

---

# Letters to the Editor

## On Zucker's "Teaching at the University Level"

Steven Zucker (*Notices* 43 (1996), 863) is correct in his assessment that most students are not prepared for college courses when they enter college and that the student is ultimately responsible for learning the course material. It would be a mistake, however, for an instructor to use the above observations as a rationale for not improving his/her teaching skills; a mistake that seems implicit in his dictum "We should be ... reforming the students, not the calculus." Reforming the students may require reforming the course.

There is a growing body of research showing that some instructional practices are more effective than others. (See, for example, the National Research Council's series "Enhancing Human Performance".) For instance, as Zucker recommends, defining the role of the instructor, being clear about the amount of outside work expected, having the text read before class, etc., help the student by providing some guidelines. But why stop there? If a further change in teaching method would improve the students' ability to learn the material, why not go further?

Instructors should be willing to work at teaching just as they expect their students to work at learning. This includes applying research in learn-

ing and instruction to mathematics courses.

*Jeff Connor*  
*Ohio University*  
(Received July 25, 1996)

I read Steve Zucker's "Teaching at the University Level" in the August 1996 issue with great interest. We have always had a large number of students in our classes with little knowledge of what it means to learn the content of a college-level course. Now we are lucky to have any that do. This is due not to any lack of intelligence, at least on the part of those attending elite private colleges, but rather to having been taught that "learning" consists of taking careful notes in class; doing routine homework problems with clean, definite answers; and doing well on examinations in which they are expected only to get the "correct" answers to problems almost identical to those worked by their instructor in class. Demanding that work on examinations be presented coherently or examining students on material not "covered" in class is almost certain to guarantee poor student evaluations—a sure way to commit academic suicide by untenured faculty.

I value highly Zucker's recommendations on how to explain to freshmen the difference between high school and university-level courses and will incorporate them into my own teaching. They can only help students to realize the importance of learning how to be independent, that they cannot apply mathematics they do not understand, and that almost all important questions are open-ended and do not have definite answers that can be put on a multiple-choice exam. Yet I cannot be optimistic that carrying out his excellent recommendations is nearly enough. By making student evaluation forms (that are usually read only long enough to associate numerical values to the responses) the principal way of deciding what constitutes good teaching, we end up by punishing those who try to teach students how to learn while rewarding those who make them feel content with old bad habits that turn a college "education" into an amusing game of little value.

*Melvin Henriksen*  
*Harvey Mudd College*  
(Received August 15, 1996)

The article "Teaching at the University Level" by Steven Zucker in the

August *Notices* really hit the mark. He clearly identifies a problem that has bothered us all, namely, that many, if not most, of our students have no idea of what it means to truly know something well or what it means to learn. He correctly locates the problem as being in the students' expectations and perceptions of what learning is as shaped by their high school experience. The solution he offers is simple, direct, and elegant. Because of Zucker's article, our department has prepared an "Academic Orientation" sheet for use by instructors of freshman classes this fall, and this sheet is based on Zucker's article. There is an ongoing series of discussions on our campus about improving undergraduate education. I alerted our academic VP to Zucker's article. The VP liked its emphasis on student expectations and readiness. The VP had the deans read it and discuss it. In the fall the article will also be used as a starting point in another of those continuing series of discussions.

It is too early to tell what impact the article will ultimately have, but it has stimulated a lot of discussion. Thank you for publishing a useful article.

*William Lampe*  
*University of Hawaii*  
*(Received July 31, 1996)*

Steven Zucker's article "Teaching at the University Level" in the August *Notices* was right on the mark. It should be republished in the *Chronicles of Higher Education*, where college administrators can read it.

The single statement "A high school is a place where knowledge is taught, while a university is a place where knowledge is sought" best describes the philosophical difference between the approaches of these two types of institutions to learning.

Unfortunately, the notion that a university is a place where all (student as well as professor) are to be actively engaged in the pursuit of knowledge is rapidly being replaced by a new, pernicious philosophical notion. The guiding principle of this new philosophy states that the student is a customer and has as its (unspoken) corollary that professors are really sales

clerks whose main goal is to protect the university's revenue stream in the face of declining enrollments by seeing that the customer is properly served. (Other expressions of the same desires by administrators to protect and even enhance revenue streams are embodied in the notions that we must "retain at-risk students" and "move toward a policy of open enrollment". At least this is the kind of nonsense I hear on my campus.)

The unfortunate consequence of this view of the student as customer is that the student need play only a passive role in the learning process. Thus as professionals we are driven to activities such as "calculus reform" instead of "student attitude reform". It is not calculus that needs reforming; it is the attitudes of students toward learning and the attitudes of administrators toward scholarship.

The student is, of course, not a customer, and the professor is most assuredly not a sales clerk. However, there is perhaps one business analogy which, while not perfect, does make at least some sense. That is the idea of the student as franchisee and the professor as franchisor. This analogy at least has the advantage of requiring some considerable responsibility for learning on the part of the student. In order to obtain a business franchise, the franchisee must first be trained in the management and operations practices of the franchisor. Should he or she fail to meet the standards of the franchisor, the time and money invested in the pursuit of the franchise is lost and no tears are shed by the rest of society over that particular outcome.

