

EFFECTIVE TEACHING IN THE COLLEGE CLASSROOM: CURRENT PERSPECTIVES AND FUTURE DIRECTIONS*

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It has been argued that a country's competitiveness in the international marketplace will increasingly be linked to its higher education system. As such, the success of a nation will rest, in part, on the calibre of its colleges and universities, with the quality of instruction playing a significant role (Perry, 1990). Accordingly, it seems that research on college teaching should attract a considerable amount of attention from the academic community. In fact, the research has a lengthy history (cf., McKeachie, 1990), but for various reasons has not been widely disseminated. For example, Perry (1990) has noted that of the 100 chapters in the three handbooks of research on teaching (i.e., Gage, 1963; Travers, 1973; Wittrock, 1986) published by the American Educational Research Association over the past three decades, only three are devoted to teaching in higher education (Dunkin & Barnes, 1986; McKeachie, 1963; Travers, 1973). Though few in numbers, these three chapters provide a wealth of empirical evidence that has helped to guide research questions and to define effective college teaching during the past 30 years.

The purpose of this review is to briefly summarize the empirical evidence on effective college instruction and to answer several questions of interest to classroom teachers and researchers alike. Specifically, the

* This research was supported by a Social Sciences and Humanities Research Council of Canada (SSHRC) Doctoral Fellowship to the first author and a SSHRC research grant (#410-91-1296) to the second author.

review focuses on the qualities or behavior that characterize the effective college instructor, the impact these behaviors have on college students, and finally, the implications these findings have for improving college teaching. As such, these issues should be of relevance to classroom instructors, researchers interested in college teaching, and academic administrators who must develop and implement policies regarding these matters. Our intent is to supply the reader with some specific profiles of effective college teaching derived from the empirical evidence, to outline the basic approaches used to gather the research findings, and to present some conceptual and methodological constraints of these approaches.

With these goals in mind, the review provides a general framework that can be used by classroom instructors and researchers alike to begin to understand and interpret the complexities of the research literature. Those who are interested in detailed reviews of specific issues are directed to more comprehensive articles by Cohen (1981), Costin, Greenough, and Menges (1971), Dunkin and Barnes (1986), McKeachie (1963, 1990), McKeachie and Kulik (1975), Feldman (1976, 1989), Murray (1991), Marsh (1984), and Perry (1991), among others. These reviews are helpful because they introduce the reader to the range of topics that have previously been examined on college teaching, such as the lecture and discussion methods, individualized instruction, class size, teaching technology, computer assisted instruction, etc.

The more recent of these reviews deal with the dimensions of effective teaching by examining global and specific teaching behaviors and their relation to student motivation and learning. An important result of this latter emphasis is that diagnostic feedback based on these effective teaching behaviors can be provided to faculty should they wish to improve their teaching. For example, good teaching has been defined, in part, as having the following properties: organization, clarity, rapport, and ability to stimulate interest in students. With such information, faculty interested in modifying their teaching practises should be able to make informed decisions about what kinds of changes to undertake. This information can also be important in administrative decisions involving tenure, promotion, and merit. Consequently, the latter reviews and research are useful because they provide many teaching dimensions or behaviors that are critical to student motivation and learning.

Effective College Teaching

Research on teaching generally concerns the study of relationships among instructor activities and characteristics, environmental influences, and educational changes that occur in students. More specifically, it examines what teachers do and the effect they have on students. This research has emerged from traditional independent-dependent variable or input-output variable models in psychological research. Dunkin and Biddle (1974), for example, labelled this approach process-product research and later extended the paradigm to include college teaching (Dunkin & Barnes, 1986). Procedurally, this approach often involves describing, assessing, and experimentally manipulating teaching behaviors (i.e., process) and examining their relationships or effects on a number of student variables such as teacher evaluations, thinking, emotions, motivation, course selection, drop out, absenteeism, and achievement (i.e., products).

Reviews of the empirical research on college teaching have aided in generating an array of key teaching dimensions (e.g., Costin, Greenough & Menges, 1971; Feldman, 1976, 1989; Marsh, 1984; Marsh & Dunkin, 1993; Murray, 1991; Perry, 1991). A representative list of the dimensions is presented in Table 1 [1]. The reader should note the degree of overlap or similarity among the dimensions that emerge from this research. For instance, interest, expressiveness (referred to by some as enthusiasm), organization, clarity, interaction, and rapport are among the dimensions most commonly reported. That is, teachers who are viewed as the «best» are those who exhibit several pedagogic behaviors such as «stimulates students' interest in subject matter», «are expressive in their presentation of lecture information», «are organized», «are clear in their presentation of subject matter», and «allow students to express their opinion». In turn, it is believed that behaviors influence the way students think (e.g., attention, encoding information, storing information, recalling information), feel (e.g., pride, hope, self-esteem), and learn in the college classroom. Thus, instructors who are expressive (i.e., use voice intonation, hand gestures, body posture, etc.) are more likely to initiate and maintain the attention of college students during a lecture than are teachers who do not. Having engaged students' attention, the instructor has a better chance to impart the lecture material, thereby increasing learning and performance (Murray, 1991; Perry, 1991). Moreover, if this teacher is well-organized, then once students' attention is established, students should be able to process lecture information more effectively by structuring the content better in their memory and in their notes.

