EPICS High: High Schools Improving Lives with Engineering Projects

The EPICS High Program is sweeping across the country with 50 schools currently engaged, as well as 23 EPICS High - IEEE international projects in South Africa, India, Africa, Europe, and South America. EPICS High is a project-based, service learning program that partners teams of students with non-profit organizations in their local community. Students work to understand what needs the agencies have and then design, build, and deliver projects to help fill those needs. Through the EPICS experience students gain valuable professional skills including: communication, teamwork, customer service, and problem solving. This hands-on learning is reinforcing traditional learning as students are made to put their knowledge into action, helping them to understand how their studies relate to everyday life.

EPICS High is working to address the decline of students interested in engineering, technology and computing fields by teaching design while serving local community not-for-profit agencies. The EPICS High program is designed to give all students the opportunity to take part, utilizing their individual interests to play a role on a project team. Recent reports from EPICS High schools indicate EPICS is impacting underrepresented populations of students. Of the 2226 students participating, 61% are underrepresented minority populations far surpassing current numbers of minority groups in collegiate-level engineering and computing programs (national average 15%). In relation to gender, 44% of the participants are female (national average 19%). Current EPICS High schools are located in urban, suburban, and rural areas. Over 80% have integrated the program into their academic curriculum. Over 950,000 people have been positively affected by EPICS High projects across the country!

Data from EPICS High student surveys are showing positive results; 63% reported they were more likely to pursue a career in engineering after participating in EPICS High. Of those, 86% were underrepresented minority students. Of students responding they had no interest in engineering when starting in EPICS, 47% of those had a strong interest in engineering after a year of EPICS with 53% of females changing to a strong interest. Two hundred teachers were trained in the 2010-2011 school year.

EPICS has made getting started for schools easy! The first step is to contact EPICS. Trainings are designed to give teachers and administrators the tools and resources needed to implement a program. EPICS High has various successful models from which new schools can draw implementation strategies. To attend a training and find out more about EPICS High please visit the EPICS High website at http://epics-high.ecn.purdue.edu.

EPICS High Schools:

Indiana - Jefferson HS, Columbus Area Career Connection, Bedford North Lawrence HS, Arsenal Tech, Thomas Carr Howe Comm. School, Northrop HS, McCutcheon HS, Indiana Academy, Harrison HS, Park Tudor, and Frankfort HS.

Massachusetts - Leicester HS, Agawam HS, Shepherd Hill Regional HS, and Prospect Hill Academy

California - High Tech HS, Pacific Ridge, Andrew P. Hill, Yerba Buena HS, Pleasant Grove HS, and Wood Middle School.


Michigan - University HS, Huron County Intermediate School District: Harbor Beach, Lakers Schools, North Huron, Owendale-Gagetown, Caseville, Ubly, and Bad Axe.

Texas - R.L. Turner HS

Arizona - Xavier College Preparatory, BioScience HS, and Hamilton HS

Virginia - Chantilly HS Academy, and Foxcroft HS

Pennsylvania - North Penn HS (IEEE/EPICS High Site)

Illinois - New Millennium School, Lake View HS, Westinghouse College Prep HS, Whitney Young Magnet HS, Urban Prep Charter Academy, Percy L. Julian HS, Alcott HS, and Orr Academy HS (all in the Chicago area)

How You Can Support EPICS

EPICS relies on partnerships with corporations, foundations, institutions, and friends of EPICS to carry out its programs. Your involvement can be either in the form of financial support and/or leadership support. Examples of how you can support the program:

- Sponsorship of a high school program and/or team
- Mentor high school teams
- Provide project materials to local schools
- Support to the EPICS Program

Please contact Pamela Dexter at pdexter@purdue.edu
EPICS High Project Examples

Chantilly High School
- Focusing on projects enabling students with special needs to participate in sports with less assistance
- EPICS High teams designed, prototyped and produced ball tossing catapult toys to be used in recreational play by special needs students

Frederick Douglass Academy
- Aquaponics system in Harlem Senior Center to improve air quality and for beautification of the space
- Designed a water quality sampling station for the east river and report findings to the city and local organizations working to improve the water quality
- Partnering with elementary feeder school to design science equipment for their classrooms

High Tech High
- Built a mobile art cart so the students could easily move equipment needed to work outside
- Designed and built a raptor cage for local wild bird rescue organization
- Worked with the Ruben H. Fleet Science Center to design and build new interactive science exhibits and modify existing ones

Agawam High School
- Saltwater tank designed and built with live rock and coral
- 400 Atlantic Salmon were cultivated in engineered tank and released into local waterway
- Rose Garden planted with local middle school while mentoring them on photosynthesis
- Cherry Tree and garden planted with a local school including engineered irrigation system

Columbus Area Career Connection
- Designed and built and demonstration kitchen for the Love Chapel food pantry and assistance facility
- Built an Eagle pen and have designed a flight pen for the Utopia Wildlife Rehabilitation Center
- Designed and built a computerized community holiday light display and continue to update it each holiday season

Xavier College Preparatory
- Researching ways to reduce algae growth at the RIO Salado Habitat Restoration area
- Constructed recycling containers and developed a traffic flow pattern for the cafeteria so each student passes by the containers
- Redesigning an existing classroom to convert it to an engineering classroom