

# 2

*Half of the new directions being chronicled in this series apply to research on teaching. This chapter provides a thorough review of progress in research on teaching since 1980.*

## New Directions for Theory and Research on Teaching: A Review of the Past Twenty Years

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Given that over the past twenty years there has been increasing realization of the intimate connection between teaching and learning, it seems almost artificial to separate this chapter from Chapter One's review of the research on learning. Nevertheless, as Marilla Svinicki did with learning, I will attempt to discuss the research on teaching and to trace some of the important issues and findings of the past two decades. To simplify the task, I will consider six general areas related to higher education teaching:

- Teaching dimensions and behaviors
- Teaching considerations (including instructional design, methods, and teaching styles)
- Teaching and motivation
- Teaching and teacher assessment and evaluation
- Teaching technologies
- Teaching perspectives and philosophies

These areas are not discrete. The dimensions of teaching, for example, are general statements that can be explained or exemplified by considering the specific behaviors of teachers. These behaviors also relate to the teaching techniques determined by content needs, available resources, teacher skills and preferences, student characteristics, and other factors. Teacher preferences are in part determined by the experiences, philosophies, and underlying beliefs of individual teachers about teaching, learning, and their

disciplines. Finally, the assessment and evaluation of teachers, teaching, and learning are intimately connected to the value systems, knowledge bases, experience, skills, and instructional objectives of each teacher.

It is no wonder, then, that the first descriptive term in Marsh's often-quoted overview of student evaluations of instruction is that evaluations and, by implication, teaching are "multidimensional" (1987). It is also clear that Doyle (1983) was correct when he made the cogent comment that "it seems most unlikely that any one set of characteristics will apply with equal force to the teaching of all kinds of material to all kinds of students under all kinds of circumstances" (p. 27). Consider the taxonomies of cognitive and affective instructional objectives developed by Bloom and others (1956) and Krathwohl, Bloom, and Masia (1956). Although objectives in the cognitive and affective domains can be carefully planned and exceptionally useful, one must acknowledge that teachers cannot rigidly adhere to any predetermined list. As Jean Civikly-Powell notes in Chapter Four, teaching and learning involve human communication and interactions, and consequently, they are subject to all the forces that affect human behavior. Particularly in the public arena of the classroom, situations arise that require immediate actions or reactions, often in the affective domain. Teachers cannot plan for all such contingencies. How do teachers maintain control, a positive atmosphere, and students' interest level—and do all that in an organized, coherent, and effective manner? Classrooms are places of constant change, and teaching involves adapting to this fluctuating reality.

A recent study (Chiu, Wardrop, and Ryan, 1999) reported findings consistent with previous research that student ratings of instruction can account for approximately 40 percent of the variance in a determination of teaching effectiveness. What of the other 60 percent? What, indeed, is *teaching effectiveness*? Factors beyond the teacher's control (student ability, prior preparation, value systems, and personal considerations, for example) can greatly affect instructional outcomes. Should we hold teachers responsible for 100 percent of the results of a course of instruction, or would it be more realistic and fair, perhaps, to hold them responsible only for the 40 percent that can be attributed to their influence? When we talk of effective teaching, what we cannot find in the literature is a simple or generalizable definition or any absolute measurement criterion.

In sum, we can say that teaching is complex, multidimensional, and dynamic. It is profoundly affected by the individuals involved in the process as well as by circumstances beyond the classroom. No wonder, then, that *effective teaching* has been difficult to define, describe, and measure in concrete and absolute terms.

### **Dimensions of Teaching and Teaching Behaviors**

Perhaps the most frequently discussed strategy for understanding teaching has been to try to identify the critical dimensions of teaching.

**Dimensions of Teaching.** What do we know about college teaching? One way to explore this question is to consider the relationship of various aspects of teaching to common performance criteria and to ask the people involved in it to identify the important issues. This research on the “dimensions” of teaching has come from studies in which students or faculty were asked to identify or rank important aspects of teaching (for example, Crittenden and Norr, 1973) and from the analyses of student ratings data and other data (for example, as reported by Centra, 1979). Several factors have appeared consistently and repeatedly. Marsh and Hocevar (1984) reported the following to be “factorially invariant”: amount learned or value of the course, enthusiasm, organization, group interaction, individual rapport, breadth of coverage, examinations, assignments, and level of work or difficulty. Assembling work in these areas, Feldman (1989) conducted meta-analyses of studies of correlations between dimensions of teaching and achievement and correlations of the dimensions of teaching with student ratings. He also compiled results from studies asking faculty and students to rank the importance of the dimensions of instruction. Although the results are too complex to review here, it would be fair to summarize them by saying that there are some aspects of teaching that are consistently related to achievement and are identified by teachers and students alike as important, and there are some aspects where just the opposite is true. Likewise, there are aspects on which students and faculty agree and others on which they disagree.

Though these results may seem contradictory and somewhat confusing, they point to another important notion: that not every teacher must be expert in every dimension in order to be effective, successful, or highly rated. Hativa (1999a) recently made this point in an exploration of the behaviors of teachers. She noted that her subjects used different strategies to achieve their goals. Franklin and Theall (1992) reported disciplinary differences in choices of instructional objectives and in teaching and assessment methods. Although the patterns of choices matched the patterns of rankings of disciplines based on average ratings of teachers and courses (Cashin, 1990), the findings supported the notion that good teaching takes many forms and cannot be limited to only a few methods or dimensions. Michael Scriven (personal communication, Nov. 9, 1998) has suggested that equitable faculty evaluation cannot be based on the assumption that teachers who address certain of the dimensions are effective and those who do not address these dimensions are ineffective. In other words, we have established correlation but not causation, and we have not yet developed absolute criteria for effectiveness.

