



## Teaching Approach, Instructional Objectives, and Learning

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Obviously, not all classes have the same objectives. Neither are they taught by the same process. The IDEA system routinely asks instructors to identify which of 12 objectives they regard as "Essential," "Important," or of "Minor or No Importance;" it holds instructors accountable only for those designated as "Essential" or "Important." During 1998–99, we also asked participating teachers to identify their primary and secondary approaches<sup>1</sup>.

In this study, we wanted to know: (1) How frequently is a given objective chosen? (2) How often are various teaching methods employed? (3) Are teaching method and objectives related? That is, does the choice of objectives dictate the methods which can be employed, or, conversely, does the choice of methods limit the objectives which can be pursued? (4) Is student progress on a given type of objective related to teaching method? That is, does the choice of method make a difference in the amount of student learning?

Data were provided by institutions participating in the IDEA program from September, 1998, through August, 1999. The study was limited to classes in which the long form was employed. To maximize confidence in the results, we included only those with response rates of 75% or higher and with at least 10 student respondents<sup>2</sup>.

The IDEA form includes 12 objectives. These have been grouped into five types of objectives. The complete statement of the objective is given below as well as an abbreviated version which will be used in the discussion.

### A. Objectives emphasizing substantive knowledge

1. *Gaining factual knowledge (terminology, classifications, methods, trends)—(Factual knowledge).*
2. *Learning fundamental principles, generalizations, or theories—(Principles and theories).*
3. *Learning to apply course material (to improve thinking, problem solving, and decisions— (Applications).*

### B. Objectives emphasizing lifelong learning

9. *Learning how to find and use resources for answering questions or solving problems—(Finding, using resources).*
12. *Acquiring an interest in learning more by asking questions and seeking answers—(Interest in learning).*

### C. Objectives emphasizing general intellectual/academic skills

8. *Developing skill in expressing oneself orally or in writing—(Communication skills).*
11. *Learning to analyze and critically evaluate ideas, arguments, and points of view—(Critical analysis).*

### D. Objectives emphasizing the development of specific skills/competencies

4. *Developing specific skills, competencies, and points of view needed by professionals in the field most closely related to this course—(Professional skills/viewpoints).*
5. *Acquiring skills in working with others as a member of a team—(Team skills).*
6. *Developing creative capacities (writing, inventing, designing, performing in art, music, drama, etc.)—(Creative capacities).*

### E. Objectives stressing personal development

7. *Gaining a broader understanding and appreciation of intellectual/cultural activity (music, science, literature, etc.)—(Broad liberal education).*
10. *Developing a clearer understanding of, and commitment to, personal values—(Values development).*

**Question 1: Popularity of objectives.** Participants in the IDEA program had a clear preference for objectives emphasizing **substantive knowledge**. From 65% to 72% chose *Factual knowledge, Principles and theories*, and/or *Applications* as "Important" or "Essential." Three other objectives were selected as "relevant" in over one-third, but less than one-half, of all classes. Two of these focused on **general intellectual/academic skills** (*Communication skills*—40%; *Critical analysis*—37%) and the other on **professional preparation** (*Professional skills/viewpoints*—47%). The two objectives related to **lifelong learning** (*Interest in learning; Finding, using resources*) were selected about 30% of the time. Objectives

<sup>1</sup>These questions appear on the *Faculty Information Form (FIF)* which identified them as for "Research Purposes." Approximately 80% of participants completed this section of the FIF.

<sup>2</sup>Previous research had established that acceptable reliability required a minimum of 10 respondents. The 75% response requirement was an arbitrary attempt to assure representativeness. It had the unintended effect of increasing the average on most measures. We believe this occurred because low response rates are associated with high absenteeism which, in turn, is often a symptom of ineffectiveness in teaching/learning.

which were selected least frequently included two devoted to the development of **specific skills or talents** (*Team skills*—23%; *Creative capacities*—19%) and two centered on **personal development** (*Broad liberal education*—21%; *Values development*—18%). Clearly, intellectual development was stressed over personal development and subject-matter mastery was emphasized over the development of more general academic or learning skills.<sup>3</sup>

Question 2: Popularity of various teaching methods. Nine teaching methods (Lecture, Discussion/recitation, Seminar, Skill-activity, Laboratory, Field Experience, Studio, Multi-media, and Practicum/clinic) were listed on the *Faculty Information Form*. Participants were asked to indicate both their primary and secondary approach.

