

THE IMPORTANCE OF TEACHING FROM AN ASSISTANT PROFESSOR'S POINT OF VIEW

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This paper was presented at the AIChE San Francisco meeting on behalf of J. Q. Doe, an Assistant Professor at Behemoth State University. It was written based on conversations with many Assistant Professors who each face some very hard decisions on what the importance of teaching should be in their career as a college professor.

I APOLOGIZE FOR NOT being here in person to present my remarks on the importance of effective teaching. However, discretion dictates that I remain anonymous. I feel that I do get along very well with the senior members of my department and the department chairman but this is a touchy subject and I could rub some of them the wrong way. I am now in my third year at Behemoth U. I got my Ph.D. from a well-known University after having spent two years in process development work in industry following my undergraduate degree. During my graduate work I did some paper grading as a teaching assistant but had no real classroom teaching experience. Various more peripheral experiences including coaching and tutoring led me to think that I would like to be a teacher and that I would enjoy the lifestyle associated with college teaching. The thoughts which are presented here are both anecdotal and personal and have led to my opinions on the importance of teaching.

I was fortunate to be looking for a teaching job during a time when colleges were looking for

teachers. I had all the interview opportunities and offers that I wanted. At each interview I presented a seminar on my thesis research. I assume that this was to see if I could speak at all and to give the faculty a chance to find out if I knew a little bit about the area. The informal discussions I had were always about research interests, writing proposals and equipment needs. There was occasional discussion of my subject matter interest and teaching loads. The latter almost always with an implication of apologies for how much I *would* have to teach. There were no discussions about teaching style or methodology during the job hunting process.

When I started I received no official instructions or advice about teaching or about classroom policies. I was simply told the two courses to which I was assigned. I got past outlines and examinations from departmental files and one of the faculty members did offer his problem solutions and pointed out some of the sticky sections of the book. This was very helpful, but there was virtually no interest shown in the launching of my teaching career by anyone except the same faculty member. He, I discovered, had a reputation for good teaching and seemed to be interested in whether or not I was running into any real difficulties. Since then, my teaching has developed through my own concerns.

I have observed that teaching is not a subject of general interest to the faculty. Lunchroom conversations, whether within the department or with mixed groups, range over: University politics and budgets, state and national interests, sports, money and investments, research projects and grants, and occasionally major curriculum issues. Teaching and what goes on in the classroom are almost never discussed casually by the faculty. Department seminars and school activities are also always of a technical or subject matter orientation. To be fair, whenever I have

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asked selected colleagues about aspects of teaching they have been most responsive and helpful.

No one has come to observe my classroom efforts. I saw the department head, and on another occasion the dean, peeking in the back door of my classroom to get a glimpse of what was going on. There has been no review of my tests or grading policy, but then I haven't done anything extreme in this regard either. We do have a University-wide rating form which is sent to the students after each semester. About half of them return it. The results are given to me and to the department head and probably to the dean. I am now about a seven out of ten in everything and that seems to be fine with our head and the tenure committee. No one has ever really officially discussed what the results mean nor talked about using them to improve any aspect of what I do.

It does turn out that student rating of teaching is discussed every year when the results are received. However, the results are not taken very seriously. The usual kinds of "what do the students know" comments are heard. One professor in Economics gets some attention for his "lenient grading equals good rating" exposition which is made in the Faculty Senate every year. Many of the other arguments tending to devalue student ratings, such as those mentioned by McKeachie in his article in the October 79 AAUP Bulletin, are also heard. Emphasis here is on asking alumni since "you don't know good teaching til you've been out of school for awhile" and poor teaching forces students to learn for themselves. Of course no one has read the literature on evaluating teaching.

The equivalent of Mole's Mystery Hour is sure to be cited by someone as a final convincing example. The mole taught a graduate chemistry course. It is reported that some of his students had never even seen his face. He shuffled into class head down, opened his notebook on the front table, turned his back to the class, and proceeded to mumble toward the board while writing with his right hand and simultaneously erasing with his left. The students had little idea what he thought he taught other than the general subject for the day. Since he gave monstrous exams they were forced to study prodigiously on their own in order to be prepared for anything. As a result, those students who did take his course learned a phenomenal amount about the subject, typically at the expense of progress on anything else during that semester. Most students simply avoided the

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course. This type of story doesn't tend to promote good teaching.

The situation around the campus is even worse. Engineers have long been interested in their students even if teaching as such is not a great concern. We do have ASEE and the various education interests within our professional societies. The few people with great interest in teaching that I found from other departments would be overjoyed if they could get their colleagues to what they look upon as the engineering state of enlightenment in this area. There is an underfunded teaching center on campus but it seems to be largely ignored. I have also been warned about a sad history of people who try to be visible and active in the cause of good teaching but don't get tenure. The School of Education, of course, does some things with respect to teaching but they are largely derided by the rest of the faculty.

