

DOCUMENT RESUME

ED 283 446

HE 020 420

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TITLE Teaching for Learning.
PUB DATE 87
NOTE 6p.
PUB TYPE Viewpoints (120) -- Journal Articles (080)
JOURNAL CIT AAHE Bulletin; v39 n8 Apr 1987

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Classroom Research; *College Instruction; *College Students; *Educational Objectives; Elementary Secondary Education; Expectation; Higher Education; Instructional Improvement; *Learning Activities; Performance; *Student Participation; Teacher Effectiveness

ABSTRACT

Ways that teachers can promote student learning are discussed, based on findings from research conducted over the past several decades. Also considered are the role of teachers in evaluating the effectiveness of their own teaching, teachers' perspectives concerning educational objectives, and ways to obtain student feedback about instruction. One important research finding is that when students are actively involved in the learning task, they learn more than when they are passive recipients of instruction. Since students generally learn what they practice, it is helpful for the teacher to consider how closely related the learning tasks are to desired learning outcomes. A similar issue is how closely related test questions are to the desired outcomes. Another research finding suggests that if teachers set high but attainable goals, academic performance will usually rise to meet expectations. The value of helping teachers develop classroom research skills to enable them to evaluate the effectiveness of their own teaching is addressed. An instrument, a Teaching Goals Inventory, is being developed to ask teachers to select one class and state the importance of various teaching goals for that class. (SW)

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TEACHING FOR LEARNING

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by K. Patricia Cross

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It has been almost four years since *A Nation at Risk* united growing dissatisfaction with education in America into an educational reform movement. The thirty or more major reform reports that have appeared since are in solid agreement that education in the public schools and in colleges and universities falls short of "excellence."

Suggestions for reform in higher education have much in common with those for elementary/secondary education, but there are also some interesting differences. Reform in the public schools seem to center around the quality of teaching and the quality of the workplace. In colleges and universities, the emphasis is more on curriculum than instruction, i.e. on *what* is taught more than or *how* it is taught.

What schools and colleges have in common in the 1980's reforms is that

in both cases, the reports look beyond the classroom teacher for action. The advocates of reform in the secondary schools place responsibility for improvement on those who train, select, and supervise teachers. In higher education, the responsibility for educational reform is in the hands of curriculum committees and the collective faculty who are urged to take action to increase requirements and raise standards. So far, there has been little discussion in either secondary or postsecondary education about what individual teachers should be doing to improve learning in their own classrooms. While we talk easily of teaching *and* learning, we are generally uncomfortable talking about teaching *for* learning. I think we need to begin to talk boldly about what teachers can do to *cause* learning.

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From research conducted over the past several decades, we know some useful things about how to promote student learning. I have distilled the findings from this research into three major conclusions that can be stated quite simply. For all the research that has gone into establishing these conclusions, they sound embarrassingly obvious, yet they are frequently ignored in school and college classrooms.

1. WHEN STUDENTS ARE ACTIVELY INVOLVED IN THE LEARNING TASK, THEY LEARN MORE THAN WHEN THEY ARE PASSIVE RECIPIENTS OF INSTRUCTION. Nothing very surprising in that. But research shows that classrooms vary enormously in the way time is used. In some classrooms, students are actively engaged in learning 90 percent of the time; in others, they may be involved only 30 percent of the time. Clearly, some teaching methods are more likely to engage students than others. After hundreds of studies comparing lectures with discussions, for example, we find the discussion method somewhat superior to lecture in experiments involving retention, transfer of information to new situations, problem solving, thinking, attitude change, and motivation for further learning (McKeachie, et. al., 1986). These are important outcomes, supporting the call for more discussion and fewer lectures. But the measured differences between lecture and discussion are not large—probably because student engagement is a more important variable than method of instruction. An excellent lecture may get excellent involvement, while a poor one may get none. A lively discussion may engage

everyone—a wandering one, very few. The involvement demanded by teaching methods such as PSI, Mastery Learning, case study, and interactive computer programs is likely to be quite high, but involvement alone will not result in productive growth. That leads to a second major research conclusion.

