The Kolb Model Modified for Classroom Activities

Marilla D. Svinicki and Nancy M. Dixon

It's five minutes before the hour in a typical college classroom. As students wander in singly or in small groups, early comers read the student newspaper, chat about their evening's activities, glance over the reading assignment, compare notes on the homework, or set up their notebook for today's class. As the bell rings, the instructor makes his entrance, laden with books and notes which he piles on the desk at the front of the room. After a few brief announcements concerning upcoming assignments, he lays out his lecture notes on the podium and launches into today's material. The students dutifully begin to transcribe whatever seems relevant. Not much changes in that scene for the next fifty minutes, after which the bell rings and the class files out, only to be replaced by the same procedure for the next class period.

This scene is repeated innumerable times every day in classrooms across the country. While there is some variation, particularly in performance-based classes such as language or mathematics, the use of alternative activities in the college classroom is minimal at best. Instructors, being primarily subject matter experts, tend to focus their attention on the content of their courses, equating

"teaching" with "covering the content" and giving much less thought to the instructional methodology they use. Thus they tend to rely on the standard instructional activities used by their own professors, such as lecture, discussion, and laboratories. A study conducted by Trani (1979) of 4,433 students in five midwestern institutions found the most frequently used teaching methods were the traditional ones of formal and informal lecture, discussion, laboratory, and audiovisual aids.

An interesting twist to this finding is that both students and faculty in Trani's study indicated that they would ideally like to experience less formal lecture and more of other teaching methods. If everyone in the classroom would like more variety, why don't instructors use more alternative methods? We believe there are many reasons for their reluctance, including time pressures, familiarity and comfort with the standard methods, and fear of failure. But an additional and perhaps more subtle source of a limited approach to instructional methodology could be the absence of a theoretical framework for selecting and organizing classroom activities to enhance learning.

Our purpose is to use an already well-established model that describes the process of learning as a basis for selecting and sequencing activities. An understanding of the model should help the instructor take maximum advantage of the tools with which he or she is already fa-
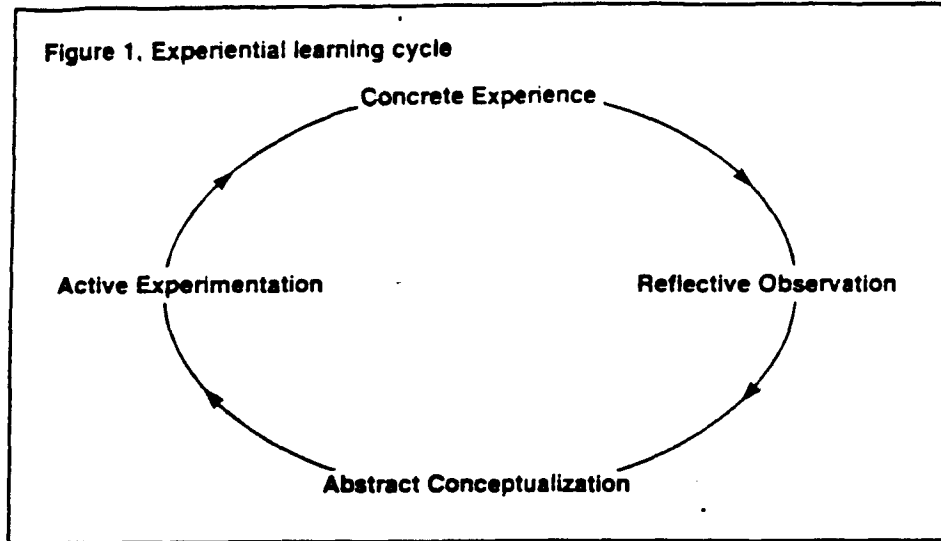
miliar and might even lead an instructor to create his or her own new learning activities appropriate to the particular course. Let's begin by examining the model and then see how it can be used in instructional design.

