

Teaching Effectiveness: A Review of the Research

G. Patrick O'Neill

brock university

This article provides an extensive overview of teacher effectiveness research. Over 150 primary and secondary sources are represented. Results reveal immense strides since the first major inventory some 17 years ago (Rosenshine & Furst, 1971). Indeed, 20 instructional research factors are identified, of which 17 are well documented. Despite present criticism, empirical investigation yields valuable insights into specific aspects of teaching and learning. The review should be of particular interest to teacher educators, classroom teachers, and school administrators.

Cet article présente un compte rendu exhaustif des recherches menées sur l'efficacité de l'enseignant. Plus de 150 sources primaires et secondaires ont été consultées. Ce tour d'horizon révèle que d'immenses progrès ont été réalisés depuis le premier bilan important sur la question, il y a dix-sept ans (Rosenshine et Furst, 1971). Vingt facteurs de recherche de nature pédagogique ont été identifiés; sur ce nombre, dix-sept sont bien documentés. Il y aurait donc lieu de penser, en dépit des critiques, que la recherche empirique peut fournir des éclairages fort utiles sur certaines facettes de l'enseignement et de l'apprentissage. Ce compte rendu intéressera tout particulièrement les formateurs de maîtres, les enseignants et les administrateurs scolaires.

INTRODUCTION

The question of what constitutes an effective teacher or effective teaching has caught the imagination of sociologists, psychologists, and educators for generations. The issue has been pondered intensively, discussed vigorously, and, more recently, examined empirically. In general terms, the question becomes: what teaching strategies, techniques, or devices contribute most effectively to student learning? In specific terms, the question addresses more complex matters such as: what teaching methods, under what conditions, with what students, in what subject areas, and at what grade levels contribute most effectively to student achievement?

Although answers grounded in conventional wisdom, idle inference, and personal intuition are interesting, they are of limited value until subjected to rigorous testing. Reputable responses are best found in the increased number of descriptive, correlational, and experimental studies that have been slowly and methodically developing a solid data bank, one that

is beginning to show that not only do well-designed process-outcome studies yield coherent and replicable findings, but treatment studies based on them are capable of yielding improvements in student learning that are practically as well as statistically significant. Such data are an important contradiction to the frequently expressed attitudes that teaching is too complex to be approached scientifically and/or that brief, inexpensive treatments cannot hope to bring about significant results. (Good & Grouws, 1979, p. 361)

Still, the research literature remains plagued with debate, dialogue, and controversy. Critics are quick to attack many of the investigations for shoddy designs (Dunkin, 1976; Heath & Nielson, 1974; Kennedy & Bush, 1976; Ornstein, 1983; Winne & Marx, 1977, 1980), for limited conceptualization (Dunkin, 1976; Erlich & Shavelson, 1978; Garrison & Macmillan, 1984), for confusion in terminology and definition (Dunkin, 1976; Heath & Nielson, 1974; Ornstein, 1976, 1983), for poor measurement devices and weak instrumentation (Berliner, 1976; Dunkin, 1976; Erlich & Shavelson, 1978; Ornstein, 1976, 1983), and for sterile statistical analyses (Berliner, 1976; Dunkin, 1976; Heath & Nielson, 1974; Kennedy & Bush, 1976). As a result, many educators have despaired or become downright cynical. Others, though, persist in endeavours with the conviction that "the only reliable source of such information is sound research" (Medley, 1979, p. 11). Some advocates have even launched massive counterattacks against the more vociferous critics. For instance, Gage (1978a, 1978b) systematically and convincingly refutes many charges leveled at the literature and, in so doing, concludes that

we may now rid ourselves of the pessimism about process-product relationships so often expressed in previous characterizations of the literature. We do have some relationships between teacher behavior and pupil achievement and attitudes on which a scientific basis for the art of teaching may be erected. (1978a, p. 231)

It is in this latter more optimistic context that this article fits. Substantial agreement between research findings in different projects completed in different parts of the United States, Great Britain, and Canada with different samples of pupils has "produced a steady accumulation of sensible and often replicated findings that constitute a growing knowledge base about process-product correlations and, to a lesser degree, causal relations (Brophy, 1979b, p. 734). This, then, is cumulative work: the assembled findings are combined into a coherent construct, one that helps define teaching and learning from a research perspective.