Table 1.—*Effective teaching behaviors identified in representative empirical studies*

Feldman (1976)^a		Cohen (1981)^b		Feldman (1989)^c	
Interesting	1	Structure	.47	Organization	.57
Clarity	2	Skill	.50	Clarity	.56
Challenge	3	Student Perceived	.47	Course Goal Met	.49
Class Progress	4	Progress		Perceived Outcome	.46
Organization	5	Interaction	.21	of Instruction	
Clear Objectives	6	Rapport	.31	Overall Rating	.39
Enthusiasm	7	Feedback	.31	Interest	.38
Knowledge	8	Evaluation	.25	Motivates	.38
Elocution Skill	9	Difficulty	-.02	Encourages	.37
Expressiveness	10	Interest/ Motivation	—	Helpful	.36
				Elocutionary Skill	.35
				Clarity of objective	.35
				Knowledge	.34
				Sensitivity	.30
				Enthusiasm	.27
				Management	.26
				Fairness	.26
				Challenging	.25

NOTES:

a) dimensions are rank ordered according to their correlations with students' evaluation of teaching.

b) Correlations of dimensions with student achievement.

c) Correlations over .25 of dimensions with student achievement.

Two different types of reviews have summarized the research on college teaching and learning: meta-analytic and descriptive. The former is exemplified by the work by Cohen (1981) and Feldman (1976, 1989), whereby a set of methodological and statistical procedures is used to synthesize the results of many different studies in a research domain. The latter focuses on the more traditional descriptive reviews as exemplified by Marsh and Dunkin (1993), Murray (1991), and Perry (1991). Only the more recent reviews are presented here, but for those interested in earlier ones, they may wish to examine McKeachie (1963) or Costin et al. (1971). The reviews provide a comprehensive analysis of the empirical evidence on effective college teaching and should be of interest to instructors, administrators, and researchers alike. The studies have been conducted in

both field and laboratory settings, with widely divergent methods (i.e., descriptive, correlational, experimental), yet reveal some surprisingly consistent results.

These reviews identify key teaching behaviors that have helped to define effective college lecturing. However, they do not specify how these behaviors affect student motivation and learning. To explore this topic, it is first helpful to understand the research methods that have been used to gather the teaching and learning data.

Typically, these methods are adopted in examining three questions concerning research on teaching and learning in higher education: How do teachers behave?; Why do teachers behave as they do?; and What are the effects of teachers' behavior on student? (cf., Centra, 1989; Dunkin & Barnes, 19886; Gage, 1963; Marsh, 1984; Marsh & Dunkin, 1993; Murray, 1991; Perry, 1991). North American researchers have attempted to answer these questions, using three research methods: descriptive, correlational, and experimental. Each method and related research will be discussed in turn.

Descriptive Method

Some researchers have attempted to describe the components of college teaching based on the perceptions of students and, to a lesser extent, faculty (e.g., Feldman, 1976, 1986). Their approach is guided by the assumption that students have acquired considerable knowledge and understanding of the teaching process after spending thousands of hours in classrooms observing dozens of teachers during their educational development. These classroom experiences provide the basis for this knowledge to become organized and structured, so that various teaching practices are linked to specific educational outcomes. This knowledge is presumed to guide subsequent student-teacher exchanges in the classroom. With the lecture method, for example, students may believe a well-organized presentation is associated with better achievement, making them feel more confident about success, which in turn, may engender more positive student-teacher interactions. Researchers using this approach believe that these subjective perceptions about instruction can provide valuable insight into what constitutes effective college teaching (e.g., Feldman, 1976).

Procedurally, the descriptive approach involves interviews and questionnaires that require students, alumni, and professors to specify the characteristics of effective teaching. The respondents are provided with either an open-ended or a forced-choice format and asked to list the attributes of the ideal teacher, to indicate the characteristics essential for

effective teaching, or to describe the qualities of their best teacher (cf. Felman, 1976; Marsh, 1984; Murray, 1983a). This method has proved to be remarkably consistent in identifying what behaviors constitute effective college teaching (see Table 1).

Critics of this approach argue that students' knowledge of instructional processes is distorted by insufficient discipline expertise and by unsubstantiated beliefs and attitudes about instruction. As such, these beliefs, or implicit theories of instruction, are deemed problematic to the extent that they may bias objective evaluations of teaching (Whitely & Doyle, 1976). In a comprehensive review of the literature, however, Marsh (1984) concluded that such biases are of little, if any, concern. Although this debate is as yet unresolved, it would appear that much is to be gained from studying students' and instructors' knowledge structures about instruction. Moreover, any potential biases can be controlled through various statistical techniques such as analysis of covariance or regression analysis.

