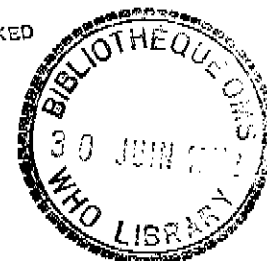




STUDY GROUP ON THE TRAINING AND PREPARATION
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THEORETICAL BASE FOR TEACHER-TRAINING PROGRAMMES

by

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It would be foolhardy to attempt in any brief working paper a summary of the theoretical₂ constructs outlined in more than eleven hundred pages of the Handbook of research on teaching or in the section dealing with teaching in the Encyclopedia of educational research. It will perhaps be more useful to the Study Group if attention is merely directed to some of the major theoretical elements that should influence the growing efforts of schools for the health professions to increase the instructional efficiency and effectiveness of faculty members. It seems reasonable to begin by making explicit three major assumptions that appear to underlie these activities, to explore the justification for these assumptions, and finally to examine their implications for teacher-training programmes:

- (i) The purpose of teaching is to promote learning.
- (ii) The nature of teaching influences learning.
- (iii) Exposure to teaching does not assure learning.

1. The purpose of teaching is to promote learning

When stated so baldly it would probably be difficult to develop any persuasive argument against the validity of this postulate. But reaffirmation seems important since so much of what goes on in schools for the health professions under the name of education often appears to serve the interests and needs of teachers more than those of learners. It is placed first as a means of bringing into sharpest focus the major goal to which teaching must be directed. It also provides a clear directive for teacher-training programmes: they must first be concerned with systematic exploration, at whatever depth seems appropriate to individual trainees or training groups, of what is presently known about the nature of adult learning.

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² Gage, N. L. (1963) Handbook of research on teaching, Chicago, Rand McNally.

The theoretical base for this element of training programmes is not entirely solid, nor is it complete, but there can be no question that there is more agreement on major components of learning theory than is reflected in the most widespread teaching practices. For example, most theorists would agree that motivation is a principal key to effective learning, and faculty members appear to concur when they so frequently say: "we must motivate the students", or even more commonly: "the students aren't motivated". It is in accomplishing the translation of what they say into what they do that faculty members could profit from considerably greater knowledge of the things that theorists have discovered about this elusive process.

For motivation is not, as the first faculty comment would suggest, something that can be externally imposed; it is an internal drive that can only be fostered and nourished. Despite frequent faculty laments to the contrary, all students are motivated to become something, but becoming that thing does not necessarily mean they all want to learn all that each faculty member wants to teach. They may be "motivated" (for which read forced) to do so, and often are, by punitive examination systems, but this tactic is demonstrably less effective in facilitating long-term learning than the strategy of building a system of rewards which shifts steadily from external symbols to internal satisfactions.

A second key concept on which there seems general agreement is the importance of an organizing principle that allows students to see how the parts of a learning experience fit into the whole. Historically, instruction has been organized around disciplines (i.e. departments) each of which has a specified time for teaching. Since that teaching time is rarely sufficient (at least in the minds of faculty) the pace of instruction is usually swift and the amount of material presented is very large, in the wistful hope that what survives the inevitable erosion of memory will be the central ideas that can later be applied to the solution of medical problems. The inadequacy of this method has long been recognized, and a different organizing principle was introduced into medical education twenty years ago when Western Reserve University established an instructional programme based upon organ systems. This provided a significantly better structural framework for learning but, as time has passed and knowledge has steadily enlarged, the impact of this major advance in organizational strategy has often been lessened by the kind of content overload that so often characterized the disciplinary orientation. More recently there have been efforts to employ an organizing principle that would seem most closely identified with the theoretical optimum - a problem-based programme in which disciplinary content and knowledge of body systems alike are learned in the context of real problems which physicians must be able to solve. While it may not be as neatly arranged for teaching, it is a far more efficient arrangement for learning.