The most common combination (1,864 classes; 27.0%) was Lecture as the primary method and Discussion as the secondary method. Other prominent combinations were Lecture/Laboratory (626 classes, 9.1%), Lecture/Skill-activity (609 classes, 8.8%), Discussion/Lecture (458 classes, 6.6%), and Discussion/Skill-activity (285 classes, 4.1%). No other combinations were reported for as many as 250 classes; but, after ignoring secondary approaches, a sizeable number of classes were identified which employed several other primary approaches [Skill-activity (990 classes, 14.3%); Seminar (377 classes, 5.5%); Laboratory (250 classes, 3.6%)]. The eight “methods” employed by at least 250 classes were the focus of this investigation; they constituted 79% of all classes in this database.

Question 3. Methods and the choice of objectives. Do instructors stressing a given objective tend to employ a particular teaching approach? Do those using a given approach tend to choose specific kinds of objectives? These questions were explored by examining the relationship between two decisions made by the faculty member: (1) the teaching approach taken and (2) the objectives stressed.

Each of the 12 objectives surveyed in the IDEA system were pursued in a number of classes taught by the various teaching approaches used in this study. There was no unanimity among instructors as to the appropriateness of a given combination of “objectives” and “approaches.” However, there were some distinctive trends.

1. When Lecture or Laboratory were the primary instructional approaches, teachers were especially likely to stress **substantive knowledge** objectives (*Factual knowledge; Principles and theories; Applications*).
2. Approaches which combined Discussion as a primary technique with Lecture or Skill-activity approaches or those employing Seminar approach were especially favored by faculty members stressing **general intellectual/academic skills** (*Communication skills; Critical analysis*).

3. By far, the most versatile teaching approach was Seminar. A majority of those using this approach chose the three **substantive knowledge** objectives, both objectives related to **general intellectual/academic skills**, one of the **lifelong learning** objectives (*Interest in learning*), and one of the **specific skills/competencies** (*Professional skills/view-points*). Faculty using this method were also more likely than those employing alternatives to identify *Values development* and *Finding, using resources* as objectives.
4. Although no one method predominated, those using more “personal” approaches (Discussion, Skill-activity, Seminar) were much more likely to pursue *Team skills*, *Creative capacities*, and *Values development* than were those whose primary approach was Lecture or Laboratory.

To summarize, although each of the eight teaching approaches was used to address each of the 12 objectives, there was a definite relationship between objectives and teaching approach. Lecture/Discussion method was used more than others in addressing 10 of the 12 IDEA objectives, and was especially prominent in objectives which emphasized **substantive knowledge**. Instructors employing approaches requiring considerable student involvement (Discussion, Skill-activity, Seminar) were especially likely to emphasize **general intellectual/academic skills** (*Communication skills; Critical analysis*), **specific skills/competencies** (*Team skills; Creative capacities*), and *Values development*. Laboratory instruction most often stressed *Professional skills/viewpoints, Applications, and Factual knowledge*. While we cannot tell whether teaching objectives influenced approach or if approach influenced teaching objectives, it is clear that the two were related.

Question 4. Is student progress on a given type of objective related to teaching method? To examine this question, we selected classes which were taught by a given approach and for which the instructor had identified a given objective as “Important” or “Essential.” Average student progress ratings on that objective were then compared across the eight teaching approaches. There were statistically significant differences among teaching approaches for each of the 12 objectives. However, not all of these were large enough to be practically significant.