I have argued that good teaching is not a very visible subject on campus and in the department. Clearly, it also is not a part of the reward system. Research is the obvious part of the faculty role that is all that teaching is not. There are so many cliches on this contrast that I cannot avoid using some of them. All of the non-tenured faculty receive letters from the dean and department head advising us of our progress after the annual performance review. My friends' experience is the same as mine. Regardless of how much research we seem to be doing we are urged and or threatened to publish more and get research grants. People seem to get tenure and promotions for research and are not downgraded for weak teaching performance. The converse is certainly not true. The story I know about a University letting go a very good researcher who was a terrible and disinterested teacher has the sad ending that the announcement of a prestigious research grant caused the terminal appointment decision to be reversed. Not surprisingly there had been no student protests in support of this assistant professor. The vice president's oft repeated statement that we expect our faculty to be good at both activities has a very hollow ring. In fact,

good research seems to lead to less and less teaching and more and more time away from campus and the students.

The publication system seems to make it easier to recognize research by providing a convenient bean counting procedure. We seem to be strangely reluctant to try to really evaluate teaching. As a profession we're willing to categorize colleagues as being poor researchers or uninterested in research. It seems to be much harder to acknowledge poor teaching. A psychology department faculty evaluation system discussed at the ASEE Summer School in 1977 showed this very clearly. Department faculty rated their colleagues over a full five point scale from 1.1 to 4.8 on research but restricted their range to 3 to 4.5 on the teaching evaluation. The poor teacher label is clearly one which is neither given nor accepted easily. Isn't this an anomaly in light of my earlier discussion?

My opinion formed over years as a student, alum, and now teacher is that teaching effectiveness is the most important characteristic of a University. It determines the attitude and learning of students which in turn determines the long term

reputation of the University. Good teaching is also the source of tremendous satisfaction to the faculty. Sadly, the University reward system does little to recognize and develop effective teaching and in fact seems to actively discourage it. My own strategy, evolved after very painful soul searching, is to give teaching the minimum possible amount of my time. My teaching ratings should show me to be competent and I do prepare for classes and try to be friendly to the students. I try nothing new or different and I have the minimum possible number of office hours. These things take too much time and effort. It goes without saying that committee assignments, advising and similar unrewarded time consumers are avoided like the plague. I hope to let my interest in teaching come to the surface in the future, after I'm over the tenure-promotion hurdle. In the meantime I would be glad to have you visit me in the lab to talk about my research and maybe steering a few graduate students my way. If I'm not in the lab look for me in the library working on a proposal. Don't look for me in my office during the day—students might find me also and right now I can't take the time to help them learn. □

ChE letters

Dear Editor,

In the Winter 1980 issue of *CEE*, Cassano [1] discusses at length various "definitions" of the rate of reaction and finally concludes that "The rate of reaction expression is the "sink" or "source" term in the continuity equation for multicomponent systems which will take into account the creation or destruction of the said species by chemical reaction." The unnecessary inclusion of the word *expression* spoils this otherwise satisfactory statement.

If *process rates* are distinguished from *rates of change*, the confusion regarding the "definition" of a rate, which exists in much of the literature and which is not greatly clarified by the above article, is easily avoided.

Process rates, such as the rate of a chemical reaction, are conceptual and mechanistic. They depend on the local environment, as described by the thermodynamic potentials alone in the special case of a homogeneous reaction. Process rates are ordinarily not measurable. Rather they are inferred with some unavoidable uncertainty from measured rates of change in space or time through the equations of conservation.

This distinction is discussed and illustrated extensively in my book [2]. It has also been noted by Dixon [3], Peter-son (reference [16] of [1]) and many others.

The primary positive contribution of reference [1] is the illustration of the reduction of the equation of conservation of species to several of the special cases which are commonly used to infer rates of reaction from mea-

sured rates of change.

1. Cassano, A. E., "The Rate of Reaction: A Definition or the Result of a Conservation Equation?," *Chem. Eng. Educ.*, 14, 14 (1980).
2. Churchill, S. W., "The Interpretation and Use of Rate Data: The Rate Process Concept", revised printing, Hemisphere Publishing Corp., Washington, D.C. (1979).
3. Dixon, D.C., *Chem. Eng. Sci.*, 25, 337 (1970).

Best regards,
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The Carl V.S. Patterson Professor
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ChE books received

"What Every Engineer Should Know About Patents," W. G. Konald, Bruce Tittel, D. F. Frei, and D. S. Stallard. Marcel Dekker, Inc., New York, 1979, 136 pgs, \$9.75

This book, written for engineers, outlines the law of intellectual property with emphasis on patent law. Its objective is to provide a perspective of patents, trademarks, trade secrets, and related matters, without undue use of specialized legal language and terminology.

"Principles and Applications of Electrochemistry," 2nd ed., D. R. Crow, John Wiley & Sons, New York, 1979, 232 pages (paperback), \$13.95.

This book presents in a simple and concise way the basic principles of electrochemistry that students require and some of its applications.