Research evidence. Feldman (1976) reviewed classroom field studies based on college students' view and assessment of effective college teaching. Based on this analysis, he identified nineteen teaching dimensions that students use to describe their ideal, important, or best teacher: Interest, enthusiasm, knowledge, intellectual expansiveness, preparation, clarity and understandableness, elocutionary skills, sensitivity, clarity of course objectives, value of course material, supplementary material, difficulty of material, fairness, classroom management, feedback, encourages discussion, challenging, respect for students, and helpfulness (see Table 1 for the 10 highest ranked dimensions). Likewise Marsh (1984) has consistently identified nine teaching dimensions using nearly one million students from various cultures in his development of the Student Evaluation of Educational Quality (SEEQ) instrument which measures college students' evaluation of teaching: learning, enthusiasm, organization, group interaction, rapport, breadth, exams, assignments, and work load.

As such, the descriptive approach offers valuable guidance for researchers who want to identify key teaching dimensions and to instructors who seek a clearer understanding of what constitutes effective college teaching. While the descriptive approach is valuable in listing and describing the components of effective teaching, it provides virtually no quantifiable measure of their impact on actual educational outcomes, namely student motivation and achievement. To address this issue, many researchers have adopted either a correlational or experimental approach.

Correlational Method

Based on logic, theory, and descriptive results, instructional behaviors and characteristics are selected and correlated with a number of student academic outcome variables. Significant positive correlations between teaching behaviors and student academic outcomes indicate one of three possibilities: (1) a teaching behavior, such as «gives an outline of the lecture», caused an increase in student achievement; (2) some student outcomes (e.g., achievement) caused an increase in the teaching behavior (e.g., «gives an outline of the lecture»); or (3) a third variable (e.g., «students' interest in the course») caused an increase in both the teaching behavior and student achievement. For example, Feldman (1989) synthesized numerous studies in which researchers found significant correlations between several teaching behaviors, such as organization and clarity, and student academic achievement. He was able to show that some teaching behaviors were highly correlated with student achievement (e.g., organization), whereas others were not (see Table 1).

An advantage of this approach is that it can lead to identifying which teaching behaviors are related to student outcomes by establishing a relationship between important college teaching behaviors and specific student outcomes, such as achievement. In addition, it can determine the degree of association or the strength of the relationship between teaching and learning variables. That is, it can help to assess how important the relationship is between specific teaching behaviors and student outcomes according to quantifiable criteria. One limitation of this approach is the difficulty researchers face in establishing a causal relationship between the teaching behavior and student outcome variables. In other words, because of the three possible effects listed above, it is difficult to establish the causal sequence of the variables. However, this problem can be reduced by instituting statistical techniques such as path analysis in conjunction with theories that identify important variables and their temporal sequence.

Research evidence. In his 1981 meta-analysis of multisection field validity studies, Cohen extended descriptive research by examining the relationship between an overall rating of teaching effectiveness and one student academic outcome—scholastic achievement. Based on 40 studies of 67 multisection courses, Cohen calculated an average correlation of .43 between the overall rating of teaching effectiveness and student achievement. In addition, he identified nine dimensions of teaching effectiveness related to student achievement: structure, student perceived progress, interaction, rapport, feedback, evaluation, difficulty, and interest/motivation (see Table 1). However, Cohen only examined nine a priori teaching dimensions, leading Feldman (1989) to reanalyse and extend

Cohen's (1981) analysis. Feldman coded 28 high-inference teaching behaviors, seventeen of which had correlations of greater than .25 with student achievement (see Table 1). Consequently, these correlations underscore which teaching behaviors are related to student achievement and the importance of the relationship.

Where these meta-analyses have generated a comprehensive list of high-inference (i.e., abstract) teaching dimensions, their abstract nature provides less guidance for developing a measure of effective teaching or an operational definition. To do this, more specific concrete, observable, and measurable behaviors are needed (i.e., low-inference). Following this line of reasoning, Murray (1991) reviewed a number of studies examining the relationships between low-inference teaching behaviors and an array of student outcome variables (e.g., Solomon, Rosenberg, & Bezdek, 1964; Mintzes, 1979). From the studies he reviewed, a number of low- and high-inference teaching behaviors were correlated with student ratings of instructors, achievement, and knowledge comprehension. Findings indicate that the low-inference teaching behaviors most highly correlated with student ratings of instructors were: «gives outline», «speaks expressively or dramatically», «addresses students by name», «gives concrete examples», and «stresses most important points» (Mintzes, 1979; Solomon, Rosenberg, & Bezdek, 1964).

