

Vision required to add engineers in Minnesota

By Ronald Bennett, St. Paul Pioneer Press, Aug. 23, 2005

Look behind the headlines. Under the stories about the loss of service jobs, you'll see that manufacturing jobs are declining, too. If you dig even deeper, you may discover what Kevin Hall reported in his Pioneer Press article (Aug. 15): A shortage of engineers in the United States will mean more job losses of all kinds. Here's why.

Engineers take scientific discoveries and turn them into innovative, affordable products and services. They also create jobs. According to Minnesota Technology Inc., for each new engineering job, five other jobs are created.

The United States has about 1.5 million engineers, about 0.5 percent of the population. For such a small percentage of the work force, engineers have enormous impact. This makes sense if you think about it. Almost every product you use was created with the help of an engineer.

William Wulf, president of the National Academy of Engineering, predicts that we will need a million entry-level engineers in the next decade — but our colleges are only producing 65,000 engineers each year. Factor in the retirement of older engineers, and the result is a shortage of about 350,000 engineers by 2012.

By the way, if you think we're only losing jobs to other countries because of labor costs, think again. College students in Europe and Asia are far more likely to study engineering, so their skills are competitive, too.

You can see how these trends will affect the national economy. Let's focus on Minnesota. Our state's economy in the past half-century was built on industries like computers, medical devices, electronics, polymers and aerospace. These all depend on the development of new products and processes designed by engineers.

Our students have the highest ACT scores in the country again; that's good news. But the number of graduating high school students will begin to decline in 2008, and fewer of them are taking technical courses. Minnesota currently ranks in the lower 25 percent for percentage of college engineering students, and for the number of engineering students per capita.

These trends are discouraging. Regional executives have already expressed concern:

- Joel Houlton, vice president of operations at Honeywell: "This is consistent with our view of the future. We are struggling to grow our engineering work force today."
- Dale Wahlstrom, vice president and general manager at Medtronic: "The generation and conversion of knowledge into saleable goods and services, which is what engineers do, is the

basis of social prosperity. I think the (outsourcing) trend we are seeing today is necessary for global prosperity, but is alarming to the U.S. if we plan to sustain our quality of life."

- Dan Conroy, human resources director of Nexen Corp.: "Even when labor-intensive manufacturing goes offshore, the need for engineering talent does not diminish; in fact, it may even increase. One of our greatest resources in the new economy is brainpower."

We know the value engineers provide. We know how many engineers we need, how many are likely to retire and how many students will go to college. We can close the talent gap if we try.

Imagine what would happen if more girls and minorities were encouraged to become engineers. Shirley Ann Jackson, president of Rensselaer Polytechnic University, has said that if underrepresented groups were proportionally represented in science and engineering, there would be no talent gap.

Now imagine a legion of experts ready to help these students. We have it. With mentoring programs and certification, our retiring engineers could teach math and science in K-12 schools, bringing experience and excitement to a new generation.

Schools need to get K-12 students involved in science and engineering, with help from the Science Museum of Minnesota, the Bakken Museum, and summer programs such as the STEPS (Science Technology and Engineering Preview) camps for 6th-grade girls and the St. Paul Connections Introduction to Engineering program for urban high school students, both offered by the University of St. Thomas.

Like engineering itself, preparing students requires vision. We need support from all quarters — educators, industry, government, engineers, everyone — to ensure a healthy economy for the future of Minnesota. With enough engineers, we would retain successful companies, spawn new ventures and create meaningful jobs with comfortable wages. That's the kind of future we all want to see.