IDENTIFYING THE INSTRUCTIONAL RESEARCH FACTORS

Throughout the project, the biggest challenge lay in distinguishing and defining the instructional research factors (henceforth referred to simply

TABLE 1

*The 20 Most Promising Instructional Research Factors on Teaching Effectiveness***I Preactive Stage:**

(1) learning environment, (2) teacher knowledge, (3) teacher organization, (4) curricular materials.

II Interactive Stage:

(5) teacher expectations, (6) teacher enthusiasm, (7) classroom climate, (8) classroom management, (9) teacher clarity, (10) advance organizers, (11) instructional mode, (12) questioning level, (13) direct instruction, (14) time-on-task, (15) variability, (16) monitoring and pacing, (17) teacher flexibility.

III Postactive Stage:

(18) feedback, (19) teacher praise, (20) teacher criticism.

as *factors*). Researchers often add unnecessary confusion to the literature by employing different terms for similar concepts. For example, the expression *time-on-task* is frequently used synonymously and interchangeably with such phrases as *academic learning time*, *active learning time*, or *direct instructional time*. Also, interdependence between many of the concepts has further compounded the sorting process. Pacing, for instance, depends largely on good management skills which, in turn, depend on good organizational skills. Thus, the quandary became: how does one classify, sort, and label so as to minimize duplication and overlap?

The construct I have adopted was derived from consultation with teachers, graduate students, and colleagues. The factors are divided into three clusters, corresponding roughly to the *preactive*, *interactive*, and *postactive* stages of an archetypical Socratic lesson. Preactive refers to advance planning procedures, interactive to classroom instruction, and postactive to teacher response and follow-up activities. This framework was conceived strictly as a vehicle, one that helps give direction and continuity to the text below. Granted, some factors could be arranged differently, but the format is secondary to the review itself.

Of the 20 factors listed in Table 1, 17 are well documented. Three others (teacher knowledge, variability, flexibility) although encouraging, show limited promise at present, at least in terms of reported findings. This imbalance is due, in part, to the fact that the literature is not uniform. That is, some factors receive far more study than others. This limitation, however, should not be interpreted to mean that the analysis is fundamentally unsound; rather, it is merely incomplete.

References are taken primarily from research reports and scholarly reviews of research published between 1974 and 1985, the period which saw

a surge of activity in the field. Earlier efforts, such as those by Flanders or Kounin, are cited indirectly through reviews containing internal references dating from the 1950s, 1960s, and early 1970s. Several sources are listed repeatedly because many studies and reviews deal with more than one factor.

In surveying the literature, each factor is defined and discussed in terms of its overall effects. The effects are usually tempered by certain conditions varying somewhat from inquiry to inquiry. These conditions are stated in terms of parameters. The most common parameter is subject matter in that most of the works are concerned with gains in either mathematics or reading. It was decided therefore to conserve space, and reduce needless repetition, by asking the reader to assume automatically that, in the review, the only subjects studied were mathematics and reading unless it is explicitly stated otherwise. Finally, it should be stressed that the text is limited, for the most part, to general trends or patterns. This restriction means that exceptions can probably be found for some of the instructional recommendations. Such anomalies do not, nor should they negate the present undertaking. Instead, they should be seen as plausible avenues for further study.

Preactive Stage

Learning Environment

Definition. The literature is replete with concepts that refer either directly or indirectly to the word *environment*. In fact, distinctions are rarely made between the terms *atmosphere*, *climate*, *setting*, and *environment*. Loughlin (1977) provides one of the better attempts at sorting out this “undifferentiated, conglomerate view of environment” (p. 127). Accordingly, environment, as distinguished from atmosphere or climate, encompasses both the *architectural* and *arranged* structures (settings) in which teachers and students interact. In other words, it includes an allocated territory with spaces created by the organization of learning materials and furnishings within the physical bounds of that territory. For purposes of research, these structures are generally categorized as: (a) closed, self-contained, formal, or traditional classrooms and (b) open space or informal classrooms.

