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AAU to Take Up Challenge of Improving Undergraduate Science Teaching

By Paul Basken

The nation's research universities have long struggled with complaints that they don't do enough to educate undergraduates in science. Their main association thinks the time is ripe to tackle the problem again.

The Association of American Universities, which represents 59 of the nation's largest research institutions, announced on Wednesday a strategy for encouraging its members and their science faculty to put a greater emphasis on teaching.

The AAU said it hopes to develop new guidelines for assessing and improving the quality of undergraduate science instruction, and to find universities willing to serve as demonstration sites. It is also forming a nine-member committee to help devise the plan.

Despite having its strategy still in development and decades of disappointing attempts before it, association leaders said they're confident that new factors this time around—such as a raft of recent research that has identified best teaching practices—will prove decisive.
"It's an old problem, not a new one," acknowledged Hunter R. Rawlings III, who took over as the association's president in June, after a career that included the presidencies of Cornell University and the University of Iowa. "But we've got several things now working in our favor that give us some optimism."

The encouraging new research cited by Mr. Rawlings includes a report issued in the past year by the American Association for the Advancement of Science, "Vision and Change in Undergraduate Biology Education: A Call to Action." Its recommendations include encouraging teachers to emphasize the mastery by students of core concepts, with a heavy use of hands-on learning.

Many universities have begun adopting such approaches, Mr. Rawlings said, but not enough. Because of the data showing the effectiveness, he said, teachers who are also scientists are increasingly likely to embrace them, he said.

The concepts do appear to enjoy growing acceptance, said Charles R. Henderson, an associate professor of physics at Western Michigan University who studies educational strategies. Mr. Henderson described the growing use of techniques in which professors form small groups of students and encourage them to discuss a concept among themselves until they feel comfortable with it.

Another hopeful trend, Mr. Rawlings said, is the growing tendency among research universities to involve undergraduate students in their labs. Universities consider it a selling point for students, and the practice helps generate interest in the subject, he said.
Yet universities have been trying for decades to tackle what they've widely recognized as an insufficient quality of undergraduate science education, and the AAU project faces many of the same obstacles that have stymied universities in the past, Mr. Henderson said. Examples include the Boyer Commission report, from 1998, which "cited many of the same problems that people are still citing," he said.

The sticky problems include faculty who feel they're better rewarded for a successful research career than for a strong teaching record, the lack of sufficient student-assessment methods, and the lack of agreement on effective teaching methods, Mr. Henderson said.

Mr. Rawlings said he's hopeful that faculty, with significant financial resources and incentives, will find the time and motivation to apply some of the new teaching methods that have been identified as successful.

Some of those resources could come from private donors, he said, and others could come from federal sponsors such as the National Institutes of Health and the National Science Foundation, both of which have staff assisting the AAU initiative.

It may seem unrealistic to expect too much help from the federal agencies, given the government's budget pressures, Mr. Rawlings said. At the same time, the agencies are suggesting it's a priority, he said, "so I'm pretty optimistic on that."
For the last eight years, AAU has made our university all giddy with anticipation of being invited as we just cannot hack it in the US News and World Report rankings. To meet the AAU fraternity requirements, we have made undergraduate education the last priority in the university. Just go and look at the AAU criteria http://www.aau.edu/about/membership... (click on Policy document), and see the lip service AAU gives to undergraduate education. Listening to AAU about undergraduate education is akin to listening to Gaddafi talk about democracy.

I'd like to have said it better, but I could not. I'm all for strong undergraduate teaching (not to mention learning) on our campuses. But until the institutions themselves (a) take it seriously and (b) provide incentives and tenure-eligible positions that are realistically obtained through quality scholarship of teaching, this is a dead end.

The main problem will indeed remain that "faculty are better rewarded for a successful research than for a strong teaching record" to the point that teaching is perceived as shameful - the less you teach the better you are among your colleagues. The problem should be approached from its root cause and reform the way research is done in universities: (a) rank universities by their research output not by how much grant money they spend; (b) more accountability on how research money are spend (I have seen equipment worth hundreds of thousands of dollars that was NEVER used and was purchased just because grant money had to be spent); (c) encourage industry to sponsor academic research in the form of tax breaks or other incentives. Regarding (c): such research will always be more applied in nature, more result oriented and more relevant to the geographic location and mission of the university. And most importantly it can be done with undergraduate students. As long as universities will compete on how much research money that spent rather than the number and quality of publications, inventions etc., teaching will be more of a platform from where to pursue research grants. It might sound harsh, but it is the reality.
It seems to me that the University of Nebraska and Syracuse have stumbled onto a laudable method by which to improve their undergraduate education program: losing membership in the AAU and the albatross of research-at-all-costs that sustaining that membership (apparently) now entails.

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