Some of the most encompassing research on low-inference teaching behaviors has been conducted by Murray (1983a) himself. He measured low-inference (i.e., concrete) teaching behaviors by obtaining ratings on teachers' effectiveness from archival data, actual classrooms (Murray, 1985, cited in Murray, 1991), and by using a group of independently-trained observers to assess 60 instructional behaviors using the Teaching Behavior Inventory (TBI). This procedure prevented potential biases, such as halo effects, from occurring by ensuring that independent rating sources were gathered for each teaching behavior. In addition, Murray (1983b, cited in Murray, 1991) addressed the issue of whether teaching behaviors that correlate with student ratings are similarly related to other indicators of teaching effectiveness such as course ratings, amount of hours studied, senior course registration, achievement, and subjective ratings of amount learned.

The items from the TBI are divided among eight categories of teaching behaviors believed to be important for successful student academic outcomes: speech, nonverbal behavior, explanation, organization, interest, task orientation, rapport, and participation. The five low-inference teaching behaviors demonstrating the greatest differences among low, medium, and highly rated instructors were: speaks expressively and emphatically, shows

a strong interest in the subject, moves about while lecturing, uses humour, and shows facial expression. Moreover, the dimensions that had significant correlations with three or more of the outcome measures were rapport, conceptual clarity, enthusiasm, task orientation, and informality.

Briefly, many teaching dimensions such as organization, clarity, and enthusiasm have been correlated with student achievement. However, some of the dimensions are abstract, and therefore, provide less guidance for developing effective teaching measures and an operational definition. As a result, a number of researchers have correlated lower inference or more concrete behaviors with student achievement, such as «gives an outline of the lecture», «stresses most important point», and «speaks expressively or emphatically». The next section summarizes research that has tested the causal relationship between teaching and learning by exercising control over the independent variables.

Experimental Method

In the simplest form of the experimental approach, a researcher randomly assigns subjects to two or more conditions, systematically manipulates an independent variable, in this case a teaching behavior, and then assesses its effect on some dependent variable, for example, student achievement. Often when a study is conducted in field settings, the researcher can resort to quasi-experimental methods to manipulate the independent variable (see Cook & Campbell, 1979). If a significant difference for achievement is found across the experimental conditions, then it is said to be caused by the independent variable, since many other variables are controlled, while only the teaching behavior is free to vary. The most obvious advantage of the experimental approach over the correlational approach is that it is interpretable in cause and effect terms because the independent variable is under the experimenter's control, the direction of the effect is established a priori, and other possible influencing variables are minimized. Thus, by exercising control over a teaching behavior and the degree to which it is manipulated, researchers can be more precise in their predictions of how it affects students in relation to their motivation and achievement.

One frequently cited disadvantage of the experimental approach, when used in a *laboratory* setting, is that it is artificial or low in ecological validity. What this means is that the experimental procedures involving the definition of the independent variable, measurement of the dependent variable, etc., are not representative of an actual college classroom. One way to circumvent the problem of contrived laboratory settings is to conduct an experiment in a *field* setting. However, what is gained in

ecological validity, namely, representativeness of the setting, is often diminished in loss of control over extraneous variables which could become alternate explanations for significant effects. For example, if a researcher was interested in the effects of class size on student learning, s/he could examine different size classes for student performance. However, each class has a different instructor over which the researcher has no control. Consequently, any achievement effects could result from differences between the different instructors, rather than differences in class size.

Recently, Perry and his associates have developed a procedure that is a compromise between field and laboratory experimental research, namely the laboratory analog (e.g., Perry & Dickens, 1984; Perry & Magnusson, 1987). With this approach, Perry couples the strengths of experimental laboratory research with the strengths of experimental field research. This is accomplished by using a representative sample of college students, an actual college professor and a lecture taken from an on-going course, an exam based on the lecture, etc. (see Perry, 1991). The same instructor is trained to exhibit, to a lesser or greater extent, a number of empirically-supported, operationally-defined low inference teaching behaviors. The presentation is then videotaped and presented in colour to students on a life-size video screen in a simulated college classroom. Students observe the lecture, take notes, and complete a multiple choice achievement test based on the lecture content.

Research evidence. Consistent with the correlational findings, Marsh (1984) and Murray (1991) have found that most experimental research on teaching effectiveness has either focused on instructor clarity or instructor expressiveness. In addition, much of the research has been laboratory in nature. Because of this, the following section will focus on the experimental-laboratory research that has examined the effects of instructor clarity and expressiveness on student evaluations of instruction and academic outcomes.

Generally, laboratory research on *clarity* as a teaching behavior has produced consistent effects on both student ratings and achievement. Two studies, one conducted by Land (1979) and the other by Land and Combs (1981), support the above claim. Land (1979) examined the effects of six low-inference clarity items: «emphasis on content», «clear transition between concepts and topics», «use of vague terms», «use of mazes such as false starts or halts in speech», «use of 'uh'», and additional unexplained content. These behaviors were presented on videotape according to their frequency of occurrence (i.e., low, high) and students were randomly assigned to either condition. The dependent variable was a 30 item achievement test completed by the students. Results indicated that instructors trained to present clear

lectures produced greater achievement in students than did instructors trained to present unclear lectures.

