

## Why Faculty Members Do Not Need to Directly Involve Students in their Scholarly Work

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Mitch Malachowski raises a topic that I have heard come up often within CUR. It concerns whether the common practice in the sciences, which is to have students directly involved in the research of the faculty member, should be applied across all disciplines. On the one hand, I have to agree with the premise that it is desirable at predominantly undergraduate institutions (PUIs) to directly involve students in the research of faculty members, thereby enhancing student learning through the process of scholarship. In many ways, this is a significant part of what CUR is all about. On the other hand, though, I do not think it is wise to diminish the potential scholarly and educational accomplishments of faculty members who do not directly involve students in their work. Furthermore, I think it would be a significant mistake to revise tenure and promotion guidelines so that the primary evaluation of faculty scholarship at a PUI is based on the impact it has on student learning.

In his commentary, Mitch describes the common reasons that are given for why we undertake research at a PUI. Several of these clearly show that there are valuable aspects of scholarly activities besides student learning. As much importance as I place on student learning, I believe the significance of these other values (e.g., contributions to one's field, faculty vibrancy, faculty development, potential for effective teaching, benefits to society, institutional prestige) should not be diminished at PUIs. It is interesting that in the hiring process at most PUIs, a doctorate degree is virtually a universal requirement, whereas there is rarely an expectation of any formal prior learning experience on how to be an effective educator. Since the aim of a Ph.D. thesis is to contribute new knowledge and insights to a discipline, presumably the requirement that faculty members at PUIs have a doctorate means that we must be expected to continue the practice of contributing new knowledge to our discipline. As much as the primary mission at PUIs is student learning, another mission is often having faculty members contribute knowledge to their discipline. When I evaluate a colleague for tenure or promotion, I believe that the quality and quantity of her or his scholarly contributions are important, regardless of whether or not that individual's scholarship directly involves students.

What is it that concerns me about tenure and promotion guidelines that evaluate student learning as the primary measure of research and scholarship? One problem I have is identifying the criteria that I would use to systematically assess student learning obtained from a research collaboration.

There are only a handful of studies that have made any progress assessing the value and learning outcomes of undergraduate research (1). We currently operate under a generalized assumption that student participation in research is beneficial without having figured out a systematic way to actually measure the quality of learning that occurs. I am not willing to say that all research advisors provide a comparable learning experience, and instead recognize that some research advisors provide better research and learning experiences than others. But I am at a loss to understand how I would meaningfully document the quality of learning that occurred in an advisor/student relationship, if tenure and promotion guidelines incorporated that as the primary factor in evaluating scholarly work. What I believe would happen is that personnel decisions would rely even more on numbers instead of quality, because we do not yet have appropriate measures for determining and comparing the quality of student learning that occurs in an individual advisor-student relationship. The faculty member who advises eight students would end up being viewed as making a more important contribution than the faculty member who advises four (twice as valuable, in fact), irrespective of whether the four students may have gotten a better educational experience than the eight. In a system that primarily valued student learning, I believe that advising lots of students would soon take priority over the quality and quantity of a person's scholarly work and the quality of student learning that occurred.

The second concern I have with a tenure and promotion system that values scholarly work for its direct impact on student learning is that it can lead to a diminishment of the standards for scholarship. If all that really counts is student learning then it may not matter whether the student actually discovers something new, and it may not matter whether I am persistent enough to get work through to the point of publication. It is easier for me to have students "discover" something that I know but they do not. By remaining ignorant of the literature, a student can work on a project, conduct experiments, interpret data, and draw conclusions, whether or not the work is original. Such a project could be an excellent learning experience.

Presumably, the value of an original project rests on the supposition that it is more difficult to create new knowledge than it is to learn something that is already accepted by people in the field. Creating new knowledge demands an exceptionally high level of proof and an exceptionally high level of

persistence, and as a result has the potential to take learning for both the student and faculty member to a heightened level. Losing sight of the need for original work, and not feeling any particular need to bring work to publication, has the distinct possibility of promoting a relaxing of standards and expectations, which I believe is detrimental to student learning and faculty development. Placing primary emphasis on student involvement and learning does diminish the emphasis on bringing high quality ideas to completion.