The Experiential Learning Model

The experiential learning model of Kolb (1984) provides a framework for examining the selection of a broader range of classroom activities than is in current use. Building on Dewey, Lewin and Piaget, Kolb has postulated that learning involves a cycle of four processes, each of which must be present for learning to occur most completely (see Figure 1). The cycle begins with the learner's personal involvement in a specific experience. The learner reflects on this experience from many viewpoints, seeking to find its meaning. Out of this reflection the learner draws logical conclusions (abstract conceptualization) and may add to his or her own conclusions the theoretical constructs of others. These conclusions and constructs guide decisions and actions (active experimentation) that lead to new concrete experiences.

The axes of the figure represent the two dimensions of the learning task. The vertical dimension (concrete experience to abstract conceptualization) represents the input of information either from experience or from abstractions. The horizontal dimension (reflective observation to active experimentation) refers to the

Marilla D. Svinicki is associate director of the Center for Teaching Effectiveness and **Nancy M. Dixon** is assistant professor in the Department of Curriculum and Instruction at the University of Texas at Austin.

Figure 1. Experiential learning cycle

Concrete Experience

Active Experimentation

Reflective Observation

Abstract Conceptualization

processing of information by either internally reflecting on the experience or externally acting upon the conclusions which have been drawn.

Experiential Learning as Instructional Design

We would add to this basic model the proposal that certain activities support different phases of this cycle. By constructing learning sequences that lead students through the full cycle, an instructor should be able to foster a more complete learning than can be gained from a single perspective. Figure 2 lists learning activities representative of each of the four poles of the learning cycle. For example, field experiences, inquiry laboratories, direct data collection, and the reading of primary sources such as poetry are all designed to give the learner firsthand, personal experiences with the content. Activities such as discussion and journal keeping force students to reflect on their experiences and the experiences of others. Model building exercises, research papers, or lectures that present a model foster abstract conceptualization. Simulations and projects force students to apply the models to problem situations.

Thus to produce a complete cycle, the instructor would select an activity from each pole and guide the students through them in order. For example, a unit designed for political science, which focuses on age variables related to political attitudes, might begin with field work.

Students could conduct interviews with people of different age groups (concrete experience). Each student could categorize his or her own observations (reflective observation) and make initial speculations on differences between the ages represented. Next the class as a whole could pool their results and identify

common age patterns to generate a model (abstract conceptualization) that describes how different age groups are likely to react to other political questions. Finally, the class could test their hypotheses by follow-up interviews with other members of the same age groups (active experimentation). Figure 3 illustrates a similar sequence of instructional activities in a number of different disciplines.

A specific activity, such as viewing a film, may fit into more than one category depending upon the instructional intent. In the political science unit discussed earlier, interviewing was used twice, first as a concrete experience and later as active experimentation. However, the purpose for which interviewing was employed at each point in the learning was different. In the first instance, the purpose was to "see what is," and in the second instance, the purpose was to verify a theory. Laboratory activities are another illustration of how an activity might fit into more than one step in the sequence. For example, when laboratory

CONCRETE EXPERIENCE
Laboratories
observations
primary text reading
simulations/games
field work
trigger films
readings
problem sets
examples

ACTIVE EXPERIMENTATION
simulations
case study
laboratory
field work
projects
homework

REFLECTIVE OBSERVATION
logs
journals
discussion
brainstorming
thought questions
rhetorical questions

ABSTRACT CONCEPTUALIZATION
lecture
papers
model building
projects
analogies

Figure 2. Instructional activities that may support different aspects of the learning cycle.

Figure 3. Sample Instructional Sequences

Concrete Experience

Abstract Conceptualization

CE
Students survey patient medication logs in nursing home setting and compile frequency distributions of drugs used

AE
Each student is given a case history and prepares drug regimen for that patient attempting to use the ideal combinations formulated by group

PHARMACY

RO
Work in groups to attempt to identify which systems are common treatment problems in aging.

