and started a pilot at one of the most challenged middle schools in the district. Funds were provided by the district for the classroom technology for the non-DoDEA middle school, but to supplement PD, the teachers in the new pilot have joined with the TI-MathForward team to create an online PLC (using a Wiki and Google docs) to share knowledge and generate ideas for scaling up the program to the other secondary schools. Most important, for sustainability, a nine-day professional development opportunity for math and science teachers to be certified as TI instructors will be offered during the summer break.

Another lesson learned was that the teacher-as-facilitator model, not a district technology coordinator, helped school-based personnel invest in the project. Teacher buy-in was a key factor in the implementation success. The facilitators' enthusiasm led to further teacher engagement as many devoted out-of-school time to developing activities and sharing with other teachers. The project director believes that selecting the right people to start the project, giving them adequate training, and then "letting the teachers run with it" creates an atmosphere that encourages others to build on their success.

Project Impact

Prior to the project, 93% of teachers indicated that they never used supplemental materials in algebra or geometry in the classrooms. Since purchasing the TI-Nspire calculators for all students, daily classroom usage of the equipment increased to 77%. Sixty percent of teachers said their students use the calculators for in-class inquiry-based explorations using the calculator's scientific functions. Additionally, math benchmark test data show that the classes furthest along in implementation (utilizing the technology most consistently) demonstrate the greatest score gains.



REFLECTIVE QUESTIONS

1. How did Clover Park School District address the fact that many districts added technology to the curriculum but did not experience a commensurate rise in student outcomes?
2. How can Clover Park's ideas be adapted for your district? How can your district help ensure that the technology will impact student outcomes?
3. How did Clover Park's implementation plan for networking calculators support teachers' use and student outcomes? What could your district do to yield similar success?