It is probably safe to say that in traditional teaching and learning situations, the essential dimensions of college teaching have been identified and their relationship to teaching effectiveness has been established. Attention to these dimensions will likely result in more effective instruction, and ignoring them risks reducing effectiveness. There is little research providing insight into the newest instructional delivery strategies: the various forms of distance education and, particularly, asynchronous instruction.

**Teaching Behaviors.** At one level of specificity below the dimensions, we find considerable research on the more discrete behaviors of teachers. Primarily the work of Murray and his associates (discussed in Murray, 1983, and summarized in Murray, 1991), these studies have identified *low-inference* behaviors: specific, observable teacher behaviors that can be recorded without the need for a researcher or an observer to make inferences from other behaviors. *Clarity*, for example, is an important dimension of teaching. One low-inference behavior that promotes the clarity of presentations is to use concrete examples to help describe concepts. The research has attempted to identify other such behaviors in order to provide more specific guidelines and strategies for teachers.

Furthering this line of thinking, Hativa (1999b) differentiated low-inference behaviors from high- and intermediate-inference behaviors, proposing a four-level model. The main dimension of clarity can be broken down, for example, into intermediate behaviors including “simplifying the material presented,” which can then include more specific behaviors such as “teaching in two or more cycles.” This behavior can be further broken down to include “presenting a concrete case prior to discussing an abstract principle,” “presenting a comparable case, analogy, or metaphor for the concept,” or “presenting a visual, intuitive, or other interpretation of the concept.”

The specific behaviors described by Hativa (1999b) are in one sense examples of what Shulman (1986, 1989) has called “pedagogical content knowledge.” This knowledge combines an understanding of effective pedagogies with deep subject knowledge and includes a clear and solid grasp of the basic principles of the discipline; the ability to explain complex concepts simply; having a well-developed and available repertoire of alternative explanations, methods, or techniques; and the ability to diagnose students’ problems and offer solutions.

As investigations of specific behaviors of effective teachers get more detailed and precise and as they expand to include a variety of disciplines and teaching and learning situations, our understanding of the dynamics of instruction will increase and more opportunities will be created to test the applicability of low-inference behaviors under a variety of instructional conditions. Those that prove generally useful can be disseminated by means of publications, institutional centers for teaching and learning, professional associations, and electronic and personal networks to a wide faculty audience for incorporation into day-to-day practice.

## Teaching Considerations

Beyond understanding what qualities and behaviors are involved in teaching, much attention has been paid to the variables an instructor must consider when designing instruction.

**Instructional Design.** Though instruction is facilitated by knowing specific techniques that relate to specific dimensions of teaching, it is not

sufficient to think only of these discrete skills. Effective teaching involves assembling the set of materials, circumstances, tools, stimuli, processes, and alternatives that have the greatest potential to contribute to the achievement of the instructors' (and sometimes the students') objectives. It is therefore reasonable to consider the design of instruction from a systems perspective (Bethany, 1987; Diamond, 1989; Reigeluth, 1983).

Few faculty, however, have any formal training or experience in the design, development, or evaluation of instruction. As Stark and others have reported (1988), faculty are most often influenced by their academic disciplines, their personal beliefs, and their own backgrounds. Franklin and Theall (1992) also found very consistent patterns of instructional choices within disciplines.

Further evidence comes from Smart and Feldman (1998), who, using the theory of Holland (1985), found evidence that matches or mismatches of individuals to "academic subenvironments can be an especially potent source of influence on students" (p. 416). In other words, students become acculturated to or affiliated with their departments and their disciplines. They likely adopt faculty habits of thought and attitudes, and if they move on to faculty positions, they seem largely to teach in the ways they were taught. Though such continuity can give rise to questions about openness to new ideas or methods, my comment is not pejorative with respect to teaching in these disciplines. Instead, as Shulman's pedagogical content knowledge paradigm (1987) implies, deep knowledge of the subject matter is an essential element in understanding how best to teach that subject matter. The phenomenon does help explain, however, traditional faculty resistance to "teaching improvement" efforts coming from outside the discipline.

The field of systematic instructional design nonetheless offers a broadly applicable and generalizable model for instruction because it considers the many systems that can influence instructional decisions and outcomes and because when properly applied, it requires the instructor to view teaching and learning ecologically, rather than concentrating solely on disciplinary content. Given that few faculty (especially new faculty) have developed true pedagogical content knowledge, the combination of the instructor's content knowledge with the structure of the design process and assistance from pedagogical experts (instructional consultants, as in Brinko and Menges, 1997) is a most effective way to engender genuine pedagogical content knowledge and to develop the expertise of faculty more quickly.

**Teaching Methods.** A second area, which is more closely examined in the literature, is that of methods of teaching. For most of its history, teaching in higher education has been fairly traditional. Over the past twenty years, however, more and more alternatives have been introduced and deserve consideration.

*Traditional Methods.* Numerous resources deal with traditional approaches such as lecturing, discussion, and case, laboratory, and clinical methods. Major works providing guidelines include Davis, 1993; Lowman,

1984; and McKeachie, 1999b, but a full review of all these methods is beyond the scope of this chapter.

*Active and Cooperative Learning Methods.* McKeachie (1999a, 1999b) has suggested that the most widespread and successful techniques for teaching can be gathered under the banner of *active learning*. Whether the method involves others (as in *collaborative learning*, *cooperative learning*, *teaming*, or *group work*) or focuses on the investigative process (as in *discovery learning* or *problem-based learning*), the essential concept is the active and often cooperative involvement of students in the processes of finding, analyzing, evaluating, synthesizing, and applying information. In particular, cooperative methods (for example, Johnson and Johnson, 1988; Johnson, Johnson, and Smith, 1991) seem to have additional motivational advantages (McKinnon, 1999; Panitz, 1999). According to Davis (1993), "Researchers report that, regardless of the subject matter, students working in small groups tends to learn more of what is taught and retain it longer than when the same content is presented in other instructional formats" (p. 147). Discussion of these types of methods can be found in several of the *New Directions* issues, including issues 59 on collaborative learning, 61 on gateway courses, 63 on self-regulated learning, 67 on active learning, and 68 on problem-based learning. The *New Directions* series in general has attempted to bring brief introductions to the newest methods as they begin to take hold, so this series is a good resource for information about individual methods.