To simplify comparisons, progress ratings were classified into one of five groups in accordance with the degree to which they departed from the overall average. These groups are defined below.

<u>Difference from overall average</u>	<u>Group</u>
-.20 or lower	Low (L)
-.10 to -.19	Low Average (LA)
+.09 to -.09	Average (A)
+.10 to +.19	High Average (HA)
+.20 or higher	High (H)

<sup>3</sup>A subsequent research study will examine the degree to which these conclusions are contingent upon the specific audience being addressed (i.e., lower division students seeking to meet general education/distribution requirements; upper division students seeking to satisfy major field requirements, etc.).

Group ratings for each combination of “teaching approach” and “objective” are shown below.

Objective	Teaching Approach							
	Lecture/ Discussion	Lecture/ Laboratory	Lecture/ Skill-activity	Discussion/ Lecture	Discussion/ Skill-activity	Skill-activity	Seminar	Laboratory
<b>Substantive knowledge</b>								
<i>Factual knowledge</i>	A	HA	A	LA	A	A	A	A
<i>Principles, theories</i>	A	A	A	A	A	LA	A	A
<i>Applications</i>	A	LA	A	A	HA	A	HA	A
<b>Lifelong learning</b>								
<i>Find, use resources</i>	LA	LA	A	A	HA	A	H	A
<i>Interest in learning</i>	A	L	LA	A	HA	A	H	A
<b>Gen intellectual/academic skills</b>								
<i>Communication skills</i>	LA	L	LA	HA	H	H	H	L
<i>Critical analysis</i>	A	L	LA	HA	H	A	H	L
<b>Specific skills/competencies</b>								
<i>Prof skills/viewpoints</i>	A	A	A	LA	A	A	A	A
<i>Team skills</i>	LA	LA	LA	LA	HA	A	A	HA
<i>Creative capacities</i>	L	L	A	A	H	H	H	LA
<b>Personal development</b>								
<i>Broad liberal educ.</i>	A	L	LA	H	HA	H	H	L
<i>Values development</i>	HA	L	LA	A	H	A	H	LA

There was little practical difference among methods which stressed the three **substantive knowledge** objectives. Results for classes employing Lecture were generally as good or better than those relying on student participation. The same was true for *Professional skills/viewpoints*.

**Lifelong learning** objectives were promoted most successfully in classes employing Seminar or Discussion/Skill-activity approaches. Approaches featuring Lecture were generally the least successful, although when Skill-activity was the secondary approach, students reported average progress on *Finding, using resources*.

Seminar and Discussion/Skill-activity approaches were also much more successful in promoting **general intellectual/academic skills** (*Communication skills; Critical analysis*) than were Laboratory or Lecture approaches, although when Lecture was a secondary method and Discussion the primary method, a moderate degree of success was found on these objectives.

For two of the objectives concerned with **specific skills/competencies** (*Team skills; Creative capacities*), the highest progress ratings were made in classes employing Discussion/Skill-activity approach. Seminar and Skill-activity approaches also produced good results, while progress ratings in classes using Lecture with any secondary approach were significantly lower.

The Seminar approach was most successful in promoting **personal development** (*Values development; Broad liberal education*). Discussion/Lecture, Discussion/Skill-activity, Lecture/Discussion, and Skill-activity approaches all obtained moderate degrees of success. Progress ratings on these objectives were lowest for Lecture/Laboratory, Laboratory, and Lecture/Skill-activity approaches.

In summary, the degree to which students reported progress on objectives chosen as “Important” or “Essential” by their instructors was contingent upon teaching approach. Stated otherwise, the degree to which a given approach was effective varied from one objective to the next. For the objectives most commonly chosen by instructors (**substantive knowledge** objectives), approaches featuring Lecture were as effective as more personalized approaches. **Personal development** and **lifelong learning** objectives were infrequently stressed; but when they were, progress was greatest for classes using the Seminar approach. This approach, along with Discussion/Skill-activity, also resulted in the most success in addressing **general intellectual/academic skills** (*Communication skills; Critical analysis*). **Specific skills/competencies** (*Team skills; Creative capacities*) were promoted best by approaches which required considerable student involvement (Discussion/Skill-activity; Seminar; Skill-activity). These results offer support to Chickering and Gamson’s suggestion that approaches which encourage “Student-Faculty Interaction” and “Student Involvement” are especially likely to promote the broadest conceptions of student learning.

