Boeing May Get Unprepared Engineers

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EVERETT, Wash. (AP) -- Adam Bruckner has noticed a disturbing trend during his 38 years as a University of Washington professor of aeronautics engineering.

His tests are less rigorous. His students, less prepared. Even the format of classes is changing, morphing into something that requires less manpower and smaller amounts of state money.

Bruckner, the chair of the only aeronautical engineering program in the Pacific Northwest, is facing a crisis: a malnourished budget and a bad case of student unpreparedness.

The best students are as good as they ever were, Bruckner said. But the rest aren\'t keeping pace with technological innovation in the industry.

Add this to the mix: The state\'s aerospace industry is in dire need of engineers. Demand consistently exceeds the state\'s production at a two-to-one ratio, and that supply gap is expected to widen as the industry\'s aging work force retires in droves.

"There aren\'t enough seats in the university here to be able to generate that many students," Bruckner said. "We don\'t want to just crank people out for the sake of cranking people out. We want to produce good engineers."

The problem isn\'t specific to Washington state or to one field of engineering, though a dearth of aerospace engineers is more noticeable here in the shadow of aerospace giant Boeing Co.

Washington\'s universities report high levels of interest from students and high demand from employers, but there\'s a bottleneck in the system. Under increasing funding restraints, programs can\'t hire enough faculty and staff to educate that many engineers at least, not good ones.

The crisis calls into question Washington\'s place in the country\'s aerospace landscape, a big red flag as Boeing moves some operations to other states and countries.

But it means an even bigger question mark for the United States\' competitive edge in engineering, especially as China and India ramp up efforts to produce a more educated work force.

Bruckner recently visited Beihang University in China, a university that focuses solely on aeronautical and astronautical engineering. It has about 26,000 students.

Compare that to the UW\'s 240 aeronautics students.

"It\'s just mind-boggling," Bruckner said. "They\'re nipping at our heels really hard."

The U.S. does have similar schools; Embry-Riddle Aeronautical University enrolls more than 20,000 aeronautical students at campuses across the country, including five in Washington state.

"The U.S. is still at the forefront," Bruckner said. "But the U.S. has to be really careful and make investments in education in support of engineering."

Last summer, the UW\'s College of Engineering received 880 applications from students deemed qualified for admittance into programs. Among other factors, students have to maintain a grade point average of 2.5 or higher in prerequisite classes.

The department denied admission to 370 qualified applicants due to lack of space.

"It just doesn\'t make economic sense to turn these students away," said Eve Riskin, associate dean of academic affairs for the UW\'s College of Engineering.

Capacity is a problem that plagues many large state universities, especially when state support drops and demand for admission goes up as it often does in a recession.

Washington\'s public universities have a clear role in the state\'s economic mechanisms: to act as an engine. But recently, that engine is increasingly fueled by rising tuition a sore spot for many students who protest the merit of a state university that can\'t keep costs low.

High-paying, high-demand academic fields such as engineering and computer science seem the logical choice for investment, considering that two of Washington\'s largest employers are Boeing and Microsoft.

But when the Legislature slashes funding, cuts often reach universities\' vital organs.

With local schools unable to produce enough trained professionals, companies such as Boeing and Microsoft consistently hire from out of state or other countries, according to a study conducted for the state by Seattle-based McKinsey and Co.

It\'s a concern that\'s registered on university administrators\' radar for years.

Before the state\'s budget deficit ballooned into the billions two years ago, state lawmakers toyed with the idea of building a fourth UW campus in Snohomish County. When spending cuts hit higher education in 2008, the plan landed in limbo.

Early on, the goal was for the north campus to focus on high-demand fields such as engineering and technology.

John Lederer is painting a picture of Washington\'s landscape as it relates to engineering degrees.

Each piece of data is another brushstroke.

Lederer is the associate director of academic affairs for the state\'s Higher Education Coordinating Board. He\'s writing a paper on the state\'s production of engineering-degree production, an authoritative report that looks at problems and solutions.

In July, he\'ll present that to to the state\'s Council on Aerospace. The data he\'s collected will serve as a guide to where the state\'s deficiencies lie and if those shortcomings can be combated in a Legislature that doesn\'t have money to spend.

Diagnosing the problem is the easy part.

"At this point, trying to expand programs just really isn\'t in the cards for many of these institutions that are just trying to serve the students they have at the doorstep," Lederer said.

Even before funding cuts, state universities weren\'t producing engineers at a level that met demand. Levels have been fairly flat since around 2003, ranging around roughly 1,300 degrees a year.

Lederer said he hears demand estimates that hover around 2,000 per year and that number is expected to grow in the future.

The UW\'s aeronautical engineering program produces about 80 graduates every year. Projections looking forward to 2016 show an annual demand of 311 aeronautical engineers statewide.

Then there\'s the age factor. Lederer said the state\'s engineering workforce is growing collectively older most are in their late 40s or 50s.

"They\'re going to be ready to retire in the next 10 years, or working their way toward it," he said. "They\'re going to need to be replaced by newly trained engineers."

That timeline adds another layer of urgency to the state\'s engineering crisis. In the past, similar skills deficits were combated by directives from the Legislature to increase enrollment in those fields.

But that takes scarce state funding.

"There\'s no reason that wouldn\'t work in the future," Lederer said. "It\'s really up to the Legislature to decide if that\'s how it wants to spend its available resources."

It comes down to a question of priorities.

"We need the state to decide how much we value this industry, and if these jobs go to Washington citizens," he said. "If that\'s the goal, we need to have the right capacity."

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