*Technology-Based Methods.* There is little definitive guidance for distance education and, particularly, teaching in asynchronous modes. Two *New Directions* issues (51 and 71) deal with this topic, and we will return to the topic later in this chapter.

**Teaching and Learning Styles.** Teaching style is a topic that of necessity overlaps with learning style, and approaches to style are numerous. Some observers have argued that the term *style* is incorrectly applied and that *preferences* is more appropriate in many cases. For example, there are some individuals who prefer to work in quiet or warm or brightly lit environments as opposed to noisy or cool or dimly lit locations. These preferences are not necessarily *styles* of teaching or learning, but they do indicate that individuals have considered their own experiences and made choices about the situations in which they feel most capable. If they have been successful in these environments, they tend to seek out such conditions again. Nevertheless, there are differences that go beyond preference and into information processing capabilities, organizational ability, cultural differences, and even physiological and neurological structures. For inclusiveness, I will use the term *individual differences* to refer to the broad range of topics covered, but I will concentrate on how these differences affect teaching. (Discussion of their impact on learning appears in Chapter One.)

*Teaching and Learning Styles.* One source of information that is current and specifically targets instructional practice is Anthony Grasha's *Teaching*

with *Style* (1996). This work is rich with illustrations, examples, and exercises that teachers can use effectively. Grasha offers several models of individual differences. The basic model has three bipolar constructs—*competitive–collaborative*, *dependent–independent*, and *participant–avoidant*—that relate to individual differences in the behaviors and approaches among learners. Here is a short description of the characteristics of these types of individuals:

Competitive = learns in order to perform or excel; seeks recognition; likes to lead

Collaborative = likes to share; seeks involvement; likes projects and group work

Dependent = shows little curiosity; does only what is expected or required; seeks help from peers or teachers; dislikes ambiguity; likes structure imposed

Independent = is usually confident; thinks for oneself; likes to work alone; likes self-paced work

Participant = is a good citizen; joins in; likes to discuss; likes optional work; is eager

Avoidant = is not enthusiastic; does not join in; dislikes testing; does not like being called on

More important for its relationship to teaching, Grasha also uses the inventory devised by Myers (1990) to classify several dimensions of teacher activities necessary to execute various instructional methods and presents an array of *roles* for teachers. He also reviews many other dimensions of individual differences among teachers and students and provides several inventories and exercises that help define differences.

*Experiential Models.* Perhaps the most widely known experiential model to link style differences with teaching methods is that of Kolb (1984). Its essential learner dimensions are *concrete–abstract* and *reflective–active*. In a  $2 \times 2$  matrix, the combinations of the components lead to identification of learners as accommodators (concrete, active), divergers (concrete, reflective), assimilators (abstract, reflective), and convergers (abstract, active). Its application to teaching and learning is well exemplified by Svinicki and Dixon (1987), who propose a cycle of learning that moves from experience to observation to conceptualization to experimentation. They provide sample instructional sequences that show how, in various disciplines, instruction can provide learners with opportunities to capitalize on their strengths.

*Classroom Dynamics and Pedagogical Styles.* Hardy (1976) identified four teacher styles: *discipline-centered*, *instructor-centered*, *student-centered cognitive*, and *student-centered affective*. The titles are largely self-descriptive and relate to other descriptions of faculty roles (including Grasha's). Grasha (1996) proposes that the essential faculty roles are *expert*, *formal authority*,

*personal model*, *delegator*, and *facilitator*. Again, these titles are largely self-explanatory, as are various descriptions of classroom dynamics, which commonly use terms such as *autocratic*, *democratic*, and *anarchic*. The instructor's style clearly determines the nature of the classroom dynamic and, depending on its interaction with other factors already discussed, can either match learner styles and disciplinary affect with positive results or conflict with learner and disciplinary styles with negative results.

## Motivation and Teaching

Like design, methods, and style, motivation is an extremely broad area of teaching. Motivational techniques vary as much and as often as the situations in which they are used. However, there seem to be some major themes that are part of the motivational models developed by several writers. Table 2.1, reprinted from *New Directions* volume 78, arrays the work of contributors to that volume as well as other conceptions of motivation and closely related work. The thrust of that volume and the terms in the table are toward intrinsic motivation: the establishing of conditions that enhance teachers' or students' innate desire, interest, and willingness to expend effort and receive satisfaction from instructional or other tasks and subsequent outcomes. In other words, seeking strategies that connect with existing interests and providing opportunities for students to take an active part in the instruction can lead to increased involvement, effort, and eventual success. The resulting motivation is intrinsic because it targets the deeper "learning orientation" of students rather than the superficial "grade orientation."

