Regional

The role of universities in our society

College Talk
Mike Shaw

I recently had a philosophical discussion about the role of universities in our society with my collaborator George Richter-Addo. George is originally from Ghana, and we met in graduate school at the University of British Columbia in Vancouver, Canada, where we worked in the same research group. He is currently a professor of chemistry at the University of Oklahoma.

Both of us have had the experience of being chairs of very different chemistry departments. In our discussion, we compared notes about the changing role of the Ph.D. degree, especially in fields like chemistry.

So what is a university? We both agreed on the basics. Universities are set up by society to provide a safe environment for a segment of society to have the freedom to explore new ideas and, in doing so, challenge commonly held truths and beliefs. In our opinion, universities are supposed to do two things very well: create new knowledge through research and disseminate that new knowledge back to society through teaching.

George Richter-Addo, above, and Mike Shaw, at right.
SIUE photos

SIUE is a predominantly undergraduate institution. Oklahoma is what is referred to as a "research one" university, meaning that they grant doctorates and research is a significant aspect of its mission. Both types of institutions grant bachelor's degrees, where students become expert in what has generally been accepted as 'the knowledge in the field.' Master's students, however, start to probe areas in the field that have not yet reached the textbooks, and tackle ideas that are not yet fully developed.

"With a Ph.D. degree, you investigate something totally new that no one has thought about before," said George. "You create new knowledge that did not exist in the first place, and this is an intellectually challenging activity."

This is a topic I find fascinating. My own education included life-changing undergraduate research opportunities, which I am happy to say SIUE's chemistry department provides to its undergraduate and master's students. The concept of research is "delving into the unknown." Students delve into something that there is no ready answer to, so they are going to explore and find the answers.

"Experience and exposure to undergraduate research is a very powerful point to make when you are applying for Ph.D. programs," George added. "It means that you have been exposed to the unknown and you still like it."

Tackling the unknown can be exciting, but lab environments should also be treated with respect. "There has actually been a big push over the last two decades to gain more student understanding of the seemingly unnatural environment in a chemistry laboratory," said George. "There has been a very big push with safety on all university campuses." In addition to safety, the overall quality of the student experience should be at the forefront.

The university has a responsibility to keep the quality of student discovery high.

"A Ph.D. graduate should be able to evaluate and critique claims of new knowledge," said George. "A Ph.D. program is set up to entrust the Ph.D. graduates with the integrity of the field. Integrity is a powerful and meaningful word, because society does not want the truth to be diluted by false claims of discovery." We also spoke about the concept of "multidisciplinary" work.

"Scientists of the past usually had a broad spectrum of training," George explained. "Advanced instrumentation meant more experimental data and eventual specialization and then over-specialization. Multidisciplinary is simply getting us back to looking at an issue from several angles and fields without the limitations of over-specialization."

At each level of training, we like to see "capstone experiences" that tie various concept areas together. At SIUE we have the "senior assignment" presentation for bachelor's students, and many programs have thesis defenses for master's students. I love these events, where students demonstrate that they can shine professionally on their own.

"The Ph.D. defense is similar, but could be a daunting experience for some people if they don't develop the confidence needed to present and defend their claims of new knowledge," added George. "You are challenged in an intellectual and safe environment to demonstrate competence that you have looked at all sides of the issue, and what you are presenting is the best possible interpretation of that new knowledge."

For the student to go into new intellectual territory and create new knowledge, this means developing leadership skills and challenging the status quo. This has the potential to create some conflict, but the goal is to keep it at an intellectual level, and to occasionally challenge what society believes to be the truth.

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