2. STUDENTS GENERALLY LEARN WHAT THEY PRACTICE. If they practice making errors in skills courses or sloppy thinking in discussion, then that is what they learn. If teachers ask questions in class or on tests, calling for little more than memorization of facts, then that is what students will learn. If there is no feedback on performance, students can go an entire semester without much indication of whether their learning is productive, nonproductive, or counterproductive.

A relatively new research variable, labeled "academic learning time" or ALT, is defined as time engaged in learning related to desired outcomes, during which a student experiences a high success rate (Berliner, 1984). We



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can state it rather simply: students need to be actively and *successfully* involved in learning tasks that lead to desired outcomes. Nothing at all surprising about that. What is surprising, perhaps, is how frequently research demonstrates that Academic Learning Time shows enormous variation from teacher to teacher.

I have not been able to locate studies at the postsecondary level that have attempted to measure ALT, but professors could make a rough gauge of their own use of it by asking themselves two questions. The first is, how closely related are the learning tasks I assign to the learning outcomes I desire? If a desired outcome is independent thinking, and the learning tasks are informational reading assignments and note-taking during lectures, then the ALT will be quite low.

The second question is, how closely related are the test questions I use to the outcomes I desire? If a desired outcome is the ability to communicate clearly, and the test consists of multiple-choice and true/false questions, then students are not likely to practice successfully what the teacher wants them to learn, and ALT once again will be quite low.

3. IF TEACHERS SET HIGH BUT ATTAINABLE GOALS, ACADEMIC PERFORMANCE USUALLY RISES TO MEET EXPECTATIONS. This has been labeled the "Pygmalion effect," and there is considerable evidence of its operation in both secondary and postsecondary education. Richardson and his colleagues (1983) found, in their observation of college classrooms, that there is sometimes an unspoken agreement between teacher and students that neither will make very heavy demands on the other. Thus teachers don't work very hard at teaching, and students don't work very hard at learning. It is a reasonable guess that neither shows much growth or improvement. Miami-Dade Community College found that when they raised expectations, in a move

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that some criticized as racist, student performance rose to meet the new standards (McCabe, n.d.).

There is no argument in the research community that these conclusions are significant factors in student learning—nor, I suspect, does any teacher question their relevance. Yet researchers consistently find that such common sense practices do not exist in many college classrooms. The authors of the 1984 NIE Report, *Involvement in Learning*, concluded that “undergraduate education could be significantly improved” if we simply applied what we already know.

Now I want to turn to assessment proposals. We in higher education are putting a lot of faith in assessment as the route to attaining quality in undergraduate education. According to a recent *Campus Trends* report issued by the American Council on Education (El-Khawas, 1986), three-fourths of all college administrators think that assessment is a good idea whose time has come. More interesting, however, is the finding that 91 percent of college administrators think that assessment should be linked to instructional improvement. Most authorities agree. Turnbull (1985, p. 25) observes that “the overriding purpose of gathering data is to provide a basis for improving instruction, rather than keeping score or allocating blame.” The Education Commission of the States’ 1986 report asserts that “Assessment should not be an end in itself. Rather it should be an integral part of an institution’s strategy to improve teaching and learning . . .”

But in most colleges and in most states, we have yet to forge the necessary links between assessment and instruction. So far, classrooms continue to be regarded as the mystery boxes of education. What we really want to know is, What are students learning in classrooms and laboratories and anyplace else we are consciously striving to teach them? Yet what we are proposing to do is to bypass the classroom and go directly to assessment—usually large scale assessments taking place at institutional or state-wide levels.

Unfortunately, this approach to assessment is not going to tell teachers much about what students are learning in their classrooms, and therefore, it is not going to be very helpful to them. Since our classroom-based system of education is organized and funded on the assumption that something important happens when teachers meet students in the classroom, teachers are going to have to get better information from assessment if we expect to improve the quality of undergraduate education.

