

**U.S. House of Representatives
Committee on Education and Labor
Future of Learning Hearing
Testimony of Jennifer Bergland
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Good Morning. Thank you to Chairman Miller and the Committee for inviting me to testify today. I am the Chief Technology Officer of Bryan Independent School District, in Bryan, Texas. We have 15,000 students of which 71% receive free or reduced lunches and 61% of our students are considered at-risk. Technology has been a key factor in our efforts to ensure that all students are academically successful. We are reaching and engaging more students and seeing real gains in achievement. In 2008, the district received the TEAM award from CoSN (the Consortium for School Networking) that is given to a school district whose impact on technology's role in transforming learning has been significant. This award recognized the district's efforts in using technology to change the way our teachers teach and our students learn.

Technology Immersion Pilot (TIP) Model

In 2004, Stephen F. Austin Middle (SFA) School, one of four middle schools in my district, issued laptops to all students and teachers attending the school. At the same time, the school received access to more robust digital content and tools, more professional development, and increased technical support. After five years of implementation the school has seen increased achievement scores, a reduction in discipline referrals, increased teacher retention, and an increase of technology proficiency for both students and teachers.

SFA received funds from a grant funded through the NCLB Title II, D – Enhancing Education through Technology (EETT) – program to implement the Technology Immersion Pilot (TIP). TIP required each school to provide a laptop computer for every student and teacher, wireless access throughout the school, online curricular resources, on-going assessments, professional development and on-going support for teachers, and the technical support to maintain an immersed campus.

The combination of these six components created a technology-rich learning environment that looks different than most typical classrooms. Collaboration, critical thinking skills, and student engagement are a part of teaching and learning in all subject areas. Tools like interactive white boards, digital content, on-line courseware, digital cameras, science probes, and laptops provide students with opportunities to collaborate and use relevant content that typically would not be available to the students in a traditionally-taught classroom. Leadership and professional development are critical to the vision and the sustainability of the type of change that occurs in a campus that immerses their teaching environment with technology tools and digital content. This is more than just putting technology in classrooms. The key is that teaching and learning happen in a different way. Education is transformed.

Transforming a School

At SFA, academic achievement scores have increased steadily for all grades 6-8 in both math and reading over the past several years. The increase in scores matches the research conducted in relation to the TIP project. <http://www.tcer.org/>

SFA has approximately 900 students in grades 6-8. They have a diverse student body with 75% of their students receiving free or reduced lunches. As part of this project they not only have laptops for all students, they also have extensive on-going professional development for their teachers, a designated Integration Specialist who models and mentors the teachers as they learn new skills and pedagogies. In addition, the students and teachers have online curricular resources, on-campus technical support, and a robust technical infrastructure that ensures each laptop can access the network and Internet from any place on campus.

The access to these resources enables the students at SFA to be cognitively active and engaged in their learning. Students use online resources to perform digital science experiments, view virtual manipulations for abstract concepts in math and science, discuss topics in social studies using an online chat application, and publish their writing for a wide audience on blogs and wikis (web pages designed to enable anyone who access it to contribute or modify content). One student at SFA used her laptop to begin writing a sequel to the Harry Potter series from the point of view of her favorite character. This was not an assignment made by her teacher, but was her passion. The laptop made the writing much easier to accomplish. The technology also allows the students to collaborate not only in school, but also when they go home. Teachers at SFA began to assign more project-based learning opportunities that enable students to collaborate with each other while problem-solving real-world dilemmas. When students are cognitively engaged in their subject content, learning occurs. One tool that was used by Math and Science teachers are Gizmos by Explore Learning. Let me quickly demonstrate for you how these work.

