

## **The STEM Academies at Wheaton High School**

### **Background**

Wheaton High School (WHS), a diverse suburban school located in Maryland just outside Washington, D.C., is organized into small learning communities called Academies, each of which has a college and career readiness focus. The Bioscience Academy and the Engineering Academy are State Certified Project Lead The Way (PLTW) programs. The Bioscience Academy has been recognized by the *Washington Post* as one of the top programs in the area and the Engineering Academy was recognized as one of the top 10 engineering programs in the country by PLTW. The Academy of Information Technology is part of the National Academy Foundation and serves students that are interested in computer programming and website development.

The Academies are relevant to students because they connect to their career interests and allow them to build skills and knowledge through project-based instruction. Each Academy connects students to professionals through job shadowing, internships, field trips, and “lunch and learn” presentations, where professionals join students for lunch and explain their jobs and expertise. Each Academy provides students with a cutting edge, rigorous sequence of four or five courses that culminate in a capstone project.

The Academy programs provide academic supports for students that are struggling and academic extensions for students that need additional rigor and stimulation. A program called “Take Action” is in its fifth year of existence. This program provides students with an extended school day, twice a week, to meet with teachers and mentors in an environment that is focused on developing student self-efficacy and supporting students as they meet their academic potential. On Saturday mornings, students in the Bioscience Academy meet with medical school students who mentor them and assist in the facilitation of study groups around Advanced Placement (AP) biology and chemistry content.

The WHS vision is to prepare all students for success in college. For students who are ready for college before graduating from high school, we provide eight college course offerings, taught by college professors on the WHS campus. As a result of these courses and additional avenues, some students graduate having already earned college credits.

The Academies are centered around a rigorous sequence of elective courses where students apply biomedical, engineering, and computer programming to solve problems and produce projects. The implementation of this cutting-edge curriculum comes at a cost. WHS, working collaboratively with the Maryland State Department of Education and Montgomery County Public Schools, has been able to secure more than \$200,000 of grant money since 2007 to establish and maintain the equipment, materials, and classroom space necessary to provide a 21st century learning environment.

### **Documented Results**

WHS celebrated 222 individuals who completed a STEM Academy program in 2012 and 2013, the highest number to complete programs of study at any high school in Montgomery County Public Schools. The combined scholarship money earned by Academy program completers

equals more than 10 million dollars. Since 2010, WHS has graduated three Gates Millennium Scholars, two Posse Scholars, and a Meyerhoff Scholar. Every program completer wears a special stole at graduation and is recognized at a Program Completer Celebration attended by parents, graduates, and business partners.

Many indicators of student achievement from 2008–2013 show that WHS is moving in a positive direction despite an increase in the FARMS rate (i.e., students receiving free and reduced-price meals) and an increase in the number of students enrolling at the lowest levels of ESOL (i.e., English for speakers of other languages) and in the Multidisciplinary Education, Training, and Support (METS) program for students with interrupted education. One reason for the continual improvement in student achievement is that all students at WHS are encouraged to take Honors and AP courses. Teachers hold students to high expectations and provide strategies that allow students to access the learning. Since 2008, WHS has increased the number of AP tests taken by 106 and the percentage of students earning a 3 or higher on the College Board Examination has continued to increase.

### **Potential Applications**

Many of the models we have created for program recruitment, retention, and academic extension are replicable. The foundation of our instructional programs for biomedical science and engineering results from the rich curriculum and tremendous training received by our teachers.

### **For More Information**

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