AC
Read text discussion of aging and hear lecture from gerontologist relating to aging discuss and attempt to formulate ideal drug combinations for geriatric use

CE
Student visits placement and interviews staff, neighbors, and residents

AE
Research programs similar to that recommended in student's paper

PUBLIC POLICY

RO
Student writes journal on how his/her model would operate in the specific site visited

AC
After hearing debate on community placement of retarded, student writes position paper on how community could handle this problem

CE
Students see films of news reports from WWII and Vietnam

AE
Students write short paper applying analysis developed to reporting on similar global events or related topics

HISTORY

RO
Students write personal reaction to depictions of two wars by media

AC
Lecture on public reaction to the two wars plus discussion of similarities to own reaction and attempt to identify reporting techniques which influence reactions

CE
Build computer models based on symmetry, subject them to quake-like forces and record problems

AE
Analyze case studies of buildings which were destroyed versus those which survived earthquakes, applying symmetry concepts
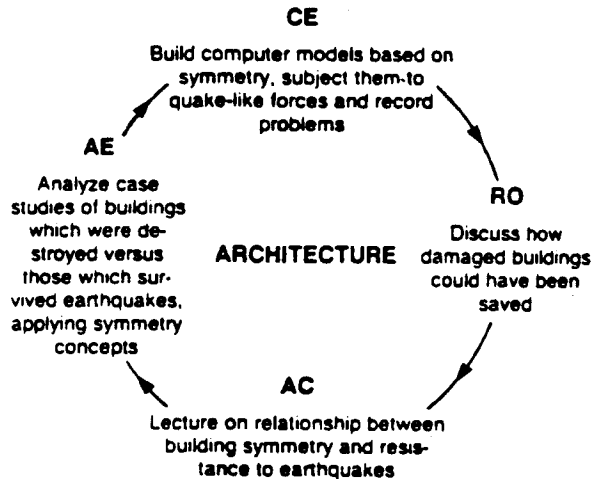
ARCHITECTURE

RO
Discuss how damaged buildings could have been saved

AC
Lecture on relationship between building symmetry and resistance to earthquakes

CE
In laboratory students work with a variety of systems to observe the properties of frequency response

AE
Students use an oscilloscope to measure amplitude ratio, plot results, compare with theory

ENGINEERING

RO
With computer, students attempt to derive function common for their observations

AC
Instructor lectures on Bode plots with mathematical derivation relating it to systems derived by students

CE
Students conduct experiment, collect data

AE
Use model to predict behavior and relationship to birth order, design experiment to test hypothesis

PYSCHOLOGY

RO
Analyze data and evaluate how well model predicted results, refine model where necessary

AC
Read description of model for predicting relationship of birth order to personality development

activities precede instruction, their intent may be exploratory, such as is used in inquiry teaching. When the laboratory activities occur later in the instructional sequence, they may serve as a way to apply what is being learned, i.e., they involve active experimentation.

A similar case could be drawn for the use of film, case study, simulations, projects, etc. Thus an instructor, in selecting learning activities to correspond with each of the four poles of the experiential learning model, must give greater consideration to the functional use of the activity than to the activity itself.

To assist the teacher in concentrating on the experience of the students when applying the model, we can modify the Kolb cycle slightly by designating the four activities with action verbs that describe the activity of the learner at each step. Thus, concrete experience becomes experiencing; reflective observation becomes examining; abstract conceptualization becomes explaining; and active experimentation becomes applying.

The second term of each of these pairs focuses our attention on what the student is doing at each phase of the cycle. We can specify that a film used during the concrete experience phase is intended to allow the student to "experience" some event or phenomenon, while a film used during the abstract conceptualization phase is intended to explain a concept. Discussion in the reflective observation phase is focused on examining an idea, while discussion in the abstract conceptualization phase would be conducted to allow students to develop an explanation of a concept.

Disciplinary Differences

While the proposed instructional framework has a great deal of intuitive appeal, there may be some other immediate considerations. For example, in selecting instructional activities to incorporate into the experiential learning cycle, it may be appropriate to take into account the fundamental differences in the nature of the discipline being taught. Kolb has suggested (Figure 4A) that the disciplines of humanities and social science are based in concrete experience and reflective observation, the natural

sciences and mathematics in reflective observation and abstract conceptualization, the science-based professions in abstract conceptualization and active experimentation, and the social professions in active experimentation and concrete experience.