Comment. Although evidence is somewhat equivocal (George, 1975; Harrison, Strauss, & Glaubman, 1982; Horwitz, 1979), findings, by and large, show that primary (Grades 1 to 3) and intermediate (Grades 4 to 6) students in traditional settings do slightly better on achievement tests and as well, or slightly worse, on tests of creativity and problem solving when compared with their peers in open space environments (Bell, Zipursky, & Switzer,

1976; Bennett, 1976, 1978; Forman & McKinney, 1978; Gage, 1978a; Henderson & Hennig, 1979; Medway & Egelson, 1980; Morrison, 1979; Peterson, 1979a, 1979b; Ward & Barcher, 1975; Weinstein, 1979; Wright, 1975). However, studies have not been consistent in controlling for the effects of certain pupil characteristics. Moreover, similar traits have produced conflicting results in different inquiries. Consequently, it is impossible, at this time, to refine the major conclusion beyond a list of the attributes themselves. Specifically, respondents have been matched on one or a combination of the following features: ability, socioeconomic status, ethnicity, motivation, locus of control, gender, and geographical or residential locale (rural, suburban, urban).

Teacher Knowledge

Definition. Knowledge is defined in terms of subject matter expertise or content specialization. Knowledgeable teachers are well versed in their teaching area(s).

Comment. Unfortunately, this is one of the weaker factors as little systematic research has been devoted to the topic. As a rule, though, knowledge still appears to be an important prerequisite to effective teaching (Brophy, 1982c; Cantrell, Stenner, & Katzenmeyer, 1977; Cruickshank, 1976; Doyle, 1979; Hamachek, 1975; Land & Smith, 1979b; Sandefur & Adams, 1976).

Teacher Organization

Definition. Organization, as distinct from management, is precursory in nature. It includes advanced planning and preparation in accordance with selecting proper learning objectives, diagnosing individual needs, gathering materials and supplies, and choosing appropriate teaching strategies (Peterson, Marx, & Clark, 1978).

Comment. Research findings clearly reveal that well-organized teachers are the most effective teachers (Anderson, Evertson, & Emmer, 1980; Doyle, 1981; Emmer, Evertson, & Anderson, 1980; Evertson, 1975; Evertson & Anderson, 1979; Evertson, Anderson, Anderson, & Brophy, 1980; Good, 1979; Moskowitz & Hayman, 1976; Ornstein & Levine, 1981; Smith, 1977). Well-organized teachers are committed to long-range planning. They have an instructional agenda in place before each class, and are thus able to devote most of the school day to a constructive series of carefully orchestrated activities. To date, the studies are confined mostly to elementary (Grades 1 to 6) and junior high school (Grades 7 to 10) students from urban working (low socioeconomic) and middle class (middle socioeconomic) backgrounds.

Curricular Materials

Definition. Curricular materials comprise the learning resources, assignments, and projects related to a course of study. They may best be defined as the structural medium through which a message, or a series of messages, are taught, reviewed, and reinforced.

Comment. Evidence suggests that effective learning materials should be interesting (Brophy, 1979b; Brophy & Evertson, 1976; Gage, 1978a, 1978b), challenging (Brophy, 1979a, 1979b; Powell, 1978), and geared to the level of the client (Brophy, 1979b; Brophy & Evertson, 1976; Gage, 1978a, 1978b; Powell, 1978). Further, effective teachers employ a wide variety of meaningful instructional exercises and tasks (Brophy, 1979a, 1979b; Brophy & Evertson, 1976; Cruickshank, 1976; Emmer et al., 1980; Evertson, 1975; Evertson et al., 1980; Manatt, Palmer, & Hidlebaugh, 1976; Stallings, 1976). In addition, Evertson et al. (1980) recommend some pupil choice in assignments and caution against the abuse of seatwork. In short, teachers should "ensure that seatwork is appropriately designed and connected to the lesson and not simply busywork" (Karweit, 1984, p. 34). Present research efforts have been restricted mainly to rural and urban elementary and junior high school students from working and middle class communities.