To achieve a finer-grained analysis of one clarity dimension, Land and Combs (1981) reduced the dimensions examined by Land (1979) and only examined three vagueness behaviors: «tangles of words», «halts in speech or false starts», and «repeated words». Using a procedure similar to the one presented above, the effects of these were examined on a teaching evaluation form and achievement test. Significant effects were found for both dependent variables. Students presented with a clear lecture gave higher ratings to the instructor and performed better than their counterparts receiving the unclear lecture.

By far, the majority of research examining the effects of instructor *expressiveness* on student academic outcomes has been conducted by Perry and his associates (e.g., Perry, Abrami, Leventhal & Check, 1979; Perry & Dickens, 1984; Perry & Magnusson, 1987, 1989; Perry & Penner, 1990; Perry & Tunna, 1988). The genesis of his research was precipitated by a series of studies conducted by Naftulin, Ware, and Donnelly (1973), Ware and Williams (1975), and Williams and Ware (1977) who tested the widely held assumption that entertaining, enthusiastic instructors receive high ratings from students in the absence of adequate course content. To test this assumption, lectures were manipulated by varying instructor expressiveness and lecture content using an actor who posed as a university professor. Findings indicated that overall, expressive instructors produced higher ratings and achievement in college students than unexpressive instructors.

In further testing this hypothesis, Perry and his associates enhanced the experimental procedure by developing the laboratory analog and including a number of neglected student variables such as cognitions, affect, motivation, and behavior using a theoretical model that explains how and why a teacher's behavior may affect students. Operationally defining expressive teaching (labelled enthusiasm by some researchers) as physical movement, voice intonation, eye contact, and humour, Perry has documented significant effects on academic achievement (e.g., Perry, Abrami & Leventhal, 1979; Perry & Dickens, 1984; Perry, Magnusson, Parsonson & Dickens, 1987; Perry, Magnusson, Schonwetter & Struthers, in press; Schonwetter, Perry & Struthers, in press), student attributions (e.g., Perry & Dickens, 1984), perceived control (e.g., Perry & Dickens, 1984), emotions (e.g., Perry, Magnusson, Schonwetter & Struthers, in press; Schonwetter, Perry & Struthers, in press), and motivation (Perry & Dickens, 1984). That is, students exposed to a high-expressive instructor exhibited higher exam scores, increased mastery attributions, a greater sense of control, motivation,

more positive emotions, and gave higher ratings than did students exposed to a low-expressive instructor. Moreover, he has explained the results within an information processing framework. Like Murray (1983a), Perry and Dickens (1984) have argued that expressive behaviors exhibited by an instructor influenced students' ability to attend to lecture content. In turn, instructor-activated attention is presumed to affect encoding, memory, and achievement.

Overall, the results that have emerged from the descriptive, correlational, and experimental approaches indicate that both students' and independent raters' evaluations of teaching behaviors are related to student achievement, amount of time contributed to studying, perceived amount learned, and course selection. Moreover, Cohen (1981), Feldman (1976, 1989), and Marsh (1984) together provide strong evidence for the validity of student evaluations of instructors (cf. Marsh & Dunkin, 1993). In addition, these reviews and research articles provide an array of important high-inference teaching dimensions that could aid in identifying the key teaching dimensions and developing operational definitions of effective teaching, namely *clarity* (Cohen, 1981; Feldman, 1976, 1989; Murray, 1983a; Mintzes, 1979; Solomon, Rosenberg & Bezdek 1964), *organization* (Cohen, 1981; Feldman, 1976, 1989; Murray, 1983a), *expressiveness* (Cohen, 1981; Feldman, 1986, 1989; Murray, 1983a; Solomon, Rosenberg & Bezdek, 1964), *interaction* (Cohen, 1981; Murray, 1983a), and *rapport* (Cohen, 1981; Feldman, 1976; Murray, 1983a; Mintzes, 1979; Solomon, Rosenberg & Bezdek, 1964). Most importantly, however, this research identifies the key low-inference teaching behaviors for each of these high-inference dimensions. For example, «uses concrete examples» (clarity), «speaks expressively or emphatically» (enthusiasm), «encourages questions and comments» (interaction), «gives an overview of the lecture» (organization), and «shows concern for students» (rapport) [2].

Supported by the field-correlational research, the experimental-laboratory research has focused on two high-inference teaching dimensions (i.e., clarity and expressiveness), many low-inference behaviors (e.g., physical movement), and a host of student outcome measures such as ratings of effective teaching, student cognitions, affect, motivation, and achievement. Results indicate that both teaching dimensions have a direct causal effect on student ratings and achievement among the other variables listed. The laboratory findings in conjunction with the field research provide strong evidence for what teaching dimensions and behaviors should be used to operationally define effective college teaching.