This construction was confirmed by Biglan (1973) when he asked faculty members to group different disciplines on the basis of similarity. Biglan found two dimensions, "soft-hard" and "pure-applied" which corresponded to Kolb's concrete-abstract and reflective-active dimensions. Biglan's results were supported with data collected in the Carnegie Commission on Higher Education 1969 study (Figure 4B).

If the general focus of a discipline is toward two specific poles of the experiential learning cycle, then the discipline itself may circumscribe an instructor's choice of learning activities. For example, in the abstract and reflective discipline of mathematics, it may be difficult to design activities which represent concrete experience and active experimenta-

tion. Likewise in history, which appears to be more concrete and reflective, activities which represent active experimentation may be more difficult to design. When such disciplinary constraints limit an instructor's choices, one possible solution, discussed in the next section, is to vary the instruction along another dimension, the student as actor versus student as receiver.

Student as Actor versus Student as Receiver

A second variable affecting the application of this design model may be the nature of the student's role. This variable would be reflected in a continuum of action of activities placed at any one of the four poles of Kolb's model as seen earlier in Figure 2. The continuum would range from activities in which the student is the actor to those in which the student is a more passive receiver of the learning. Figure 5 illustrates this continuum for each of the poles of the experiential learning model. Activities at the outer edge of the circle most directly in-

Figure 4A. Average learning style inventory scores for various undergraduate majors as reported by 800 practicing managers and graduate students in management

