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ARTICLES

Research in Support of the College Teacher

B. CLAUDE MATHIS

College teaching has traditionally been regarded by a majority of its practitioners as a profession having much in common with the ministry. Those who commit their lives to the front lines of higher education often do so with a dedication which suggests having been called to the task by whatever teleology their disciplines embrace. Teaching in this context becomes a mystical skill which, in its existential unfoldings, loses its artful essence if studied in the objective light of empirical analysis. Those who attempt to study teaching and learning do so at the risk of creating a network of knowledge about the process of education which never reaches beyond the disciplines involved in its establishment.

Educational researchers and psychologists are the major contributors to the present state of our knowledge about teaching, learning, and the process of education. Educators, especially instructional developers, have at their command a content which says much about teaching and learning. We seem to be most effective, however, in communicating with each other rather than with a public which neither shares our frame of reference nor understands the way we articulate it. Our careful attention to the pragmatics of research has somehow obscured the possible usefulness of many of the general principles in our discipline which could have practical implications, especially for teaching. We need to begin to think beyond the immediate form of our data.

The need to move from the general to the specific—from basic data to specific application—is no more apparent than in the neglect given by researchers to the adult learner and to the teacher × subject × student interactions which determine much of the effectiveness and efficiency of education in post-secondary institutions. The call for lifelong learning as the dominant characteristic of educa-

tion in the years ahead clearly makes the adult learner a special target for research efforts. We might begin with some of the following kinds of examinations of already existing data:

(1) Research on learning and motivation since the late 1940's has been dominated by an extension of Thorndike's Law of Effect in the direction of a pragmatic and parsimonious examination of the relationships between reinforcement and performance. That students differ in the time needed to learn a specific performance is a fact which any perceptive teacher can attest to; yet, research has very little to offer concerning the reasons for this phenomenon other than to refer generally to differences in intelligence, aptitude, and other constructs which are often more rationalizations than reasons for pecific behaviors. John Carroll (Carroll, 1963) has given us a very practical schema for conceptualizing student learning in his analysis of learning as a function of time needed in relation to time spent. Aptitude, opportunity, perseverence, the ability of the learner to understand instruction, and the quality of the instruction all interact to influence learning. Individual performance results from just such an interaction and from the general influence of one variable alone. Potential reinforcement contingencies are implied through such interaction.

Bloom (Bloom, 1974) has extended Carroll's thinking by introducing mastery learning as a different way to think about schooling. Bloom's concern about the critical relationship between time and learning, especially his distinction between total time spent in class in comparison to time spent on specific learning tasks, has about it the sound of reform in the way we now treat the teacher as the single most important variable for classroom learning. Time on task may be equally important, with or without the teacher.

One of the most difficult concepts to communicate to college teachers is the multi-dimensional aspect of reinforcement and its relationship to learning. B. F. Skinner has done us a service by providing a pragmatic logic for self-directed learning, but he has not helped by his insistence on parsimony in his treatment of reinforcement and performance. Adult learning is not as simple as he seems to make it for those who are unaware of the complexities of operant conditioning. For most teachers, Skinner and reinforcement are the same. The reinforcement model for learning is still quite uni-

dimensional for the majority of those who admit to its application. Reinforcement needs to be examined more frequently with respect to factors such as age, ethnic background, and subject-matter differences. One person's reinforcement can be another's punishment. Reinforcement as a principle of learning is of no use to a college teacher until it includes, in a practical way, some accounting for individual student differences.

(2) One very consistent body of literature about verbal learning has been almost totally neglected in the search for applications to problems of learning with college students and adult learners. The classical work of Benton J. Underwood on the effects of practice, proactive and retroactive interference phenomena, and meaningfulness has much to say of practical value for teaching and learning, yet its applications both in the classroom and to self-directed learning have not been realized. One overriding result of Underwood's lifetime of research on verbal learning has been the conclusion that the more you practice the more you learn, yet this seemingly simple conclusion has been all but forgotten in the rush to include more and more content in the college experience. This practice effect is powerfully potent when meaningfulness is accented.

We still teach in a system which emphasizes that evidence for learning has been obtained when we can summon from our students the first correct response. This initial example is all our system demands. Underwood feels that an initial correct response only indicates that the learner can perform in an appropriate context. Learning does not begin until a second correct response is made; hence, the importance of practice. To some, this may be the same as the phenomenon of overlearning, but the implications for teaching have not been recognized. Underwood's data suggest strongly, as do other data about learning, the importance of individual differences in the acquisition of specific performances.

Carroll's inclusion of opportunity to learn as an important variable implies that practice must take place at a time when the learner is most receptive to the effects of practice. Student differences being what they are, opportunities for learning to take place should be multiple and varied, and not controlled by the usual regimentation of institutionalized learning schedules.

(3) The research literature on the relationship between incentives

and learning is well developed, yet we have only begun to chart the interaction between incentives, interest, and age. Stanford Ericksen's (Ericksen, 1974) excellent book about teaching the young adult contains much practical information which can be useful for teaching the young adult. The literature of higher education has much to say about the kinds of young adults who have always gone to college. Very little is known about those young adults who are just now beginning to go to college in sizable numbers. Student characteristics are much more heterogeneous, both within and between institutions, than was the case in the years both before, and even after, World War II. Everything we know about incentives and motivation tells us that student motives for seeking a college education are more diverse than they used to be. Yet, we still teach as if one universal system of incentives will satisfy today's heterogeneity as it did yesterday's homogeneity.

(4) No theory of adult human development yet exists to help us understand the adult learner who continues to seek out learning experiences after the formal undergraduate and graduate experience. A classic article by Harold Hodgkinson (Hodgkinson, 1974) underscores the need for an extension of the work of Levinson, Chickering and others who are trying to map the developmental tasks of institutions they seek for a college education. Hodgkinson's article is a useful summary which should appeal to most faculty. He points out, however, that the preliminary research to date on adult development has been done primarily on a male population.

Many teachers at the college level exhibit misconceptions about teaching and learning which are easily refuted by research, yet they maintain their misconceptions because refutations are rendered unpalatable by the idiosyncratic communication habits of the researcher. We need to understand, and use, the many languages of higher education in order to combat misconceptions such as the following:

1. Theory has nothing to offer of practical value to the classroom teacher.
2. The best teaching methods are those that are the oldest.
3. Frequency and repetition are no longer useful tools for learning.
4. Training has no place in higher education.
5. The only factors which affect learning are in the learner.
6. The teacher is crucial for learning to take place.

Robert Glazer (Glazer, 1968) has written about additional assumptions which he considers untenable. Briefly, these are:

1. Knowledge acquired in the classroom is related to the goals envisioned by the instructor.
2. In any classroom, students are similar in aptitudes, prior achievements, and backgrounds.
3. Previous achievement is less important than aptitude in the process of learning.
4. Students all learn the same way in the same amount of time.
5. Lectures and books are the most potent methods for all students.
6. Relearning is not important in acquiring knowledge.
7. Grades are the best way to evaluate learning.
8. Ph.D. programs of study produce good teachers.
9. Teaching is an art that cannot be taught.
10. Students learn best by exposure to that structure of knowledge which is defined as "best" by the scholars in any discipline.

Any of the myths, misconceptions, and untenable assumptions can be refuted by research. The literature of the behavioral sciences and higher education is rich with reliable conclusions about student differences and learning. We should be more pragmatic and less timid about the applications of what we think we know. If research is to have any impact on teaching and learning at the post-secondary level, we must begin to make what we know meaningful to those of our colleagues who do not speak our language.

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