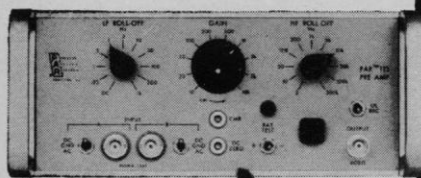


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## LETTERS

### Academic Question

No doubt Hayes's report on the relation of research and teaching (16 Apr., p. 227) will earn him criticism from both skeptics and true-believers. His scales are crude, his student evaluation item not germane, and so forth. Actually, Hayes merits praise for his ingenuity in devising variables and for utilizing administrator ratings.

He might well, however, have introduced other related studies which are at least the equal of the two (Voeks's and Bresler's) he uses. For example, earlier Guthrie (1), also at the University of Washington and using the data bank that Voeks employed, correlated student evaluations of teaching effectiveness with the ratings given by a panel of seven faculty judges. Maslow and Zimmerman (2) at Brooklyn College intercorrelated faculty colleague ratings of teaching effectiveness and of creative effort with student evaluations. Isaacson *et al.* (3) identified factors by peer judgment of college teachers evaluated by students in psychology at the University of Michigan. Hammond *et al.* (4) reported on pilot investigations of the relation between research and teaching effectiveness at the University of Wisconsin and at Stanford. Stallings and Singhal (5) conducted an extensive analysis on a stratified sample of University of Illinois faculty on the relation of teaching effectiveness and a sophisticated scale for publication. And Hoyt (6) introduced and validated a new measure of teaching effectiveness (attainment of course objective), which he correlated with faculty productivity, promotion rate, and merit increases at Kansas State University. Had Hayes built on this research, his fine contribution would have been enriched.

Finally, for those intrigued with the problem Hayes investigated, two as yet unpublished studies will be of interest. One, by Trowbridge (7), relates faculty productivity as measured by Ph.D. production to research dollars and teaching effectiveness, in six liberal arts departments in a major large university. The other, carried out by Clark and Blackburn (8) in a small liberal arts college, introduced for the first time professorial self-rating of teaching effectiveness and overall contribution to the college, a measure demonstrated to be equivalent to research

productivity in a university setting. These self-ratings are correlated with student evaluations, judgments by colleagues, and administrator ratings. The finding of the very low correlation between the professor's judgment of his performance and how students and administrators rate him on teaching effectiveness is frightening. The academic man seems to be an extremely poor judge of how well he is doing. This may partly account for why he is as concerned as he is at promotion time.

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### References

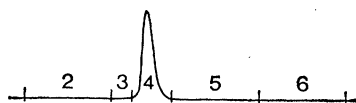
1. E. R. Guthrie, *Educ. Record* 30, 109 (1949).
2. A. H. Maslow and W. Zimmerman, *J. Educ. Psychol.* 47, 185 (1956).
3. R. L. Isaacson, W. J. McKeachie, J. Milholland, *ibid.* 54, 110 (1963).
4. P. E. Hammond, J. W. Meyer, D. Miller, *J. Higher Educ.* 40, 682 (1969).
5. W. M. Stallings and S. Singhal, *ERIC, ED 027 838* (1969) (available from ERIC Document Reproduction Service, P.O. Drawer 0, Bethesda, Md.).
6. D. P. Hoyt, "Instructional Effectiveness: III, Interrelationships with Publication Record and Monetary Reward" *Research Report 10* (Kansas State University, Manhattan, 1970).
7. K. Trowbridge, thesis, University of Michigan (1971).
8. M. J. Clark and R. T. Blackburn, "Assessment of Faculty Performance: (1) A Methodology and (2) Some Correlates between Self, Colleagues, Students, and Administrators," in preparation.

... Inasmuch as teaching and research are just two of the duties that a faculty member is called upon to perform, I see no justification in assuming that there exists either an inverse or a direct relation between the ability to do research and the gift of being a good teacher. The two factors could just as easily be totally independent of one another. In addition the correlations that Hayes and Bresler employ in their studies give one no information on causality.

A key point that seems to have been overlooked in these studies is a clarification of what constitutes good teaching. It would be a valuable contribution to determine what characteristics are embodied in the concept of good teaching by different individuals at various levels within the academic hierarchy. A graduate student and an undergraduate are likely to have somewhat different criteria of what constitutes good teaching. A researcher who stimulates students to do research in a one-to-one situation may be a poor lecturer within the confines of an undergraduate course; a showman often has a more stimulating influence at this level.

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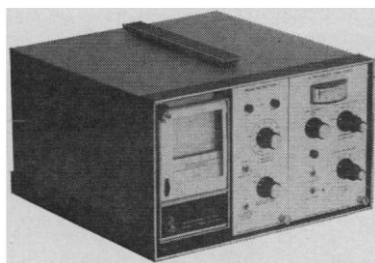


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One also has to weigh such factors as the course content, the level of scholarship demanded, the ability to counsel students, and the talent for turning students on. It would appear obvious that an undergraduate and a department chairman would weight these factors differently. It is my feeling that this difference in attitudes has a more profound influence on the academic conflict in question than does the teaching versus research controversy (which has assumed dimensions of jousting with windmills).

Many of the teaching-versus-research studies that have been done simply result in quantifying the obvious. One only has to look for an academic position to realize that one's apparent research potential as evidenced by publications is an important criterion in hiring. Thus it is not surprising that it is also an important factor in promotion. Studies of this sort might be more useful if they employed more realistic indices of research achievement, such as the number of times an author's paper is cited rather than how many papers he has produced.

DAVID DOW

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Hayes's article provided some interesting bits of data heretofore unavailable. However, it is my opinion that his measures of "teaching ability" were entirely inadequate. He showed that his two measures—student evaluation of the teachers' performance and quality of teaching as judged by the department head—do not covary (his figure 2), then tried to relate these measures to other variables. Before any definitive answers can be made to the questions posed by this article, student performance must be made to play a central role in the evaluation of "teaching ability."

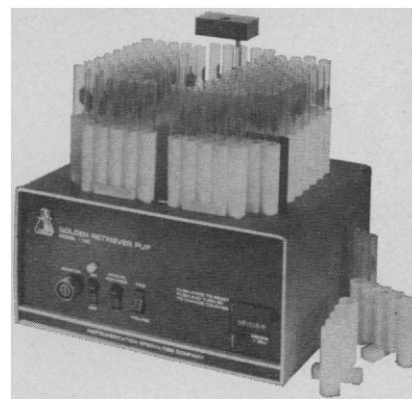
TIMOTHY F. ELSMORE

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### Transliterations' Pitfalls

The "barbarisms" of transliteration that Wartofsky points out in his review of an English translation of a Russian collection of essays on the logic of scientific knowledge (19 Feb., p. 662) results from the unfortunate translator's attempt to comply with the "International System for the

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