'Critical Questions' Series
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Does using Technology in the Classroom Enhance Student Engagement?

Research on classrooms that have put constructivist teaching and learning models into practice indicates that technology can enhance student engagement and productivity.   More specifically, technology increases the complexity of the tasks that students can perform successfully, raises student motivation, and leads to changes in classroom roles and organization (Baker, Gearhart, & Herman, 1994; Dwyer, Ringstaff, & Sandholtz, 1990; Means & Olson, 1995). These role changes-- with students moving toward more self-reliance and peer coaching, and teachers functioning more as facilitators than as lecturers--support educational reform goals for all students.

Technology also can help students develop positive cooperative learning relationships, enabling them to work together while researching topics and creating presentations. In such relationships, students help each other learn. Students with special needs may require more coaching in computer-based activities, but they benefit from the experience of learning with and from other students.

The Toppenish School District believes this whole heartily and has implemented a K-12 STEM program using Project Lead the Way (PLTW). Project Lead the Way offers a different approach to learning and teaching. Through activity-, project-, and problem-based curriculum, PLTW gives students in kindergarten through high school a chance to apply what they know, identify problems, find unique solutions, and lead their own learning. This engaging, rigorous program provides tools to empower students and transforms the classroom into a collaboration space where content comes to life.

Last year, Garfield Elementary School was one of 42 schools across the United States to be chosen to pilot the Project Lead the Way Launch elementary program. This was especially exciting for the Toppenish School District to finally be able to extend the successful PLTW curriculum from the high school and middle school levels into the elementary. PLTW Launch gave K-5 students a chance to love STEM at a younger age. Through PLTW Launch, students learn important, future-changing lessons, like it's okay to take risks and make mistakes, and it's great to employ critical thinking. Garfield teachers incorporated GLAD strategies into the program to bring comprehensible input for comprehensible output for our large population of ELL students. Second grade students created a container to keep their ice-cream frozen and third graders built airplanes that flew using mini I-pads to design their model. The modules are aligned to Next Generation Science Standards, Common Core State Standards for Math and English Language Arts, and of course the content is highly engaging for students.

Toppenish School District believes that technology in today's classroom needs to promote learning activities in which students work in small groups rather than in isolation. Technology need not be solely designed to teach basic skills, but rather real-world applications that support research, design, analysis, composition, and communication. Traditionally, schools have not focused on technology as a means to support engaged learning.   When computers are present in schools serving at-risk students, they usually are used for drill-and-practice programs on basic skills rather than as tools to support students in designing their own projects (DeVillar & Faltis, 1991).

The Toppenish School District has invested in teaching our students rigorous and engaging content in science, technology, engineering, and math (STEM). The goal of the STEM initiative is to give our students a wide variety of opportunities to engage in their education by challenging their thinking in math and science.

Anastasia Sanchez
Director, State & Federal Programs
Toppenish School District
sanchez@toppenish.wednet.edu

Washington State Association for Supervision and Curriculum Development
825 Fifth Avenue SE ⬧ Olympia, WA 98501 ⬧ (360) 357-9535
www.wsascd.org