This view differs from older conceptions that regarded motivation as something "done" to someone, a response to an imposed set of extrinsic rewards, more in the behaviorist mode, as discussed in Chapter One. In Table 2.2, the left-hand column presents the six terms examined in Table 2.1, derived from the work of the same authors shown in the top row. The cells of the table that are marked with a capital X indicate that the author used the term shown or an analogous term with almost the same meaning. The cells marked with a lowercase x indicate situations where the author's work could, with little elaboration, be said to include the term on the left. As a scan of the table shows, certain general terms apply directly in almost every model, and the remaining terms fill literally the rest of the cells. The sole exception (Pintrich and others, 1988) exists because the model used was the Motivated Strategies for Learning Questionnaire (MSLQ), which does not include items on inclusion and leadership. However, Pintrich's later work on "self-regulation" (1995) has strong implications for the use of intrinsic motivational strategies. These connect well with studies by Perry and his colleagues on perceived control and attributional issues (Perry, 1991) and particularly with his work on "attributional retraining" (Menec and others, 1994), which has proved especially effective for students with a history of academic difficulties.

**Table 2.1. Motivation Terms: Author by Factor Matrix**

| <i>Author</i>            | <i>Wlodkowski</i> | <i>Paulsen<sup>a</sup></i> | <i>Donald</i> | <i>Keller</i> | <i>MacKinnon</i> | <i>Panitz</i> | <i>Feldman<sup>b</sup></i> | <i>Nuhfer</i> | <i>Farmer</i> | <i>Theall<sup>c</sup></i> | <i>Pintrich</i> | <i>Forsyth<sup>d</sup></i> | <i>Chickering<sup>e</sup></i> |
|--------------------------|-------------------|----------------------------|---------------|---------------|------------------|---------------|----------------------------|---------------|---------------|---------------------------|-----------------|----------------------------|-------------------------------|
| <i>Factor</i>            |                   |                            |               |               |                  |               |                            |               |               |                           |                 |                            |                               |
| <i>Inclusion</i>         | X                 |                            |               |               |                  | X             |                            |               |               | X                         |                 | X                          | X                             |
| <i>Community</i>         |                   |                            | X             |               | X                |               | X                          |               |               |                           |                 |                            | X                             |
| <i>Climate</i>           |                   |                            |               |               |                  |               | X                          |               | X             |                           |                 |                            |                               |
| <i>Ownership</i>         |                   | X                          |               |               | X                |               | X                          | X             | X             |                           |                 |                            | X                             |
| <i>Attitude</i>          | X                 | X                          | X             |               |                  | X             |                            |               |               |                           |                 |                            |                               |
| <i>Affect</i>            |                   |                            |               |               |                  |               |                            |               |               |                           | X               |                            |                               |
| <i>Interest</i>          |                   |                            |               |               |                  |               |                            |               |               | X                         |                 |                            | X                             |
| <i>Awareness</i>         |                   |                            | X             |               |                  |               |                            | X             |               |                           |                 |                            |                               |
| <i>Attention</i>         |                   |                            |               | X             |                  |               |                            |               |               |                           |                 |                            |                               |
| <i>Enthusiasm</i>        |                   |                            |               |               |                  |               |                            | X             |               |                           |                 |                            |                               |
| <i>Meaning</i>           | X                 |                            | X             |               |                  |               |                            |               |               |                           |                 |                            |                               |
| <i>Relevance</i>         |                   | X                          |               | X             | X                |               |                            |               |               | X                         |                 |                            | X                             |
| <i>Value</i>             |                   |                            |               |               |                  |               |                            |               |               | X                         | X               | X                          | X                             |
| <i>Competence</i>        | X                 | X                          |               |               |                  |               |                            |               |               |                           |                 | X                          |                               |
| <i>Empowerment</i>       |                   |                            |               |               | X                | X             |                            |               |               |                           |                 | X                          |                               |
| <i>Confidence</i>        |                   | X                          |               | X             |                  |               |                            |               |               |                           |                 |                            |                               |
| <i>Expectancy</i>        |                   |                            | X             |               |                  |               |                            |               |               | X                         | X               |                            |                               |
| <i>Leadership</i>        |                   |                            |               |               |                  |               | X                          |               | X             |                           |                 |                            |                               |
| <i>High expectations</i> |                   |                            |               |               |                  | X             |                            |               |               | X                         |                 |                            | X                             |
| <i>Structure</i>         |                   |                            | X             |               |                  |               |                            | X             |               | X                         |                 | X                          | X                             |
| <i>Feedback</i>          |                   |                            |               |               |                  |               | X                          |               |               | X                         |                 |                            | X                             |
| <i>Support</i>           |                   |                            |               |               |                  |               | X                          | X             |               | X                         |                 |                            |                               |
| <i>Satisfaction</i>      |                   |                            |               | X             |                  | X             |                            |               |               |                           |                 |                            |                               |
| <i>Rewards</i>           |                   |                            |               |               |                  |               |                            |               | X             |                           |                 | X                          |                               |

<sup>a</sup>Paulsen and Feldman, 1999.

<sup>b</sup>Feldman and Paulsen, 1999.

<sup>c</sup>Theall, Birdsall, and Franklin, 1997.

<sup>d</sup>Forsyth and McMillan, 1991.

<sup>e</sup>Chickering and Gamson, 1987.

Source: Theall and Franklin, 1999, p. 101. Used by permission of Jossey-Bass Inc., Publishers.