Having digital content, rather than traditional textbooks, enables the students to use all the Web tools available to personalize their learning. Students use these outside of school to customize their experience on the Internet. They create, collaborate, and publish in ways that were not possible ten years ago. SFA has been using similar tools within the classroom. Students are able to take a learning objective and use the vast resources on the Internet to go more in-depth on topics of interest or find more information on a topic or skill in which they are struggling. The teacher no longer has to possess all the knowledge needed to instruct their students. They can truly be the facilitator of learning. In fact, students are able to find their own "teacher" using the Internet. These "teachers" might be a video demonstrating a physics problem, or step-by-step instructions on how to divide fractions. This customization of a student's learning has enabled the SFA students to create their own "teachable moments" through their investigative inquiry during and outside of school. This leads the students to become more independent learners. One teacher has described her classroom this way, "It's opened the environment...anybody can become the teacher at any point, and they don't hesitate."

When each student is issued a laptop, the learning is extended beyond the school day. Students at SFA mainly complete projects and homework assignments with their laptops at home, but the laptops are also used in other ways. One teacher set aside two nights a week to have a "live homework chat session". At first, the teacher was the one answering the student's questions. Soon, however, the teacher was able to back away and let the students answer each other's questions. The research conducted on the TIP project indicates that the students' use of laptops for home learning was the strongest predictor of both reading and mathematics achievement on the state achievement tests. The findings for home learning underscore the important role that individual student laptops play in promoting ubiquitous learning and equalizing the out-of-school learning opportunities for students in disadvantaged family and school situations. Individual student laptops, in contrast to laptops on carts or computers in libraries, labs, or classrooms, expand where and how student learning occurs. Access to

electronic textbooks on laptops motivates many students to continue working on chapter assignments outside of school.

The laptops also provide teachers with a variety of ways to assess their students' mastery of their subject content. Many of the online resources provide immediate feedback both for the teacher and the student. Some SFA teachers use Moodle, an online course management system, which allows teachers to embed assessments throughout the online assignment. The teachers can also set the system to allow students to re-take the test until the student masters the material. Benchmark assessments that are taken online allow a teacher to quickly determine what objectives each student needs to be re-taught or reinforced. The use of the student laptops has enabled teachers to diagnose and suggest remediation for students during the learning process, rather than after the process is complete.

Professional Development in Bryan: Improving Teacher Effectiveness

Ongoing, job embedded professional development is essential when changing teaching practices. Teachers at SFA were given hands-on training on how to use the technical tools and online resources. This is a first step in helping them to be comfortable with the tools that the students will have. It is important that schools not stop at this step. In order to use the power of the technology, the teachers have to learn how to leverage these tools to educate differently. If teachers teach the same way using technology, as they did without technology, then the investment is wasted. Helping teachers see this takes time. Professional development needs to be based on teachers' evolving needs, and progress from the first-year focus on proficiency with technology tools and online resources to an increased emphasis on technology-related lessons, subject-specific lesson development, and the use of more advanced technology applications for projects.

We used several professional development models to help teachers acquire these skills. We created a cadre of mentor teachers, the iSupport team, who would help teachers learn how to teach using the laptops and the digital resources. We also found that having a person on campus that is solely dedicated to helping teachers change their teaching practices was critical to the teachers' success. The Integration Specialist would plan with teams of teachers on how to take a traditional lesson and embed technology in that lesson that would engage the students in the learning process and increase their ability to understand and apply their learning. This individual would also model-teach, work with students, and work with teachers on classroom management.

Teachers are not alone in the need for professional development and coaching. A change of this magnitude requires that all key stakeholders understand the reasons why the classroom needs to change, the methods that will be used to obtain the transformation, and what their role is in equipping the teachers and students with the necessary support to make the change happen. In the hurry to begin the implementation, our district started with the teachers. We found during the first year we only had vocal support for the project from the executive leadership and curriculum coordinators. In the second year we began providing the necessary professional development for the district leadership and their support for the project increased. We provided professional development for all campus administrators, district curriculum coordinators, district executive leadership, and technology personnel. As a result, the administrators began to communicate to teachers how the project benefits students that in turn raised the awareness of why immersion was important. Campus administrators took an active role in discussing technology issues with students, allocated time for teachers to plan technology-integrated lessons, and monitored the use of technology by visiting classrooms. The need to include all

individuals that affect the classroom teacher in the professional development plan should not be underestimated.