In sum, researchers often adopt the descriptive method in generations key teaching behaviors. This approach involves students, colleagues, and alumni observing and rating the ideal teacher. Unfortunately, nothing is

gained in terms of how the key teaching behaviors identified influence students. To do this, researchers need to adopt either the correlational method which can determine the relationship between behaviors and student academic outcomes or the experimental method which manipulates teaching behaviors and assesses their effects on student academic outcomes. Before researchers begin to test their hypotheses concerning the effects of teaching on learning, however, they should attend to at least three lingering problems in research on teaching and learning: the use of a theoretical framework; an operational definition of effective teaching; and a reliable and valid instrument to measure teaching behaviors.

Conceptual and Methodological Constraints

Theoretical Approaches

Because academic performance results from an interactive process involving instructor and student, theories of effective college teaching should take into account theories of student learning (Murray, 1991; Marsh & Dunkin, 1993; Perry, 1991). Surprisingly, however, research in higher education suffers from a paucity of theoretical underpinnings incorporating teaching behaviors and student learning. The few theories that have been used to explain research findings have been largely dominated by cognitive and social cognitive models.

According to Fiske and Taylor (1984, 1991), social cognition refers to how people make sense of other people and themselves and includes topics such as attitudes, person perception, motivation, etc. They argue that there are several basic features of social cognitive research, each of which makes it well-suited to the study of teaching and learning in higher education. First, social cognition features cognitive elements such as memory, attributions, schemas, and expectations. Second, it examines cognitive processes incorporating stimulus-response (S-R) variables (i.e., behaviorism) mediated by cognitive elements (i.e., S-C-R) and their sequential association. As such, students and teachers would *both* be assumed to be active participants in a learning episode and not simply reactive. Thus, when students are presented with a social stimulus (e.g., instructor), there are a number of intervening cognitive activities that occur (e.g., attention, encoding, inference, decision) before a response is made (e.g., note-taking). Finally, there is a merger between social and cognitive processes (e.g., self-regulation, self-perception, student-teacher interaction, information processing) to explain thoughts, feelings, and actions.

One example of such a theoretical approach has been presented by Perry (1991). He proposes that certain teaching behaviors are effective because they prime information processing activities (i.e., encoding, storage, and retrieval of information) in students. In the case of instructor expressiveness, for example, students are more likely to attend to instructors who physically move and vary the intonation of their voice. Stimulus modulation or variability is identified as a critical factor for activating selective attention in the cognitive science literature (Fiske & Taylor, 1991), and there is good reason to believe that it should also affect teaching/learning dynamics. Once attention has been invoked, this instruction-activated mechanism is proposed to determine such things as knowledge acquisition, motivation, and achievement in students.

Another example of a social cognitive theory that is in the forefront of explaining college student motivation is Weiner's (1972, 1974, 1985, 1986) attribution theory of motivation and emotion. His model describes a temporal process in which people make inferences about the causes of their own actions and those of others. He contends that a motivational episode is initiated by the person's attempt to explain (e.g., ability, effort, luck) why the event happened. It is these attributions which give rise to cognitive (expectations) and emotional (e.g., hope) reactions which are, in part, the basis for academic motivation and achievement-striving.

For example, college students are frequently confronted with a number of challenges such as tests, papers, and poor instruction in pursuit of their academic goals. Not surprisingly, any one of these challenges can produce success or failure outcomes. Such experiences can have enhancing or deleterious effects on subsequent thoughts (attributions, expectation), emotions, motivation, learning, and achievement. By a similar set of circumstances, it is suggested in this paper that teachers' attributions, motivation, and behaviors are linked to students' motivation and learning. Thus, students affect teachers who in turn affect students.

In sum, any theory intended to explain college teaching and learning must take into account what the instructor and student do in the classroom and how this affects subsequent instructional practices and student learning initiatives. Routinely this is achieved by assessing or manipulating one or more teaching behaviors, examining their effects on student achievement, and then using theory to predict and explain the research findings. The selective attention model and Weiner's (1985, 1986) attribution theory of achievement motivation and emotion provide a glimpse into the complexities of teaching and learning processes. Ultimately, the key behaviors must not only be identified, but they must also be defined and assessed; how they are defined forms the basis for the next section.

Operational Definition

An operational definition of a construct (e.g., teaching effectiveness) provides a set of procedures that can be used to measure it. They are a necessary and important way of communicating exactly what a researcher means by a construct, so that other researchers can replicate and assess empirical findings. Far too often, however, researchers are inattentive to this issue, and consequently, it has plagued the literature on college teaching. Some researchers have adopted artificial definitions that bear little resemblance to the realities of the college classroom. Manipulating teaching qualities with brief written descriptions or short tape-recordings are typical examples of this problem. Pervasive in these simplistic approaches is the complete disregard of the extensive research literature of the kind described here. Rather than consulting comprehensive reviews (e.g., Feldman, 1989; Marsh, 1984) and the empirical evidence, such researchers resort to highly artificial definitions, lacking representativeness, thereby jeopardising the meaningfulness of their results.