**Table 2.2. Key Motivation Terms: Author by Factor Matrix**

| <i>Author</i> | <i>Wlodkowski</i> | <i>Paulsen<sup>a</sup></i> | <i>Donald</i> | <i>Keller</i> | <i>MacKinnon</i> | <i>Panitz</i> | <i>Feldman<sup>b</sup></i> | <i>Nuhfer</i> | <i>Farmer</i> | <i>Theall<sup>c</sup></i> | <i>Pintrich</i> | <i>Forsyth<sup>d</sup></i> | <i>Chickering<sup>e</sup></i> |
|---------------|-------------------|----------------------------|---------------|---------------|------------------|---------------|----------------------------|---------------|---------------|---------------------------|-----------------|----------------------------|-------------------------------|
| <i>Factor</i> |                   |                            |               |               |                  |               |                            |               |               |                           |                 |                            |                               |
| Inclusion     | X                 | X                          | X             | x             | X                | X             | X                          | X             | X             | X                         |                 | X                          | X                             |
| Attitude      | X                 | X                          | X             | X             | x                | X             | x                          | X             | x             | X                         | X               | x                          | X                             |
| Meaning       | X                 | X                          | X             | X             | X                | x             | x                          | x             | x             | X                         | X               | X                          | X                             |
| Competence    | X                 | X                          | X             | X             | X                | X             | x                          | x             | x             | X                         | X               | X                          | x                             |
| Leadership    | x                 | x                          | X             | x             | x                | x             | X                          | X             | X             | X                         |                 | X                          | X                             |
| Satisfaction  | x                 | x                          | x             | X             | x                | X             | x                          | x             | X             |                           | x               | X                          | x                             |

<sup>a</sup>Paulsen and Feldman, 1999.

<sup>b</sup>Feldman and Paulsen, 1999.

<sup>c</sup>Theall, Birdsall, and Franklin, 1997.

<sup>d</sup>Forsyth and McMillan, 1991.

<sup>e</sup>Chickering and Gamson, 1987.

*Source:* Theall and Franklin, 1999, p. 106. Used by permission of Jossey-Bass Inc., Publishers.

The consistency of the constructs used in these thirteen different models is striking and powerful, but the terms are, of course, general. For teachers who seek a detailed description of the application of a model to the specific task of designing instruction, Keller's ARCS model (1987) offers a workable design. Beginning with *attention* strategies, the model stresses *relevance*, the development of students' *confidence* in positive outcomes, and their eventual *satisfaction* as a result of positive performance. Greater effort consistently leads to improved performance, and improved performance leads to satisfaction. The cycle continues as satisfaction enhances the student's valuing the content and having raised expectancy for further success. A positive cycle of intrinsic motivation results, and performance is improved. Teachers could conceivably intervene at any step along the way to increase student motivation.

### **Assessment and Evaluation of Teachers and Teaching**

Perhaps the most influential work in assessment, especially as regards classroom techniques, is that of Angelo and Cross (1993). Based on an earlier report from the National Center for Research to Improve Postsecondary Teaching and Learning (NCRIPAL) at the University of Michigan (Cross and Angelo, 1988), the text attempts to "respond directly to concerns about better learning and more effective teaching" (Angelo and Cross, 1993, p. xiii) rather than the broader issues of the "assessment movement," which focuses more on the gathering and use of evidence about the outcomes of education and the degree to which institutions are successfully preparing students for careers and for life.

Angelo and Cross (1993) offer hundreds of strategies, tips, hints, procedures, and methods to teachers, focusing on assessing skills such as recall, understanding, critical thinking, creative thinking, problem solving, application, attitudes, and self-awareness. The underlying relationship of assessment to instructional design is obvious, as these techniques require the teacher to know and to have previously articulated specific plans and objectives for instruction. As the old saying goes, "If you don't know where you're going, you won't know if or when you get there." Though many authorities decry the development of instructional objectives as a mechanistic and formulaic process, the essential focus is not on the objective itself but rather on the specification of what the learner must be able to do at the completion of the instruction. Knowing the intended outcome greatly facilitates the development of instructional strategies and the determination of the measures that will provide evidence of achievement.

Many of the techniques reviewed by Angelo and Cross (1993) come from the literature of faculty development, evaluation, and teaching improvement. For example, the process known as *small group instructional diagnosis* (SGID) uses a focus group technique to extract critical information about the success of instruction. Originally proposed by Clark and Bekey (1979), SGID

has been used extensively in formative assessment and evaluation, and in combination with quantitative instruments (such as validated student ratings questionnaires), it is a powerful tool for understanding classroom process, dynamics, and effectiveness. Another widely used technique is the *one-minute paper*, first reported by Wilson (1986) in his investigations of faculty techniques for improving teaching. This technique and its several variations simply ask students to take a very small amount of time to answer one or two questions at the end of a class period. Usually, students are asked to tell “the most important thing you learned today” or to tell about “something you did not understand in today’s class.” Feedback about students’ understanding (or lack of it) helps teachers plan for the short term (“What do I do in our next class?”) and also for the long term (“Should I build in extra time next semester for a hands-on project that will make the concept more clear?” or “I should do this again. It worked very well”).

The conceptual and procedural distances between assessment and evaluation are not great. Both are processes for gathering and using data appropriately and effectively, and indeed, the two can be and should be complementary. For example, the terms *formative* and *summative* originally proposed by Scriven (1967) to describe the roles of evaluation, are used with the identical meaning in both fields: *formative* for improvement or revision and *summative* for making decisions about merit or worth. In the same work, Scriven also proposed two other terms that are less used but equally important: *instrumental* and *consequential*. These refer to the processes of instruction and its outcomes. Complete assessment or evaluation should consider these aspects of instruction as well as the purposes of the assessment or evaluation. Role determination not only clarifies the intended use of the data but also guides the process and procedures chosen, as well as the choice of how and to whom the results are reported.

Thus to propose any major dichotomy between assessment and evaluation seems almost foolish, given that the assessment of instructional outcomes is crucial to the evaluation of individual and program success. Student achievement is, after all, the intent of instruction and should be part of the data set used in making determinations about the success of instruction and instructional programs as well as the process of awarding grades and degrees.