In this discussion, it is also worth examining the nature of a student's contribution to an original project in different disciplinary models of student scholarship. If the student is directly involved in the work of the faculty member then the idea for the project almost always originates from the faculty member. For example, the chemistry projects that I undertake in collaboration with students that are supported through external research grants are my ideas. The students do not design an original project. The success of a project is critically dependent on the contributions of the student, the most important of which are the intellectual contributions she or he makes in reading and understanding the literature, designing and carrying out experiments, and interpreting data. The students make significant independent contributions during the course of their work, and I firmly believe that they have an excellent learning experience. They understand that the intent is to publish the work, and become fully aware of the burden of proof and stringent demands that will be necessary for such an outcome. Given initial direction and subsequent advising, many of the students do end up as coauthors on a peer-reviewed publication.

I am also a member of the Environmental Studies (ES) Program at Bates College. Students at Bates complete ES majors in a broad spectrum of areas encompassing the humanities, social sciences, and sciences, and must complete a two-semester senior thesis. On occasion I have had to advise a thesis student with interests other than chemistry. For example, a few years ago I advised a senior who was interested in doing a thesis related to the National Outdoor Leadership School (NOLS). His interest in NOLS arose entirely because he had taken one of their summer courses and liked it. I knew nothing about NOLS at the time, but my passion for hiking and backpacking and my interest in wilderness preservation made me a reasonable advisor. When I first met with the student, he had no idea of an actual thesis question. Over the next couple of months we participated in an iterative process in which the student had to design a suitable thesis topic. He would bring an idea to me based on the reading and thinking he had done, and I would criticize it, usually identifying certain aspects of his idea that had potential and others that did not. Eventually we agreed that an interesting thesis topic would be to evaluate whether the growth of NOLS and its expanding dependence on corporate and government support had caused the organization to sacrifice aspects of the core values on which it was founded. The student's initial thought was to examine all of NOLS' initiatives (easily a doctoral-thesis length project), but at my insistence he refined it down to

one particular program (the Leave No Trace Program).

In my opinion, this student had an outstanding learning experience. What especially impressed me was the learning that occurred as he designed from the beginning his own thesis project. It was clear to me that my chemistry thesis students, who do not go through such an exercise, do not really appreciate the process and difficulty of designing a high-quality, original thesis. My chemistry students were missing an important aspect of the entire process of creating new knowledge. The student who did the project on NOLS did write an excellent thesis, although without the head start of an idea, he ran out of time and there were gaps that needed more refinement if we were interested in publishing the work. In some ways, he missed out on the exacting demands that must be met when attempting to publish new knowledge. I am convinced that students under both sets of circumstances can have excellent learning experiences. Provided the advisor holds the students to high standards and expectations, I also believe these learning experiences go far beyond what happens in most courses.

What impresses me at my own institution is the number of faculty members in the humanities and social sciences who do not involve students in their own scholarship, but because of the high standards they must apply to their own work, advise excellent senior thesis projects on original topics. I would argue that as long as the standards are high — and I do believe that faculty members who are active scholars are more likely to maintain high standards and expectations of the thesis students they advise — students have the potential to get an excellent educational experience whether it's the faculty members' work or not.

I believe that our goal ought to be to involve all undergraduates in an original scholarly project, whether or not the idea originates with the faculty member, and whether or not faculty members involve students directly in their own scholarship. I see nothing wrong with a system in which different disciplines have different cultures and expectations for how original scholarly projects are done.

## Reference

1. For a review of activities designed to assess undergraduate research, see "Assessment and Evaluation of the Undergraduate Research Experience" by Joanne Stewart ([http:// abacus.bates.edu/acad/depts/chemistry/twenzel/white\\_papers.html](http://abacus.bates.edu/acad/depts/chemistry/twenzel/white_papers.html)).

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