A number of useful operational definitions of effective teaching behaviors have emerged through, and been replicated, a host of factor analytic studies (see Table 1 and Cohen, 1981; Feldman, 1976, 1989; Marsh & Dunkin, 1933; Murray, 1991 or reviews). Unfortunately, many of these dimensions form what Murray (1983a) refers to as high-inference teaching behaviors that can only be assessed through an observer's inference or judgement. For instance, organization, is a high-inference construct that is too general and unclear regarding the specific teaching behaviors that define it, such as, «uses an outline» and «prepares the lecture in advance». Because of their abstract nature, high-inference constructs provide only general guidance in establishing an operational definition, although often they do aid in reducing a larger number of variables into a fewer number of manageable multivariate constructs [3].

Fortunately, many of these global constructs can be operationally defined in terms of what Rosenshine and Fust (1971) refer to as low-inference teaching behaviors, namely concrete, denotable actions of an instructor that can be recorded and observed with little or no inference on the part of the observer. According to Murray (1991), there are several additional advantages to adopting low-inference teaching behaviors in establishing an operational definition of teaching effectiveness. First, such behaviors are, in comparison to high-inference behaviors, easy to convey, record, and manipulate for research purposes. Second, low-inference teaching behaviors represent the «front line» of teaching or the point of direct contact between students and instructors whereby students are most likely to be affected by quality of instruction. Third, given that an

important aim of research on college teaching is to provide diagnostic feedback to improve teaching and learning, then low-inference teaching behaviors, rather than abstract notions, are more readily comprehended and implemented. Having established an operational definition, researchers require a measurement instrument to assess the teaching behaviors under investigation.

Measurement

In an attempt to answer two of the three questions typically asked in research on teaching, namely «How do teachers behave»?; «what are the effects of their behavior on students»?; a method of assessing effective teaching is required. The value of any measurement instrument that is adopted is determined by its psychometric properties which include actually measuring what the instrument is supposed to measure (validity) and doing so consistently (reliability, see Anastasi, 1982). For example, Marsh (1984) provides a comprehensive rationale and procedure in establishing psychometric properties. Using a combination of intuition, logic, data collection, empirical verification and theory, Marsh (1987) has provided an excellent example of an instrument for assessing effective college teaching: the Student Evaluation of Educational Quality (SEEQ) questionnaire [4].

In his development of SEEQ, Marsh (1982) obtained key teaching behaviors from the literature and from interviews with faculty and students. They were based on ratings of items that students and faculty believed were important, on ratings from faculty about the usefulness of each item for providing diagnostic feedback, and on open-ended student comments. Marsh (1984) proposed that effective teaching is multidimensional instead of unidimensional. That is, effective teaching is comprised of numerous dimensions, such as organization and expressiveness, rather than a single dimension, namely good/bad teaching. Consequently, an instructor can be organized, but lack enthusiasm. In support of his claim, an overwhelming number of SEEQ surveys by students and faculty (nearly 1 million) from many cultures including the Universidad de Navarra in Spain (Marsh, Touron & Wheeler, 1985), were factor analyzed and have consistently produced 9 factors or dimensions of effective college teaching: interest, enthusiasm, organization, group interaction, rapport, breadth, exams, assignments, and workload.

In summary, research on teaching is important because it can provide valuable information about how teachers teach and students learn more effectively, thereby aiding both in accomplishing their educational goals. Despite a growing number of consistent findings that have emerged, however, not enough is known about how teaching behaviors affect student

learning. A solution to the problem lies, in part, in the use of theoretical underpinnings, in identifying and operationally defining a core set of effective teaching behaviors that have been empirically demonstrated to affect student outcomes, and by adopting reliable and valid measures to assess teaching behaviors, achievement.

Conclusions and Implications of Effective College Teaching

What We Know Now

Effective teaching in higher education is beginning to stimulate considerable interest and research. Most of the prior field and laboratory research conducted has attempted to describe, assess, and experimentally manipulate teaching behaviors and to examine their relationships and effects on various student academic variables. One advantage of this research was that a number of key low- and high-inference teaching behaviors were identified as important precursors to student achievement, in addition to other academic outcome variables. Despite this interest and research, however, not enough is known about why and how teaching behaviors affect student learning and other student variables, making it difficult to reward effective teaching and to change ineffective teaching.