A problem arises, however, when the focus of evaluation is the rating of teaching performance or, even more problematic, overall faculty performance. The problem is primarily in the area of the quality of evaluation practice, and the greatest error made today is the use of a single data source (for example, student ratings of instruction) as the basis for decision making. While the continuous debate about faculty evaluation rages on and is often phrased in terms that attack the validity and reliability of student ratings, the ultimate problem is poor practice and the lack of knowledge of evaluation among the individuals who use and interpret the data (Franklin and Theall, 1989). Many variables have been cited as potentially biasing factors in stu-

dent ratings, but the consistent findings of the research are best summarized by Marsh (1987), who said that student ratings are "(1) multidimensional; (2) reliable and stable; (3) primarily a function of the instructor who teaches a course rather than the course that is taught; (4) relatively valid against a variety of indicators of effective teaching; (5) relatively unaffected by a variety of indicators hypothesized as potential biases; and (6) seen to be useful by faculty, by students, and by administrators" (p. 255).

Given the interest in outcomes in both evaluation and assessment, one of the most important issues is instructional effectiveness in terms of student learning, and one of the powerful arguments for the validity of student ratings comes from Cohen's study (1981), which considered multisection courses with identical midterm exams administered and graded by someone other than the section instructor. The meta-analysis of several studies of multisection courses revealed a correlation of .43 between ratings and achievement on the exams; that is to say, there was a strong and significant relationship between ratings and learning. Though there is considerable current debate about some issues, no substantial and consistent evidence yet exists to deny the ratings-learning relationship. In other words, good teaching leads to good learning, and good learning results in good grades and satisfied students. This does not mean, however, that the topic is exempt of debate.

One contentious topic is the effect of "grade inflation" on ratings. Some research (Greenwald and Gillmore, 1997a, 1997b) claims that statistical controls and special data reporting formats can reduce or remove this supposed "contaminant" of ratings, but there is strong opposition to these conclusions (Franklin and Theall, 1991; Gillmore and others, 1998). Another sensitive topic is gender. Despite numerous studies showing that on the whole, neither student nor faculty gender directly affects ratings in a significant way (Centra and Gaubatz, 1998; Feldman, 1992a, 1992b; Franklin and Theall, 1994), a debate continues over gender bias. Interestingly, the gender bias that was found was in the assignment of female instructors to difficult teaching situations in one department at one institution (Franklin and Theall, 1994). Women were a minority in the department and were disproportionately assigned to large undergraduate required classes. These kinds of classes show consistent patterns of slightly lower ratings for all faculty; thus anyone teaching such classes could expect depressed ratings. If course assignments were deliberate and ratings results were uncritically examined, one could mistakenly attribute lower ratings either to poor performance by females or to student bias against females: both conclusions would be erroneous. In fact, when the study was replicated in the same departments at another institution of similar size where the course assignment patterns were equitable, women had slightly higher average ratings than men (Franklin and Theall, 1994).

More than twenty-five hundred studies, papers, articles, and books have been written on the subject of faculty evaluation. Although the vast

majority of these (particularly those undergoing rigorous review) have shown ratings to be reliable, valid, and useful, there has been disproportionate discussion of flawed or small sample studies, possibly because faculty are rightfully concerned about the impact of ratings on their careers. Given the poor state of practice, it is no wonder that faculty are suspicious of the evaluation process and argue against its primary data source: student evaluations.

A more reasonable approach is that offered by Arreola (1994) and in line with Miller's earlier ten principles for evaluation (1987). Both emphasize the cooperative development of complete "systems" for faculty evaluation. Crucial to this process is participation in the identification of performance areas and criteria and the determination of who will provide what data to whom. A priori agreement about these issues among all concerned parties (faculty, administrators, students, or others) is necessary before questionnaires are adopted or developed.

Whatever processes, procedures, and policies for assessment and evaluation are selected, they must reflect institutional and individual needs and the concerns of all constituencies. Imposed questionnaires, inappropriate or poorly constructed reports, unvalidated questionnaires, insecure data handling processes, and marginal data management all contribute to poor practice. Even more, institutional affect will determine the reaction of faculty and students to the evaluation process. If good teaching goes unrewarded and if evaluation results are used only when they are negative, faculty will resist evaluation, and with good reason. If evaluations are disregarded and if students perceive that their input is unheeded, they will not be motivated to provide complete and thoughtful responses. In either case, evaluation is counterproductive. Aleamoni (1987) and Theall and Franklin (1990, 1991) have outlined both general and specific guidelines for evaluating and improving teaching using student ratings and other evaluative data. The sought-for system is one that provides accurate, reliable, and useful data to persons who can correctly interpret and fairly use that data. Anything less destroys the true potential of evaluation to serve its many constituencies.

## **Teaching and Technology**

The impact of technology on teaching and learning has been questioned at least since books became readily available to students. The massive investigation of the relationship of technology and teaching has taken place in the past half-century with military studies of film and other media followed by a spate of television studies in the 1950s and 1960s. The result: essentially nothing. The majority of studies found no significant or widespread effects of technology on learning (Chu and Schramm, 1967). An early critic (Mielke, 1968) suggested that the underlying questions of such comparative research were inappropriate because the compared situations were

essentially identical to begin with. A lecture in one room was still a lecture in the next room, even though the instructor was present in one case and televised in the other.

The next wave of studies began with distance education via video technologies such as cable television and ITFS (instructional television fixed service: microwave-spectrum space reserved for educational use). Some positive results were reported, for example, by Gibbons, Kinchloe, and Down (1977), who described an ITFS-delivered program of graduate engineering courses in which students at distant sites outperformed those on campus. However, the design of the instruction included the use of an on-site tutor in combination with live broadcasts and the ability to review taped lectures. The positive results could not be attributed simply to the use of television; rather, they were due to the effective design of the courses and the combination of media and a set of other resources.

TV research was soon overtaken by investigations into the use and effectiveness of computers. Again, a major error was made: the assumption that it would be possible to find some difference between “traditional” instruction and instruction that used some form of mediation. The mistakes made with television were repeated with computers, often with the same results. These have been documented by Russell (1999), who reports 355 studies showing no significant differences.