A few colleges, such as Alverno, with extensive experience and heavy faculty involvement in assessment, have managed to make a profound impact on teaching. But most colleges, I predict, will conduct their assessment, add a few more course requirements, tighten academic standards, and see that students toe the line. Despite all of the current enthusiasm for assessment, it looks as though it will stop short of the classroom door, doing little to improve the quality of learning in the average classroom.

It is for this reason that I proposed at last year’s AAHE National Conference the development of a new set of skills and tools for college teachers that I called “Classroom Research.” The purpose of Classroom Research is to help teachers evaluate the effectiveness of their own teaching.

Most teachers really don’t know how effective they are as teachers. Classroom Research gives them

quicker and better feedback on what students are learning and how they are responding to teaching. A second goal of Classroom Research is to get teachers intellectually involved with the challenge of teaching by helping them clarify what they are trying to do, and assess the impact of their teaching on student performance.

The problem with earlier efforts to get teachers to state teaching objectives was that goals became the servant of measurement rather than vice versa. Behavioral objectives became downright silly because the task was to state, as a teaching objective, whatever we could measure. It serves no useful purpose to lower our educational aspirations because we cannot yet measure what we think is important to teach. Quite the contrary, measurement and assessment will have to rise to the challenge of our educational aspirations. I am not confident that is the case in most of the current plans for assessment.

Leaving aside the discussion about goals, let us ask the question, What are *teachers* trying to do? Ironically, that is one of the least researched questions in higher education. We rarely ask teachers what they hope students will learn from them. Most surveys directed to faculty attempt to describe their relatively unalterable characteristics. A national study conducted in 1973 was primarily concerned with faculty characteristics, but Alan Bayer also included some questions about teaching goals. He found that 97 percent of the teachers in community colleges, four-year colleges, and universities thought that developing students’ abilities to think clearly was “essential” or “very important” in their teaching of undergraduates. Almost as many thought that mastery of knowledge in a discipline and increasing the desire and ability to undertake self-directed learning were important (92 percent and 89 percent, respectively). It would be interesting to know what

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teachers did in their classrooms to prepare students for self-directed learning, or how the 47 percent subscribing to the development of moral character or the 57 percent endorsing the achievement of deeper levels of students' self-understanding went about implementing those goals.

The theme of this conference is "Taking Teaching Seriously." I, for one, would like to know how college teachers think about student learning. To that end, I am developing a Teaching Goals Inventory (TGI).^{*} It asks teachers to select one class and state the importance of various teaching goals for that class. We are currently in the process of pilot testing an inventory consisting of 48 items distilled from the literature on cognitive and affective goals and outcomes of higher education. The collection of data on teaching goals raises some interesting research questions—for example, do teachers in community colleges espouse different goals from those in liberal arts colleges or universities? Do teachers in physics have different goals from those in history? Do the teaching goals of experienced teachers differ from those of inexperienced teachers? Do part-time and full-time teachers have different goals? How do the accumulated goals of classroom teachers relate to institutional goals? Collectively, faculty serv-

^{*}Appreciation is expressed to Elizabeth Fidler a graduate student at the Harvard Graduate School of Education who served as research assistant in the development of TGI.

ing on curriculum committees are quite likely to endorse—and sometimes promise—the development of self-understanding or moral character. Preliminary evidence from the TGI indicates that at one college no teacher said moral development was an important goal of his or her teaching. How then does it become a goal of the college?

These are interesting questions, and we will pursue some of them, but my major interest in developing the TGI is to provide teachers with a profile of their instructional priorities. Once we determine the major clusters or factors of teaching goals, we can devise a set of assessment measures that will tell teachers whether students are learning what teachers say they are trying to teach. That will take the form of a set of feedback devices indexed to teaching goals.^{**}

Feedback devices are tools that tell teachers how students are responding to their teaching. If, for example, a teacher states that mastery of subject matter is an essential goal of his or her teaching, then the traditional classroom test is a fairly good feedback device. Almost every teacher is interested in content learning to some extent, and we (those of us in the profession of education) know a fair amount about how to construct tests that are reliable and valid. However, most college teachers know almost nothing about constructing classroom tests. They use very primitive measures because they have never been exposed to existing knowledge about how to construct a test that will provide maximum information about student learning. Tests are frequently used simply to sort and grade students.