TIP Results

Other Texas districts have experienced similar results as Bryan. As part of TIP, the Texas Education Agency (TEA) participated in a scientific investigation of the effectiveness of technology immersion in increasing middle school students' achievement in core academic subjects as measured by the Texas Assessment of Knowledge and Skills (TAKS). This research study was funded by a US Department of Education evaluation grant as part of the NCLB Title IID Program. The evaluation examined the relationships that exist among technology immersion, mediating variables (school, teacher, and student), and student achievement. Applicants were high-need due to children from families with incomes below the poverty line, schools identified for improvement, or schools with substantial need for technology. Technology immersion schools were matched by researchers with control schools on key characteristics, including eligibility for Title II funds, size, regional location, demographics, and student achievement.

The study included grades 6-8 middle schools drawn from rural, suburban, and urban locations in Texas. The study focused on two groups of student with a total of more than 10,000 students in control and experimental schools. Nearly three-quarters of students are economically disadvantaged (about 75%) and represent minority groups (approximately 70% Hispanic and 7% African American).

First and second year reports revealed positive effects of technology immersion on schools, teachers, and students. Outcomes across two evaluation years and two student cohorts show that immersing a middle school in technology produces schools with stronger administrative leadership for technology, greater teacher collaboration and collective support for technology innovation, and stronger parent and community support for technology. Additionally, teachers in immersion schools are more technically proficient and use technology more often for their own professional productivity. Students use technology more often in core-subject classrooms, and teachers adopt more learner-centered ideologies. Students in immersion schools are more technically proficient, use technology more often for learning, interact more often with their peers in small-group activities, and have fewer disciplinary problems than control-group students. Additionally, there are other outcomes for immersion students that may contribute to their long-term success. Certainly, technology immersion has narrowed the technology equity gap for economically disadvantaged students. Many students who previously had no technology in their homes are becoming computer literate through their experiences with laptops. Across four years, students in Technology Immersion schools consistently had fewer disciplinary actions than control-group students. In the fourth year, Cohorts 2 and 3 immersion students had an average of 0.54 and 0.45 disciplinary actions per student, respectively, compared to 0.76 and 0.71 per-student averages for control students. Reducing disciplinary actions may have very important benefits due to more time in classrooms and decreased time and effort spent by middle school teachers and administrative staff on disciplinary problems of students removed from classrooms.

Another District: Academic Results and College

Rural Floydada school district began Texas TIP implementation in their school district in 2005 and then later expanded from the middle school to the high school. Sixth grade standardized math scores increased by 29 points, and 10th grade standardized math scores increased by 36 points. Also impressive is that Floydada High School students completed 206 college level courses in 2008 for a total of 619 hours. Half of the senior class completed at least 1 college course prior to graduation. These courses not only helped prepare students for higher education, but also saved parents thousands of dollars since the

district covered the cost of the courses and allowed children to see themselves as college students. Because of districts success like Floydada, my district has created a high school in which the students will receive enough credits to enter college as a junior when they graduate from high school. Many students at this high school do not have the technology needed to successfully complete a college course. Therefore, we are hoping to provide each of these students with a laptop next year in order to meet this need. Technology is providing increased access to education and higher education for students most in need.

Conclusion

One administrative staff member described the positive effects the technology immersion project has had on the students at SFA:

“It’s one of the most rewarding projects that we have undertaken. It’s one of the few things that we do in education that we really do for the kids. We say that all the time, that we are going to be child centered. This one really is student centered because there is no other reason you would do it. They are the ones who benefit...It’s hard for the adults...This is for them...It’s going to benefit all of us as they become better adults.”

Thank you for the opportunity to testify. You have provided me an opportunity to share with you what we have learned in Bryan, Texas; that classrooms are transformed when students are engaged in a meaningful learning environment, their learning is personalized to their needs and interests, and their school day is extended by providing all students with access to resources to support their scholastic objectives and interests.