Thirdly, the concepts of active participation in regular feedback are generally accepted by theorists as key elements in the achievement of optimal learning. Although faculty members may acknowledge the theoretical advantages of such an orientation, their practices suggest otherwise. Students all over the world appear to spend a major portion of their time listening to teachers describe what they have learned or watching them demonstrate the skills they have acquired. While listening and looking may be useful introductory exercises, they can scarcely be characterized as active learning. Further, the opportunities which are given most students to test their knowledge and professional skills without fear of judgement, and at a time when feedback on that performance might help them to learn more, are extremely limited. Instead, the most widespread assessment practice employed by faculty is the terminal examination on which students are rewarded for concealing their ignorance (since to do otherwise would lead to adverse judgement), rather than revealing it (and gaining insight into what they must still learn).

2. The nature of teaching influences learning

The assumption that what a teacher does has an influence upon student learning flows naturally from, and is supported by the prior assumption, for it is the teacher who serves as the principal interface between theory and practice, and may consciously utilize what is known about the facilitation of learning, or unconsciously perform in a fashion that impedes it.

But generally this assumption implies that a teacher must select the right method for assuring student learning, and on this selection question the evidence is far from clear. In fact, the literature on instructional methodology is filled with reports of no significant difference in learning when varied instructional methods are compared. It would be unwise to conclude from these findings, however, that methods do not make a difference. Critical scrutiny of these studies commonly reveals serious problems in the research methodology which substantially weakens the general conclusions that are often drawn. For example, one of the most serious is the criterion problem. In a vast majority of these investigations the achievement criterion is simple acquisition of a body of knowledge, in contrast to demonstration of skill in how to use information in solving specific problems, willingness to use it when a need is identified, or recognition of informational lacunae that must be filled for full understanding, all of which are also frequently verbalized and generally admired educational objectives. On the single criterion of information recall the evidence is clear that students can exhibit comparable achievement following exposure to a great variety of methods. But to generalize, from this finding, that all methods are equally effective in stimulating other kinds of learning is surely not justified.

Yet even the absence of difference should have the practical effect of giving teachers pause about mounting an argument for the unique contribution of a specific method they happen to prefer. If at least one kind of learning (and a kind which many educational programmes seem to favour) is equal under many teaching tactics, then rationality would suggest that the most economical or efficient means of instruction should be selected. But higher education has rarely been responsive to such logic; instead favoured methods are justified with the claim that they encourage some ill-defined yet critical kind of learning, even though the achievement of that learning is generally assumed rather than documented.

And it is surely true that other goals are important. If defined carefully then methodology most suited to their achievement can be selected rationally. For example, if the goal is to develop a manual skill, then it would be unwise to select the group discussion method; if the goal is to develop positive attitudes toward independent learning, then it would be pointless to select drill as the instructional strategy. As Bloom has pointed out in one significant study of lecture and group discussion methods: if the goal is that of helping students learn how to solve problems even the poorest group discussion is more effective than the best lecture.

But quite aside from these general rules for matching goals and methods, a far more important variable is how the method is used. It is here that teacher performance makes a real difference, one far more significant than the nature of the method, the setting, the size of the group, or the time assigned. And what a teacher does will be influenced not only by his understanding of the learning process or the specificity of his goal but also by the technical proficiency with which he uses the tools of instruction (i.e. himself and a rich variety of simple and complex aids to learning which are now available to him).

One of the most significant elements of this technical skill of teaching appears to be one of adaptability and responsiveness to students, rather than the rigidity of method and unresponsiveness to learners that characterize so much of higher education today. The weight of evidence suggests that most currently practising teachers, by adopting such a stance, could realize a significant gain in both student attitudes toward learning and substantive achievement as well.

The most serious question, of course, is whether teachers can learn this behaviour for the belief is persistent that teachers are born, not made. There is probably little doubt, even among skeptics, that lecture skills can be learned, or even that the skill of leading a group discussion may be acquired. But there is a lingering doubt that the most important element of teaching (whatever that may be) can be engrafted, rather than inherited. Significant progress in combating this view has been made in the past decade through increasing use of such training techniques as simulation, micro-teaching and communication skill exercises, followed

by prompt and intensive feedback to the trainee. There seems little question that such experiential learning can profoundly and positively influence in the tyro even those intangibles that are so prized in master teachers.