The IDEA system’s best measure of overall effectiveness is called *Progress on Relevant Objectives*. It uses a statistical technique to equalize average progress ratings on the 12 objectives and then computes a weighted average for those selected as “Important” (weighted “1”) and “Essential” (weighted “2”). On this measure, the most effective teaching approaches were Seminar (average 56.3) and Discussion/Skill-activity (average 55.7). Discussion/Lecture and Skill-activity were also generally effective (averages of 53.7 and 53.5, respectively), followed by Lecture/Discussion (average

52.9), Lecture/Skill-activity (average 52.2), Lecture/Laboratory (average 51.8), and Laboratory (average 51.4). It appears that the more the approach encourages student participation and responsibility in the learning process, the more effective it is on an overall basis.

The study raises several questions about objectives. Is the heavy emphasis on **substantive knowledge** appropriate? Of course, most intellectual activity assumes a platform of basic knowledge and understanding; faculty members would be derelict if they ignored this need. At the same time, it is important to recognize that much of the subject matter content which students learn today will be outdated 5-10 years after they graduate. This is a major reason why **lifelong learning** skills have been increasingly emphasized. But in this large sample, these objectives were identified as "Important" or "Essential" in only about 30% of the classes<sup>4</sup>.

Employers have commonly suggested that improvements are needed in graduates' skills in *Communication skills*, *Critical analysis*, and *Team skills*. The first two of these were emphasized in only 40% of the classes we studied (in spite of popular emphases on "Writing across the curriculum" and "Reasoning"), and *Team skills* was emphasized in only about 20% of these classes. These data suggest that employers' concerns have not significantly impacted the teaching agenda.

Finally, only about 20% of the classes sought to foster **personal development**. These objectives are concerned with helping students expand their interests and find more meaning in life. They also relate to pervasive societal concerns with diminishing morality and character. It was, therefore, somewhat disappointing to find that 80% of the classes in this sample regarded these objectives as of "Minor or No Importance."

It may be no accident that the objectives which were most heavily emphasized are those which are effectively addressed by the faculty's favorite teaching approach, the lecture. This approach has clear economic advantages. Lecture notes require only minor revisions each year, saving considerable preparation time. The lecture can also be used effectively with large classes, producing sizeable cost savings. Furthermore, most faculty are more comfortable with lecturing than with other pedagogical methods. It emphasizes the instructor's academic background (which almost always is excellent, especially when compared with that of the students), and it is centered on what the instructor rather than what the student does. Because it reduces the need to respond flexibly to the needs, styles, and aspirations of individual students, it is both less nerve-racking and less demanding for the faculty member.

Although the lecture was shown to be effective especially in addressing **substantive knowledge** objectives, it was clearly inferior to more student-centered approaches in facilitating achievement of objectives focused on **lifelong learning**, **personal development**, and **general intellectual/academic skills**. While such objectives were not chosen with a high frequency, pressures to make higher education more respon-

sive to the needs of its graduates, their employers, and society in general can be expected to make them more important in the future. This means that higher education will need to employ an increasing number of relatively costly approaches. It will also be increasingly vital to provide faculty members the opportunity to develop and employ a variety of teaching skills other than the lecture.

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<sup>4</sup>It is not likely that the composition of the sample was responsible for these findings. About one-third of these classes were freshman/sophomore courses directed to students seeking to meet general education or distribution requirements, and another 9% were junior/senior courses with the same purpose. Slightly over 30% were directed to major (specialized) interests of juniors/seniors and another 19% of this type were directed to freshmen and sophomores. The other 10% were graduate or professional courses.

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