The most credible research took its approach from Cronbach and Snow’s work on “aptitude treatment interactions” (1969) and considered the specific effects of the unique attributes of the medium in question with relation to particular cognitive and task requirements. Salomon’s work, culminating in his *Interaction of Media, Cognition, and Learning* (1969), is probably the most established and well conceptualized in this area, as he was able to demonstrate the use of technology to “compensate for” or “remediate” or “supplant” certain cognitive processes for students. The gains were a result of an appropriate match between instructional needs and available technological tools that had the capability to present information in ways impossible in a traditional instructional mode.

In a meta-analysis of technology and college teaching studies (including personalized systems of instruction and autotutorial instruction), Kulik, Kulik, and Cohen (1980) found that “instructional technology had a positive impact on course outcome in most of the studies” and that “the overall results suggest that experimentation with instructional technology is worthwhile. . . . It would be foolish, however, to pretend that the effects of instructional technology are large ones” (pp. 201, 204). Richard Clark (1983) “reconsidered research on learning from media” and concluded, “One might reasonably wonder why media are still advocated for their ability to increase learning when research clearly indicates that such benefits are not forthcoming” (p. 456).

In the past twenty years, however, there have been some changes. Clark himself, in the introduction to Russell’s book (1999), says, “The most

promising of the new directions can be found in a study of potential economic benefits from various media. If media researchers and practitioners would only switch their concerns to the economics of instruction, we would discover all manner of important cost contributions from media" (p. xi). Whether cost contributions are sufficient to promote widespread acceptance of technology remains to be seen. Though administrators and trustees see cost benefits as desirable, faculty often see them as a cost-cutting rationale leading to the loss of teaching positions.

What does current research on teaching with emerging technologies tell us? At this point, nothing very definitive. When we find situations, as Clark suggested, that capitalize on the unique attributes of technology for a matching instructional need, what we have found amounts to good instructional design, that is, choosing the right tool for the right job. Indeed, although there is much research on the use of technology, there is much less definitive research on whether new technologies, especially asynchronous technologies used in distance education, can be said to enhance learning simply by virtue of their use. To paraphrase Clark, it isn't the delivery truck that nourishes you, it's the food that it brings. In the same vein, well-designed instruction that appropriately uses technology can provide endless opportunities for teachers and students, opportunities never before possible. But the haphazard application of technology for its own sake can just as well result in "no significant difference" or, worse, the disillusionment of teachers and students and yet another cycle of expensive technology relegated to storage closets.

## **Perspectives on Teaching**

Lest it be said that the past twenty years have concentrated solely on mechanistic, technical, or quantitative issues related to teaching, some reference needs to be made to the ongoing dialogue about teachers and teaching—about the people, the profession, the priorities, and the practice. Ernest Boyer's Carnegie Foundation report (1990) has been one of the most influential discussions of the professoriate and of the nature of scholarship. The report outlines the changing directions of higher education and the pressures on professors at various types of institutions. Boyer defines four kinds of scholarship: the scholarship of discovery, which "contributes not only to the stock of human knowledge but also to the intellectual climate of the university"; the scholarship of integration, which makes "connections across the disciplines, placing the specialties in a larger context, illuminating data in a revealing way, often educating nonspecialists too"; the scholarship of application, which "moves toward engagement" where "new intellectual understandings can arise out of the very act of application"; and the scholarship of teaching, where "the work of the professor becomes consequential only as it is understood by others" (pp. 17–23).

Carnegie studies revealed that the scholarship of discovery was pre-eminent, especially with respect to its importance at research and doctoral institutions. Decisions about faculty performance were based largely on scholarly output, though effective teaching performance (however documented) was expected nonetheless. The problem for many faculty was (and is) that good teaching is not adequately rewarded while poor teaching is often used as a reason for denial of promotion or tenure or even for dismissal. Robert Boice's work (for example, 1991, 1992) addresses the problems new faculty face in balancing the requirement to produce scholarship of many kinds and offers guidelines that can help new faculty become "quick starters." More distressing is Machell's report of "'professorial melancholia,' a progressive emotional process characterized by the negating of a university professor's professional motivation, positive attitudinal focus, and adequate personal self-esteem" (1989, p. 41). This destructive cycle can best be avoided through institutional attention to the needs of teachers and students (Farmer, 1999) and the development of a "supportive teaching culture" as described by Feldman and Paulsen (1999).

What do these discussions of scholarship and professional pressure have to do with teaching? Part of the answer is related to the cyclical emphasis on supporting effective teaching. In the 1960s and 1970s, many centers for teaching were created. By the late 1970s and early 1980s, institutional programs and resources for the support of teaching had diminished, and nearly every one of these centers (even some with national reputations) had closed. Ironically, literature on teaching abounded, and teachers could select from a wide array of resources, as documented by Menges and Mathis (1988).

In the past decade, we have seen renewed interest in support for teachers and teaching. Although external funding like that available for teaching centers in the 1960s has not been the mode, it is heartening to see that many institutions have taken on the responsibility of supporting both teaching and learning. Boyer's distinctions were important in bringing about this emphasis. There has been much discussion, especially of the scholarship of teaching, and work is in fact under way on a *New Directions* volume devoted to this topic.