A solution to the problem lies in more research that adopts teaching and learning theories such as information processing. First however, researchers must identify, operationally define, and measure a core set of effective teaching dimensions. The authors of this paper believe that at least five high-inference teaching dimensions have been identified as critical: clarity, expressiveness, interaction, organization, and rapport. Each of these has a related subset of low-inference teaching behaviors (e.g., «uses concrete examples», «moves about the classroom») that can be assessed with very little subjectivity on behalf of the observer. As well, they can be used to provide feedback to instructors. Because the evidence presented in this paper has a number of implications for professors, administrators, and researchers, other solution to the problem of quality education may be required. These solutions could emerge through administrative policy, teaching effectiveness courses based on empirically supported teaching behaviors, better research methodology, and student demands.

What We Need To Know

Professor perspective. Effective college teaching has been theoretically and empirically defined by a number of teaching behaviors including being

expressive, organized, clear, and receptive to students. Consequently, teachers who exhibit these behaviors can expect to influence the way students' think, feel, and learn. However, in the future, instructors need to know more about the effect that their behaviors have on students. Given this knowledge, it is quite likely that instructors will experience a greater sense of control in the college classroom. That is, faculty who teach effectively, and who understand how and why they are doing so, should have a greater sense of mastery and be more likely to optimize teaching goals.

Administrative perspective. In the future we need commitments by administrators to effective teaching and student learning. Thus, if teaching is important to student motivation and learning, then administrators may consider demonstrating a commitment to excellence in teaching via policy. For example, mandatory teaching courses based on sound empirical evidence would be helpful for new faculty and graduate students involved in teaching. This course and other teaching supports, such as videotaping lectures to improve teaching, could be offered through a teaching centre on campus. In addition, administrators could establish relationships with researchers and practitioners to facilitate research on teaching and its dissemination. This relationship could be encouraged through research grants and teaching awards.

Research perspective. In the future, we need to know more about the effects of specific teaching behaviors on a broader range of student outcome variables. As a result, researchers need to be more assertive about experimentally examining teaching behaviors, other than expressiveness, and consequently, how they affect student outcome variables such as attention, note-taking, memory, and independent thinking. As discussed above, this research will be important to both administrators and teachers attempting to base their policy and behavior on empirical research. Moreover, research examining students' ability to learn despite ineffective instruction is also valuable. Because teachers are not taught how to teach at the higher education level, students frequently face poor instruction in the classroom.

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Received: 1.III.1993.

NOTES

- [1] Personality and context variables were excluded as criteria because they provide little opportunity to be altered or improved upon by instructors. This should not imply, however, that these types of variables do not have an effect on the quality of instruction. Dunkin and Barnes (1986), Murray, Rushton, and Paunonen (1990), McKeachie (1990), and Perry (1991) have all documented the effects of these variables on student outcomes. In addition, the focus was restricted to the lecture method because it is the most prevalent one in higher education (Dunkin & Barnes, 1986).
- [2] Each high-inference teaching effectiveness dimension contains a number of low-inference teaching behaviors. The examples provided here are simply individual examples of low-inference items. For a more comprehensive list see Murray (1991).
- [3] Tabachnick and Fidell (1989) note that the multivariate world is a more accurate representation than the univariate world. However, when the multivariate world is too complex or comprehensive to explain the phenomenon under study, then its advantage over the univariate approach is dubious.
- [4] Many other teaching evaluation forms exist, for example: the Endeavour Instrument (Frey, Leonard & Beatty, 1975); Student Description of Teaching Questionnaire (Hildebrand, Wilson & Dienst, 1971); the Michigan State SIRS Instrument (Warrington, 1973); The Illinois Course Evaluation Questionnaire (CEQ) Aleomoni (1972).

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SUMARIO: ENSEÑANZA EFICAZ EN EL AULA UNIVERSITARIA: PERSPECTIVAS ACTUALES Y FUTURAS DIRECCIONES.

La efectividad de la enseñanza en la educación superior es importante tanto para los estudiantes, profesores e investigadores, como para los administradores, y, en consecuencia, ha originado un considerable interés. El propósito de este artículo es realizar una revisión de las evidencias empíricas acerca de cuál sea la enseñanza más eficaz en el nivel universitario, con el objetivo puesto en los siguientes problemas: las cualidades o conductas que caracterizan al profesor eficaz; el impacto que estas conductas tienen en los estudiantes, y las implicaciones de los hallazgos empíricos en la mejora de la enseñanza eficaz que se extraen de diversas experiencias, como son las de organización, claridad y expresividad; las distintas perspectivas principales para la obtención y acumulación de resultados de investigación, fundamentalmente, la descriptiva, la correlacional y la experimental, y, por último, algunas de las virtualidades y limitaciones conceptuales y metodológicas de estas perspectivas. Esperamos que este artículo proporcione al lector una idea suficiente acerca del estado actual, métodos y preocupaciones de la investigación sobre la enseñanza en las instituciones universitarias de América del Norte.

KEY WORDS: Effective teaching. Higher education. Empirical research.