The other problem with classroom tests is that they are frequently *final*

^{**}Appreciation is expressed to NCRIPAL of the University of Michigan, the Harvard Assessment Seminar for funding, and to Tom Angelo, graduate student at HGSE who served as research assistant.

exams, and feedback comes too late to improve teaching for that class. Some teachers, however, have devised effective ways to find out what they need to know about student reactions *during* the semester. A physics professor at the University of California uses the extremely simple device of "minute papers" to obtain student feedback on classroom learning. He stops class one minute early four or five times during the term and asks students to write the answers to two questions: 1) What is the most significant thing you learned today? and 2) What question is uppermost in your mind at the end of this class session? This gives him excellent feedback on whether students are understanding and whether there are important questions to which he should respond (Wilson, 1986, p. 199).

Another frequently used feedback device is student evaluation of teachers and courses. In two-thirds of the four-year liberal arts colleges, academic deans claim that systematic student ratings of instruction are "always used" in the evaluation of faculty (Seldin, 1984). Yet teachers claim that they do not find student ratings, collected for purposes of evaluation, especially helpful in improving teaching. That's perhaps understandable, but it's too bad.

Students are a rich and virtually untapped resource for the improvement of teaching. Research is now reasonably clear that college students are generally reliable and unbiased judges who tend to give the highest ratings to those from whom they learn the most (Gaff and Wilson, 1971; Centra, 1977; Cohen, 1982; Gleason, 1986). No research or evaluation project or faculty development program could possibly hire classroom observers with sixteen years of experience observing teachers day in and day out on good days and on bad with such a good opportunity to

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judge the impact of teaching on learning. That makes it sad that we don't use students to help teachers as well as to evaluate them, and doubly sad that we don't train students to be careful observers of their own learning.

Designing student feedback forms that are collected by the classroom teacher midway through the semester rather than at the end and that offer constructive reactions to teaching would help students be better consumers of education as well as help teachers be better providers of it. Ultimately, of course, all of our information about student learning comes from students, in the form of outcome measures, or value added, or self reports on reactions to teaching.

Classroom research is primarily aimed at individual teachers for classroom use, but it would also seem to

be an ideal way to engage departmental faculty or teachers of multiple sections in discussions of teaching goals and the assessment of accomplishments.

We need, of course, to recognize that some measures of student learning are quite difficult to construct. Some people have spent entire careers trying to measure creativity or critical thinking or ethical behavior. It is true that we know the least about measuring the things that are most important to us as educators. I don't think that means that we wait until the "experts" have devised the appropriate measures. Most college teachers are bright, creative people, with high motivation for devising measures of student learning outcomes. Moreover, there is increasing evidence that academic skills are best studied in the context of subject matter content.

We need the full participation of classroom teachers in this reform movement. Our national goal to improve the quality of undergraduate education necessarily starts in the classroom. Most of the research on

college student outcomes that is highlighted in *Involvement in Learning* and other reform reports consists of interpreting research on college students that has been conducted over the past twenty years. It is heavily weighted toward full-time students of traditional college age.

As valuable as that research is in demonstrating the importance of creating campus environments that are supportive of and conducive to learning, dramatic increases in the commuting and part-time student population has changed the college environment. Campuses are more comprehensive and impersonal, and on-campus extracurricular activities are replaced by part-time jobs, family responsibilities, and day-to-day struggles to survive.

As this trend continues, what students learn in college will be more and more dependent on what they learn in classrooms. The teachers and students in those classrooms carry the heaviest burden they have ever carried for the quality of education. It is, indeed, time to take classroom teaching seriously. ■

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