

WISCONSIN SchoolNews

www.wasb.org | October 2009

The official publication of the Wisconsin Association of School Boards



Help is
Here

EDUCATING AND AIDING HOMELESS STUDENTS

Math + Engineering = Economic Future



Wisconsin's economic health depends upon an educated workforce

L. ALLEN PHELPS

Amid 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.

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 stu-

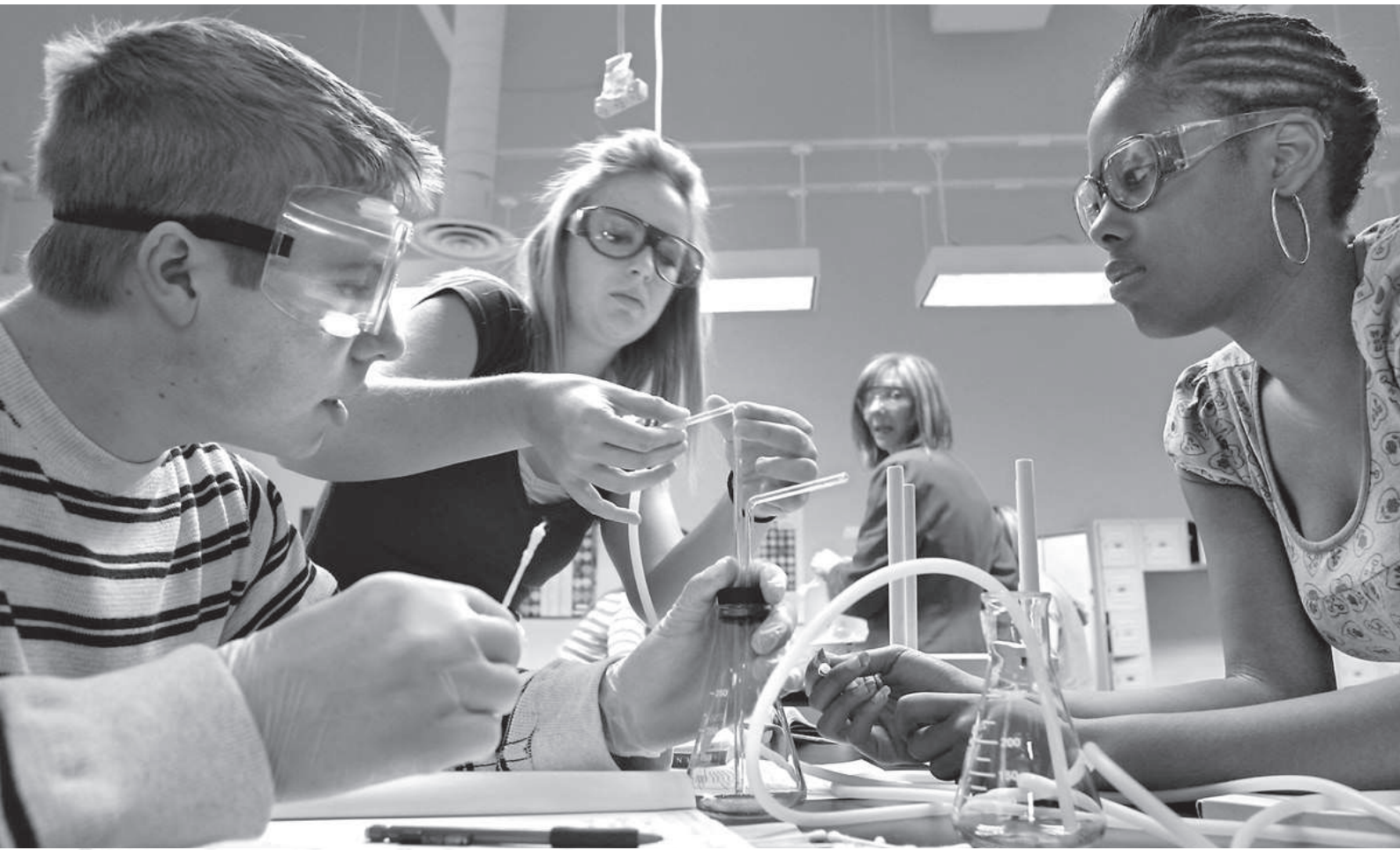
dents with opportunities to learn how real-world problems are solved using mathematics and scientific principles.

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.



— Photos courtesy of Project Lead The Way.



In today's technology-intensive workplace, advanced mathematical proficiency is essential.

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.



Employees WANTED

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.

2009 HOT JOBS

- Skilled Manual Labor Trades
- Sales Representatives
- Technicians
- Engineers
- Management/Executives
- Accounting and Financing Staff
- Laborers
- Production Operators
- Administrative Assistants/PAs
- Drivers

► continued from previous page

- 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. ■

Phelps is a professor of Educational Leadership and Policy Analysis and the director of the Center on Education and Work at the University of Wisconsin-Madison.

Getting at the Core of Public Education

As educators increasingly focus on preparing graduates to be work- and college-ready, a new push to align standards with college and career expectations is underway.

Wisconsin is one of 46 states that have formally agreed to join together to create common academic standards in math and English language arts. The effort, called the Common Core Standards Initiative, is being led by the National Governor's Association (NGA) and the Council of Chief State School Officers (CSSO).

Gov. Doyle and former State Supt. Elizabeth Burmaster signed a memorandum of agreement (MOA) that states:

"the standards will be aligned with college and work expectations, include rigorous content standards, and be internationally benchmarked. The intent is that these standards will be aligned to state assessment and classroom practice. The second phase of this initiative will be the development of common assessments aligned to the core standards developed through this process."

Work on the common core standards is well underway. First to be completed will be college and career-readiness standards reflecting what students should know by the time they finish high school. Next will come national grade-by-grade standards for K-12 students, called "learning progression standards."

Wisconsin is already working on revising its own state academic standards in English Language Arts and Mathematics. The Department of Public Instruction (DPI) is working with Achieve, Inc. to align Wisconsin's standards with the benchmarks of the American Diploma Project (ADP). The DPI is also drawing upon partnerships with business, higher education and the Partnership for 21st Century Skills to make the revisions.

In reviewing Wisconsin's proposed Mathematics standards, Achieve, Inc., noted that the new standards are well aligned with the ADP Benchmarks, which represent the knowledge and skills required for successful entry into credit-bearing college courses and quality jobs. Reviewers indicated students achieving proficiency in these standards will be well prepared for success in college and career.

Achieve, Inc. also noted that the proposed mathematics standards will not only effectively increase the rigor of expectations for all students, but outline expectations that are critical for students pursuing postsecondary opportunities and career options in STEM fields.

Drafts of the proposed PK-12 standards for English language arts and mathematics are available on the DPI Web site (dpi.wi.gov). □