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Motivating students through project-based service learning

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IN A SURVEY CONDUCTED BY AN independent evaluator for the California High School Exit Examination, the state's teachers reported that student motivation was the greatest limitation on teachers' effectiveness (Human Resources Research Organization 2003). Because a lack of encouragement is also a primary reason for high student dropout rates, this article will offer proven strategies for addressing the issue of student motivation.

As most educators intuitively know, students learn more when they are creating their own learning opportunities. The "tell me and I'll forget; show me and I may remember; involve me and I'll understand" concept is being acknowledged and implemented in classes nationwide. Students from middle schools and high schools are mastering academic content standards while immersed in hands-on, technology-integrated projects which provide learning experiences that are not usually possible within the confines of the traditional classroom.

Project-based service learning emphasizes educational opportunities that are interdisciplinary, student-centered, collaborative, and integrated with real-world issues and practices. Teachers have found that environments which foster academic achievement through hands-on, authentic learning can motivate students by engaging them in their own learning (Brophy 1986; Lumsden 1994). Students apply and integrate the content of different subject areas at authentic moments in the production process, instead of in isolation or in an artificial setting. Thus, learning becomes relevant and useful as students establish connections to life outside of school. Authentic projects also help to address real-world concerns and develop real-world skills.

Integrating technology with service learning catches and holds the attention of students who have grown up in the digital age and rely on computers, video games, cell phones and digital music players for their information and entertainment. They are neither afraid of technology, nor in awe of it (American Institutes for Research 2002). As an added bonus, many of the abilities that students acquire through technology-integrated, project-based service learning are 21st century interpersonal skills. These include teamwork and problem solving skills, as well as effective oral and written communications skills, which are highly desirable by business communities (U. S. Labor Department 1991).

Project Success Stories

The following are three examples of student-driven service learning projects integrated with technology that engage and motivate California students, while simultaneously encouraging mastery of the academic content standards.

Tracking Arsonists. High school students in Sacramento are working with the local police and fire departments to help identify and track serial arsonists in their community. The students designed a mapping program for the police and fire departments that identifies and plots all fires within the designated jurisdiction by type, origin, size and time of fire. The students were then able to take the fire department data and plot them onto a visual map. This allowed the fire department to view

arsonist patterns visually rather than in a data format, while also enabling them to focus on range patterns.

The students are taking the project one step further and now plan to train fire department personnel to maintain a mapping program that will visually plot arsonist patterns throughout Sacramento County. During the course of this important civic project, students developed technical skills in various software programs and equipment. They also gained important academic and personal skills that included problem solving, critical thinking, research documentation, teamwork and effective communication (Thoene 2003).

Saving Lives. In Riverside County, students whose lives had been touched by gang violence created a forceful, thought-provoking film to dissuade other teens from entering gang life. The film, titled "For Life, " won four awards from Panasonic's KWN Contest. During the production of the video, students perfected their animation skills and learned specific software applications to create movie posters and brochures designed to entice viewers. The community also got involved in the creation of the video. For instance, a hospital technician assisted with the special effects makeup for the student actors, while the sheriff's department provided technical expertise in the staging and logistics of the depicted gang-related shooting.

The process of video production required students to focus attention; to keep on task; and, within a production timeline, to utilize language arts skills such as written and verbal communication, storyboarding and researching. Even more impressive than the authentic learning that took place is the change that occurred in the students, as the message disseminated through their video project was geared toward saving young lives (Delcampo 2003; Hinkson 2004).

Aqueduct Mapping. A student- driven project in Santa Barbara County, known as Mission Santa Ines Aqueduct Mapping, solved a 200-year-old archaeological mystery. Through research, sophisticated electronic mapping techniques and perseverance, students discovered evidence of a previously unknown aqueduct. Their discovery answered the question of where the mission and its adjacent mill complex got their constant and abundant water supply.

To map the ancient water system, students used high-end technology and software programs. In addition, students consulted experts; viewed original documents; and analyzed data and information from archives, environmental impact reports, databases and libraries. Based on their research, the students used GPS units to map four aqueduct locations. After collecting the GPS coordinates for the known ruins, the identified points were plotted and elevation layers were added. By extrapolating along the elevation contour lines, a topographic map was created that allowed students to determine where they might find additional evidence of the aqueduct. The class discovered two previously unknown sites along the 500-foot contour. Additional analysis revealed where the aqueduct system crossed a road into a commercial development that was built in the 1940s.

The evidence was submitted to archaeologists from the Santa Barbara Trust for Historic Preservation who confirmed the sites as well as the students' theory. Then, the class wrote a paper and presented findings at the California Missions Foundation Conference in a series of lectures. The students are currently working on recreating the aqueduct in a virtual reality Web-based animation. Their findings have become part of a historical curriculum for local elementary school classes. The students, their teachers and the mission project also recently received California's 2004 Governor's Historic Preservation Award (Fenenga 2004).

These three examples illustrate what educators have long suspected and research has confirmed: service learning and technology are both motivators for student learning. And students benefit when service learning and technology are combined in programs such as the Environmental and Spatial Technology (EAST) Initiative (Bynum 2004).

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