Source: Kolb, D. A. 1976. Management and learning processes. *California Management Review*, 18(3):21–31.
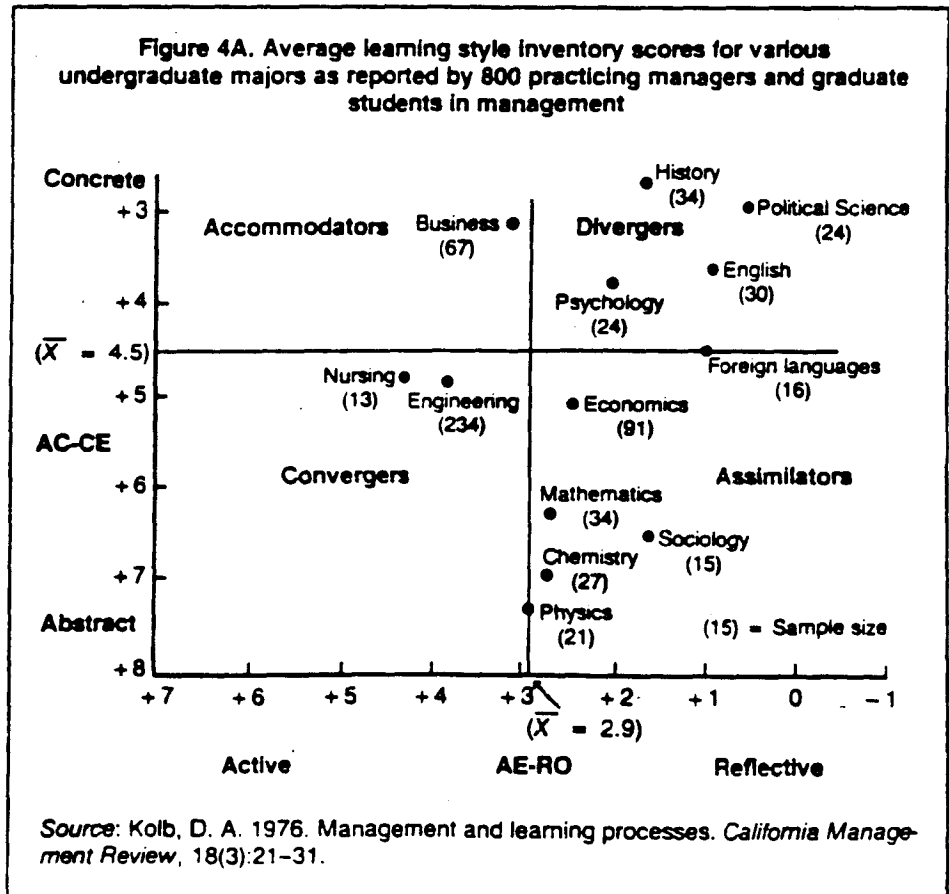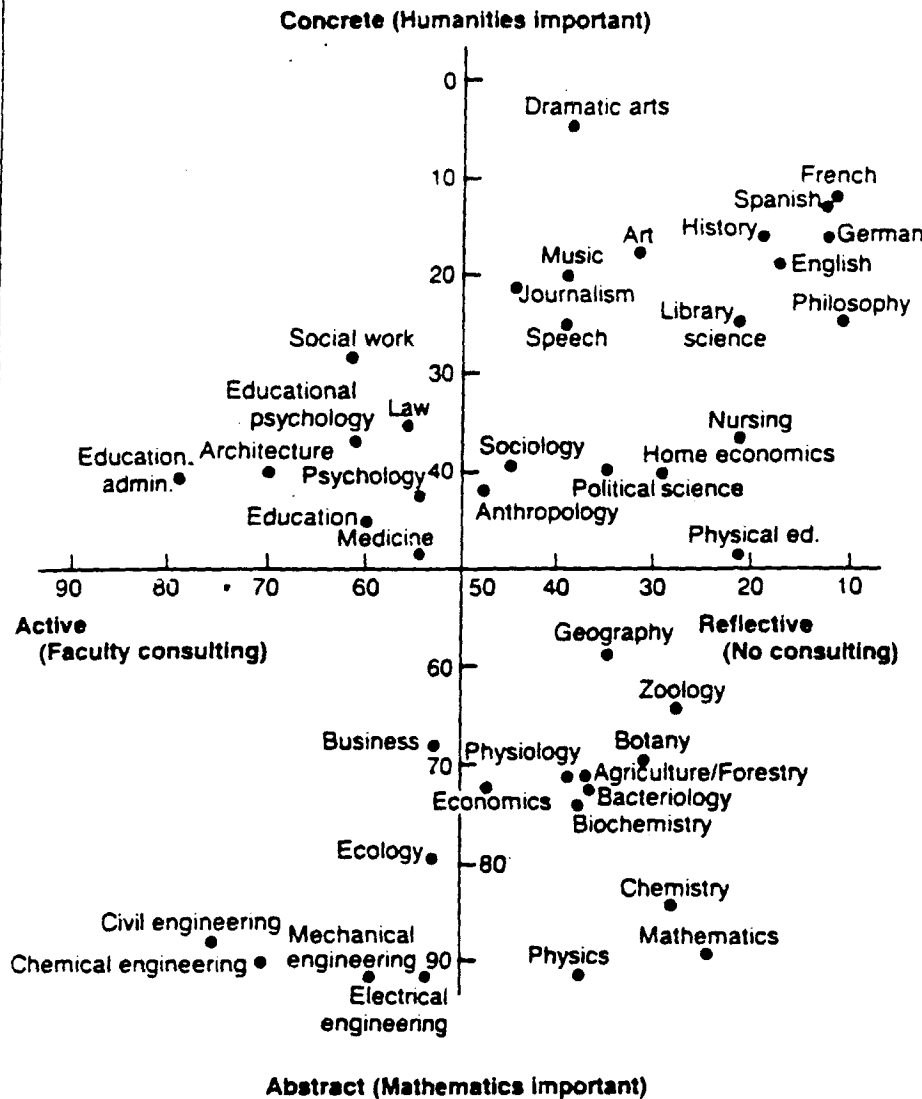
Figure 4B. Concrete-abstract and active-reflective orientations of academic fields derived from Carnegie Commission study of graduate students and faculty