The practical implication of this theoretical base is clear: teacher-training programmes for the health professions must give attention to the refinement of pedagogic skills, but it must be done in the context of educational purpose, not as an end in itself. It will profit neither student nor programme if teachers learn to use, even with consummate skill, tools which are inappropriate for the instructional task.

3. Exposure to teaching does not assure learning

A dispassionate auditor of the current debates about curriculum structure would be forced to conclude that this assumption has no validity at least in the eyes of faculty curriculum planners. Despite protestations of concern for individualization and flexibility, the majority of contemporary curriculum reforms are still time-based and content-oriented, with heavy dependence upon exposure to teachers, or to the unique instructional materials that teachers have prepared to serve a particular course of study. And in spite of persuasive evidence that students learn in variable ways and at variable rates, teacher-centred instructional programming is still dominant in schools for the health professions. Nor is there any widespread effort to confirm the implied dogma that learning follows teaching. It is a rare institution that employs systematic pre-testing to determine whether students, when they start an instructional programme, already have all or a substantial part of what they are supposed to gain from it. As the number of settings increases in which demonstration of competence - rather than exposure to instruction - is the prime criterion for success, there is a growing body of evidence to support the view that teaching does not necessarily assure learning and, conversely, that learning does not necessarily require teaching. It follows that teachers then may have to learn to play a new role best summarized in the term "facilitator" i.e. one who helps students identify clearly the learning objectives as well as the resources available to achieve them, and provides regular feedback and non-judgemental assessment of the extent to which these objectives are being achieved. The practical implication of the first two components of this task have already been alluded to in the exploration of the first two assumptions. It is the final element to which attention must be given here - the issue of evaluation.

The literature of evaluation is both vast and complex, and though not well known to educators for the health professions, its dominant themes are at least reflected in some of their practices. Those themes are derived largely from the discipline of psychometrics, a branch of psychology that has made an immensely important contribution to the documentation of psychologic constructs and to the description of educational achievement patterns through standardized test procedures. But the psychometrician builds upon the statistical analytic model which is aimed primarily at discriminating performance differences within a group, rather than determining whether a criterion performance has been achieved. The educator, on the other hand, should be concerned first with whether a learning objective has been fulfilled and only secondarily, if at all, with the distribution of achievement scores. Both psychometrician and educator are concerned with test reliability and validity but they do not always mean the same thing even when they use the same terms. The psychometrician is particularly anxious that an assessment procedure have a high level of reliability (i.e. that it measure accurately and consistently whatever it measures); the educator is particularly anxious that an assessment instrument have a high level of content, construct, concurrent and predictive validity (i.e. that it measures the objectives to which attention is addressed) even at the expense of lower reliability. When the psychometrician talks of validity he does not refer primarily to these elements, but rather to a statistical calculation of the extent to which performance on one item correlates with performance on the whole test.

These basic theoretical differences are more than an argument over detail by ivory tower scientists; they are at the heart of important evaluation problems that relate directly to the assumption under discussion. It is not that one view is right and the other wrong, but rather that each should be employed for the purpose it best serves. The evaluation/examination process in schools for the health professions is too important in the establishment of a learning climate, in the determination of student achievement and documentation of instructional effectiveness to be carried out by faculty whose understanding of the theoretical base is at best rudimentary. Unless teacher-training programmes address these questions directly and explicitly, trainees may end with no greater facility than their untrained colleagues in determining the extent to which exposure to teaching has resulted in learning.

Conclusion

It will be apparent to any reader that this working paper has done no more than touch some prominent highlights of a rich and varied discipline. It may, however, provide further reinforcement, if such is required, for the notion that there is a theoretical base for teacher-training programmes, a base that may now be gross or ill defined but which is undergoing steady refinement as the science of education evolves.