Help is Here

Educating and Aiding Homeless Students
The global economy demands that our future citizens leave high school ready to succeed in both college and careers. Debates about the value of general, academic or technical education are no longer affordable — the global economy demands both deep academic knowledge and skill proficiency for 21st careers.

The next generation of Wisconsin engineers, scientists, technicians, and community-engaged citizens will need a full understanding of science and engineering processes to solve such challenges as making solar energy economical, securing cyberspace, and engineering better medicines.

In more than 100 Wisconsin high schools, recently introduced engineering courses are providing students with opportunities to learn how real-world problems are solved using mathematics and scientific principles. In Project Lead The Way courses, students examine careers in multiple science, technology, engineering and mathematics (STEM) fields directly with local engineers and scientists. Students completing courses such as Principles of Engineering, Digital Electronics, and Aerospace Engineering can receive six or more college credits in various programs offered by the technical colleges and the engineering schools in the University of Wisconsin System or at Marquette or the Milwaukee School of Engineering.

Like Advanced Placement (AP) courses, students’ scores on the end of course exams document their knowledge and competency, as well as the college credit they have earned before leaving high school.

Wisconsin’s economic health depends upon an educated workforce

L. Allen Phelps

Math + Engineering = Economic Future

Mid the rising economic challenges and the substantial reduction in K-12 school funding, school boards and education leaders must prioritize funding resources in ways that serve multiple rather than specialized or single goals.

— Photos courtesy of Project Lead The Way.
Manpower, Inc, an employment services company, released the results of its fourth annual talent shortage survey in May. The survey reports that 30 percent of employers across the globe continue to struggle to fill positions available despite the global economic downturn.

So how effective are these programs in delivering both technical skills and academic outcomes? Researchers at the University of Wisconsin-Madison’s Center on Education and Work recently completed a case study of an engineering charter school located at a large comprehensive Wisconsin high school. The non-experimental data for the 2007-08 school year revealed that the 27 seniors completing engineering courses, when compared to the 300 seniors not enrolling in engineering courses, were significantly more likely to:

- Receive higher composite ACT scores (26.7 compared to 23.1). The average WI Statewide ACT composite score was 22.3.
Attain higher ACT math scores (27.1 compared to 23.2). The average WI Statewide ACT Math score was 22.2.

Complete about the same amount of math and science credits in high school (about 3.2 to 3.4 credits).

Report being involved in career exploration, including talking with adults about career goals and participating in school experiences that help them clearly define career goals.

These findings offer preliminary evidence that graduates’ college readiness — mathematics proficiency in particular — can be raised by students completing engineering and technology education courses in combination with a rigorous sequence of math and science courses. In addition, these findings dispel the myth that engineering and hands-on technical courses are primarily for students headed directly for jobs or technical schools instead of four-year colleges.

In today’s technology-intensive workplace, advanced mathematical proficiency is essential. Many careers in construction, manufacturing, bioscience, and other sectors require the use of statistical tools, analysis of systems, analysis of data, and use of precision measurement instruments to solve routine and non-routine problems. As the National Governors Association have suggested, in today’s economy “advanced mathematics = career readiness.”

In Wisconsin, local education leaders need school board support to work closely with local business partners and with college and university faculty to compile more evidence on how engineering, math, and science learning can be integrated and taught differently yet effectively to all students.

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