When universities attempt to protect their revenue streams by admitting weak students and watering down the curriculum in order to accommodate them, they defraud these students and their parents of valuable time and money that could be better spent on technical college and vocational college training while at the same time cheapening the value of the university degree. Turning our universities into glorified high schools or forcing them to compete with junior colleges and vocational schools for students will cause far more harm to them and to the students they serve

than will be caused by gradually downsizing these institutions and permitting them to serve only those students with sufficient intellectual interest, motivation, and ability to make the most of a university experience.

*Howard A. Levine*  
*Iowa State University*  
*(Received August 19, 1996)*

### On the Continuation of the Summer Mathfests

In my role as the Mathematical Association of America's (MAA) associate secretary, I have the responsibility to schedule the MAA scientific program at its two national meetings. So I was interested, perhaps more than the average AMS member, in what the secretary of the Society, Robert Fossum, had to say in his piece "Adieu to the Mathfest" (*Notices* 43 (1996), 836).

I object to bidding "Adieu to the Mathfest". It is curious that Fossum doesn't even mention the MAA at all, since it is a fact that up to and including this year the MAA and the Society have cosponsored the Mathfests. Starting next year, after a unilateral decision by the AMS to not hold any more summer meetings this decade, the MAA will sponsor the Mathfests by itself because it believes the meetings serve a very real and valuable function in the mathematics community.

It seems to me that one of Fossum's goals is to explain why the Society is acting in the best interests of its members in not continuing its participation in the traditional summer Mathfest. He lists activities "...attractive to the modern specialized mathematician" that all seem to stress mathematics research. I agree that research is a major interest of AMS members, but it is far from our only professional interest. Unfortunately, the overall effect of Fossum's column is to encourage the belief that AMS members will not attend a meeting in the summer unless it is a pure "research" meeting.

I am not convinced. I believe that AMS members—whether we consider ourselves researchers, practitioners, teachers, or even one of "(T)he gurus of a subject..."—will be interested in

organizing and attending sessions at the MAA's 1997 Mathfest in Atlanta (August 2-4). Already we know that Elliott Lieb will deliver the three Hedrick lectures. I believe the Program Committee for the 1997 Mathfest will develop a strong mathematical program, including short course(s), lectures that introduce the nonspecialist to new research results throughout the discipline, a lively program by and about students (undergraduate and graduate) of mathematics, and general sessions of interest to mathematicians in areas covering research, teaching, and the general state of the mathematics profession. In this regard, if you have an idea you would like to pursue relative to the Mathfest program, please contact the chair of this committee, Barbara Osofsky.

The Society as an organization will not be supporting the MAA's 1997 Mathfest in Atlanta directly, but I expect and hope that many of my fellow AMS members will be involved in an integral way. In any event, the Mathfest does not qualify to be bid adieu to: the rumors of its death were greatly exaggerated in Fossum's well-intentioned piece!

*Donovan H. Van Osdol  
University of New Hampshire  
(Received August 20, 1996)*

### The Vanishing Regular Position

Susan Friedlander discusses the trend people are calling the "vanishing regular position" in her second page editorial (*Notices* 43 (1996), 956). She focuses on the perception of many that replacing regular positions with "freeway flyers" may lead to "marginalization of the mathematics departments".

She suggests a key danger in the trend; it drops the appeal of a long-range mathematics research career to young people. I agree. Still, I would like to clarify the following comment she made: "...some departments (e.g., the University of California, Irvine, and the University of Michigan) have been able to counter the trend to a certain extent by converting graduate student positions to junior faculty positions,

one consequence of which is that more courses are taught by Ph.D. mathematicians."

That may be the operating position of the U. of Michigan under the chair of Donald J. Lewis. While we believe the Irvine department was sensitive to the issue, we believe other departments are, too. Our method, however, started with an observation on who filled Visiting Positions. For considerable time, the department had a few senior visitors, who returned to appointments regularly. Starting with chair Ronald Stern and continuing with chair Peter Li, the department consciously discouraged repeats of senior visitors. Instead, it encouraged faculty to create mentoring situations for younger mathematicians.

Further, UCI actually increased its graduate support during this time, and is still doing so. In particular, the department increased the fraction of graduate students holding summer instructorships. This gave them opportunities to improve their teaching skills (and money). Now fewer courses have freeway flyers and senior visitors as instructors, and many more are taught by visiting assistant professors (academic year) and graduate students (summer).

The department benefited with a rejuvenation for having these talented young people around. Yet, there is no simple guarantee this model will continue. It depends on the chair (and sometimes the dean) and his or her consultants. That is why it is so important that someone like Professor Friedlander put this issue out for discussion. There are many models that might work if a conscious effort is made by chairs of departments. The mathematics community needs young Ph.D.s (although that is not the subject of this letter). Still, it cannot keep producing them and then prefer employing non-U.S. trained Ph.D.s. If we train them, then we must share responsibility for their employment.

*Michael D. Fried  
University of California, Irvine  
(Received August 27, 1996)*