Other writers have profoundly influenced our conception of teaching in the past twenty years. Pascarella and Terenzini (1991), in their landmark work on the effects of college on students, established the importance of the teaching and learning environment and the impact of student-teacher interactions beyond the classroom. From this and work mentioned elsewhere in this chapter came Chickering and Gamson's *Applying the Seven Principles for Good Practice in Undergraduate Education* (1991), revisited by the authors in Chapter Six of this volume and one of the most cited and influential guidelines for higher education of the decade. Though not proposing to offer extensive and detailed suggestions for teachers, the principles suggest the importance of interaction, cooperation, engagement, task orientation,

communication, feedback, and mutual respect to successful teaching and learning. The principles and the work that underlies them are powerful indicators that teaching involves more than presenting information to a passive audience.

Another notable voice in the dialogue has been Donald Schön (1983, 1991), who argued for “an epistemology of practice based on reflection-in-action” and proposed a reflective practicum where “students mainly learn by doing, with the help of coaching” (1991, p. xii). The reflective practitioner approach mirrors the active learning emphasis noted earlier and reinforces the importance of engagement, time on task, and the ongoing partnership of students and teachers (“apprentices and masters” or “interns and mentors” might be appropriate descriptive terms). The mutually reinforcing concepts from all these writers serve to stress the intellectual and role model responsibilities of teachers and the extension of teaching beyond the simple need to “profess.” A particularly interesting and relevant set of essays can be found in *The Social Worlds of Higher Education: Handbook for Teaching in a New Century* (Pescosolido and Aminzade, 1999), a work based on three premises: that “the institution of higher education is undergoing radical shifts,” that “these shifts reflect not only changes in theories of teaching and learning, but large changes in society,” and that “the improvement of teaching will require a broad, concerted, and truly multidisciplinary effort” (p. 13). The combination of a very broad range of perspectives and a “field guide” of useful hints provides both theoretical and practical information for teachers and makes this a timely and thought-provoking work.

An even further elaboration of non-subject-bound teaching emphasis comes from Parker Palmer (1983, 1997). Palmer exhorts teachers to involve themselves in teaching in deep and personal ways, offering the personal perspective quoted by Jean Civikly-Powell in Chapter Four of this volume: “As I teach, I project the condition of my soul onto my students, my subject, and our way of being together” (1997, p. 15). Palmer’s words have inspired many to develop philosophies or perspectives on teaching that are humanistic and student-centered. An example is a list of “commandments” proposed by Louis Schmier (personal communication, Oct. 12, 1998) on the theme “teach to that one student,” which includes admonitions to teach “with an unshakable faith, with unconditional love, with bold courage, with boundless energy, with uncompromising tenacity, and with your spirit anchored in unending hope.”

Such personal statements focus as much on the teacher’s human responsibilities toward students as they do on professional, disciplinary, or even institutional needs. They have become more common partly as a result of the interest in teaching *dossiers* (Shore and others, 1986) and *portfolios* (Seldin, 1991) and the recommended inclusion of statements of philosophy in these compilations. There are many sources of information and even electronically accessible guides for the preparation of such statements (see, for example, Haugen, 1998).

Although such presentations of personal philosophy and perspectives are important and help illuminate the approaches and values of teachers, they raise a different kind of difficult question: How do we incorporate and consider such statements into the necessary decision-making processes? In an invited address at the annual meeting of the American Educational Research Association, Larry Braskamp (1999) stressed the “integrity” of good teachers and teaching and discussed struggling with the concept with respect to promoting it as a vital part of institutional thinking about teaching and to the difficulties of measuring it as an indicator of excellence. His comments highlight both the importance of establishing and sharing perspectives on teaching and the complexities of arriving at shared definitions and perspectives in an arena so broad and diversified. Clearly, the traditional autonomy granted teachers and the need to preserve an appropriate degree of academic freedom must be balanced against the reality that making judgments about teacher performance includes the need to establish benchmarks. In the arena of personal philosophies, this becomes a very difficult conceptual, political, and practical task.

Ultimately, some observers may reach the conclusion that teaching is so personal, intimate, and individualistic that it defies description or measurement. This would be an unfortunate error, for it would misunderstand concepts like pedagogical content knowledge, it would fly in the face of Boyer’s definitions of scholarship, and it would result in chaos when decisions about merit or worth had to be made. Teaching will always include the uniqueness of the individuals (teachers and students) who are involved, but it will also include process, techniques, strategies, and methods that can be successfully investigated and then replicated across situations, disciplines, classrooms, and contexts. The “scholarship of teaching” seeks to celebrate the accomplishments of individuals but also to identify concepts, principles, and ideas that have merit and to share them with a wide constituency.

## **Conclusion**

In this chapter, I have attempted to review two decades of research relating to many important aspects of college teaching. In the process, it became clear that it is impossible to separate teaching from learning in any reasonable way. Not only this, but it is particularly difficult to treat teaching as a discrete topic divorced from the many other factors that influence the overall dynamics of classrooms, offices, lounges, cafeterias, buildings, and campuses. In other words, this chapter reinforced the notion that college teaching and learning take place in a complex and ever-changing environment, a community affected by and affecting the larger world. As Pascarella and Terenzini (1991) point out, it is the overall experience of college that affects students, and college is, as Pescosolido and Aminzade (1999) also point out, a “social world” that greatly influences both teaching and learning.

A good starting place to consider the array of research on college teaching is Feldman and Paulsen's *Teaching and Learning in the College Classroom* (1998). From it one can get a glimpse of the many multiple interacting forces and variables at work in higher education, and one can begin to see how interdependent these variables are. Perhaps the notion of research on "ecology" is appropriate, for these separate systems must be balanced and interact productively if higher education is to succeed.

What, then, does the research of the past two decades tell us? I believe it tells us that we all have much to learn and much to do if we are to achieve the lofty ideals found in admissions brochures and in our hearts. It also gives us hope that exciting new techniques, discoveries, technologies, and strategies can improve both teaching and learning. And it tells us that two decades of research is just the beginning of a long and necessary but exciting journey into what we are only beginning to know.

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