Concrete (Humanities important)

```
                                    0
                          Dramatic arts
                               •
                                   10                French
                                            Spanish •
                                       History•    •German
                              Art                 • English
                    Music    •
                     •              20
            Music                         Library•   Philosophy
           •Journalism              science          •
            Speech
                              Social work
                               •           30
                 Educational
                 psychology  Law                     Nursing
                       •      •                         •
        Education. Architecture •      Sociology  Home economics
         admin.•         • Psychology 40  •          •
                        Education•         Political science
                          •    Medicine  Anthropology   •
                               •

   90    80   • 70    60      50    40    30    20    10
Active                                          Reflective
(Faculty consulting)     Geography    (No consulting)
                              •
                                   60
                                            Zoology
                                              •
          Business •    Physiology  Botany
                   70  •            •
                          Economics  • •Agriculture/Forestry
                          •         •Bacteriology
                                     Biochemistry
          Ecology•   80
                                     Chemistry
                                        •
     Civil engineering Mechanical         Mathematics
           •         engineering 90        •
  Chemical engineering •  •    Physics
                          •     •
                        Electrical
                        engineering
```

Abstract (Mathematics important)

Source: Kolb, D. A. 1981. Learning styles and disciplinary differences. In The modern American college, edited by A. W. Chickering and Associates, San Francisco: Jossey-Bass.

volve the student, while those closer to the center involve the student merely as an observer or listener.

The political science sequence cited earlier would fall near the outer circle of the graph. A political science sequence designed to be closer to the center, with students as receivers, might include activities such as: the instructor describes some examples of survey responses (concrete experience); the instructor shows graphed results of survey responses displayed in frequency and age distributions (reflective observation); the instructor states the general principle being illustrated in the graph (abstract conceptualization); the instructor displays graphs from related studies to show how the principle applies more broadly (active experimentation). Such a sequence could conceivably take place using lecures as the only method.

One drawback of this actor/receiver dimension is that, in general, activities involving students as actors require a great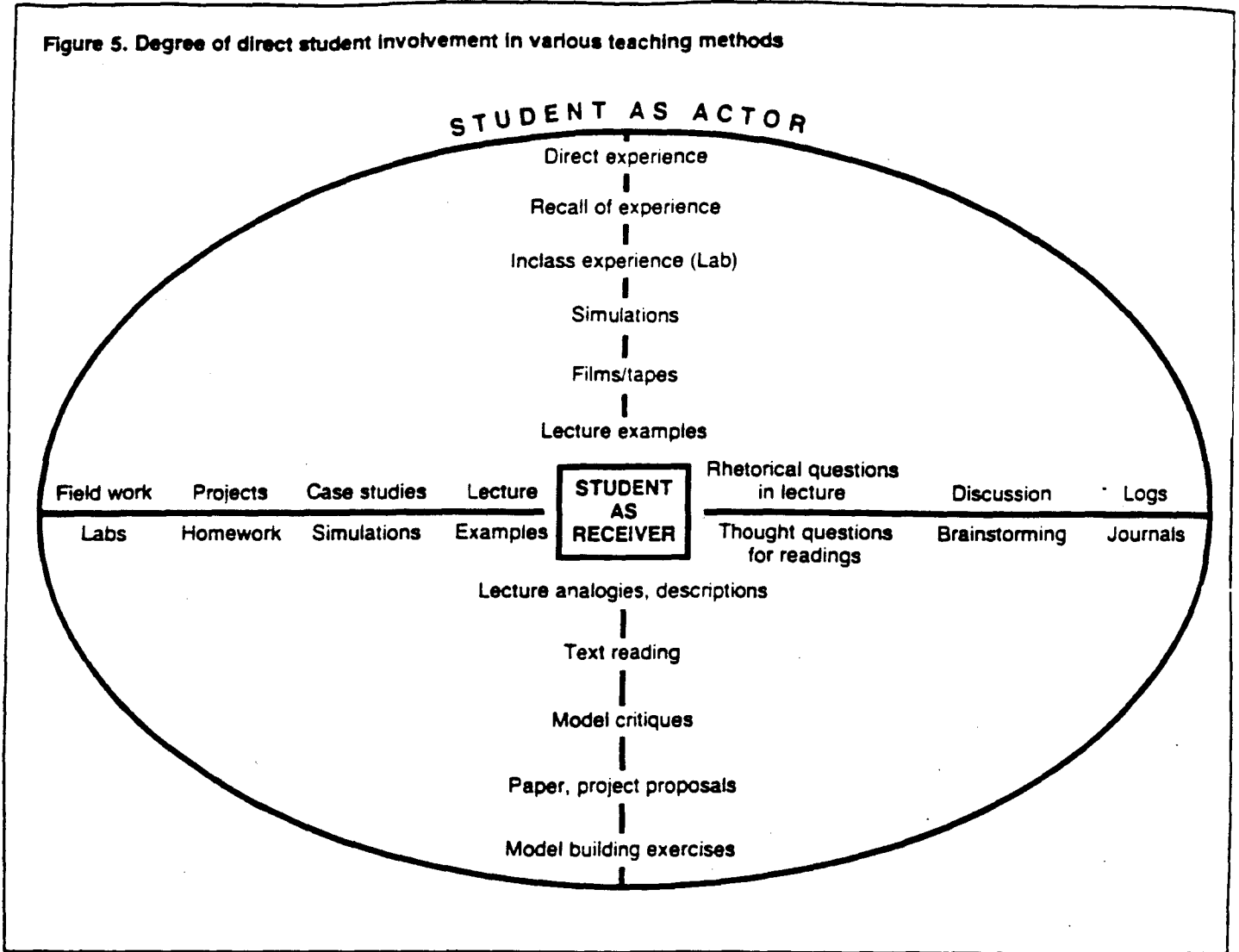er amount of time. For example, in the engineering unit illustrated in Figure 3, it would take longer for a student to work with a number of oscillating systems in order to observe the properties of frequency response than it would for the instructor to simply describe in class what the students would see if they had done the observation themselves. Likewise on the reflective observation pole, less time is consumed if the instructor provides the functions then if the students attempt to derive the functions themselves. And so on throughout the cycle. On the other hand, the active participation in learning has long been accepted as an important concept in learning. The value of active involvement must be weighed against the time limitations most instructors face.

The Framework on a Larger Scale

It is also possible to think of the learning cycle as extending across a curriculum in addition to occurring within a single course. For example, students may begin their program with a course that involves field work coupled with class discussions about their experiences (concrete experience and reflective observation). In the next course the field experiences may be tied to the conceptual framework of the discipline through a heavy emphasis on reading and theory (abstract conceptualization). In the next, the student may work in a team to construct applications of the theory to their initial field experiences (abstract conceptualization and active experimentation). And finally the students may return to the field to try out their applications and collect new data (active experimentation).

The experiential learning model appears to provide a functional framework for the systematic selection of classroom activities. The model takes into account the varying perspectives of different disciplines, while the expansion of the model to include the actor/receiver dimension gives consideration to the learner's role in the process. By including all these aspects, the framework frees the instructor to explore a wider range of possibilities and choose those most appropriate to the class situation.

Figure 5. Degree of direct student involvement in various teaching methods

STUDENT AS ACTOR

Direct experience

Recall of experience

Inclass experience (Lab)

Simulations

Films/tapes

Lecture examples

Field work	Projects	Case studies	Lecture	STUDENT AS RECEIVER	Rhetorical questions in lecture	Discussion	Logs
Labs	Homework	Simulations	Examples		Thought questions for readings	Brainstorming	Journals

Lecture analogies, descriptions

Text reading

Model critiques

Paper, project proposals

Model building exercises

REFERENCES

Biglan, A. 1973. The characteristics of subject matter in different academic areas. *Journal of Applied Psychology*, 57:195–203.

Chickering, A. W. and Associates. 1981. *The modern American college*. San Francisco: Jossey-Bass.

Kolb, D. A. 1976. Management and learning processes. *California Management Review*, 18(3):21–31.

Kolb, D. A. 1981. Learning styles and disciplinary differences. In *The modern American college*, edited by A. W. Chickering and Associates, San Francisco: Jossey-Bass.

Kolb, D. A. 1984. *Experiential learning: Experience as the source of learning and development*. Englewood Cliffs, New Jersey: Prentice-Hall.

Trani, E. P. 1979. Final report on the project—Helping students become more sophosticated consumers of their own education. Unpublished paper, University of Nebraska, Lincoln.