Interactive Stage

Teacher Expectations

Definition. Expressions such as *self-fulfilling prophecy* (Merton, 1948), *teacher faith* (Braun, 1976), or *can do attitude* (Brophy, 1979b) are commonly employed to describe teacher expectations. In particular, the concept refers to achievement demands on individual students by the teacher. These projections are usually conveyed directly to the learner in the form of explicit performance standards.

Comment. Research strongly indicates that teacher expectations can have an immense impact on a child's academic record (Brophy, 1979b, 1983b; Brophy & Evertson, 1981; Cooper, 1979; Cooper, Findley, & Good, 1982; Cooper & Tom, 1984; Crano & Mellon, 1978; Cruickshank, 1976; Evertson, 1975; Feldman & Theiss, 1982; Good, 1980, 1981; Good, Cooper & Blakey, 1980; Good & Grouws, 1977; Kerman, 1979; Smith, 1980). The effects, however, are not universal and they differ in strength and type of outcome (Brophy, 1983b; Brophy & Evertson, 1981). Unrealistically high expectations, for example, can eventually depress rather than enhance achievement (Brophy, 1983b). As well, high achievers are frequently given more attention, encouragement, and coaching than low ones (Good, 1980; Good, Cooper, &

Blakey, 1980; Kerman, 1979). These findings, with few exceptions, tend to hold for all grade levels (primary to senior high school) and for male and female students from urban working and middle class residential locales. (See Good, 1981, for more detail.)

Teacher Enthusiasm

Definition. Enthusiasm is often equated with terms such as *optimism*, *dynamism*, or *vigour*. In essence, enthusiasm is the amount of *energizing* exhibited by the teacher during the contact period. Enthusiastic teachers could be described as vibrant, lively, keen, exciting, stimulating, or inspiring.

Comment. As a rule, research has consistently found positive associations between teacher enthusiasm and student achievement (Brophy, 1979a; Cruickshank, 1976; Evertson et al., 1980; Land, 1980b; Larkins & McKinney, 1982; Levin, 1979; Manatt et al., 1976; McConnell, 1977; Sandefur & Adams, 1976). The samples, though, have been confined mostly to urban elementary mathematics and reading classes and, to a lesser degree, urban junior high school history and English classes. Moreover, the dimensions of this relationship are not as yet known clearly as recent studies with rural and urban intermediate and urban junior high school students in social studies contradict earlier reports (Bettencourt, Gillett, Gall, & Hull, 1983; McKinney & Larkins, 1982; McKinney, Larkins, Kazelskis, Ford, Allen & Davis, 1983). In discussing their results, both Bettencourt et al. (1983) and McKinney et al. (1983) propose optimum levels (low, medium, high) of enthusiasm for different grades. Exactly what the best levels are remains speculative, although a medium level of enthusiasm is tentatively recommended for elementary children.

Classroom Climate

Definition. Climate or atmosphere is the *social spirit* or *ethos* of the classroom. This temperament is reflected in the tone of communication, the global attitudes and emotional states, and the reciprocal bonds of allegiance. Hence, climate is concerned, almost exclusively, with interpersonal relationships from an affective point of view. For instance, one could gauge teacher-student and student-student exchanges on an impersonal-personal, cold-warm, relaxed-hectic, or democratic-authoritarian barometer.

Comment. Descriptors of effective classroom climates are varied and extensive. The most common adjectives are listed below in order of frequency. First and foremost, an effective climate is considered to be *supportive* (Brophy & Evertson, 1978; Cantrell, Stenner, & Katzenmeyer, 1977; Cruickshank, 1976; Deci, Sheinman, Wheeler, & Hart, 1980; Evertson, 1975; Manatt et al., 1976; Medley, 1979; Moskowitz & Hayman, 1976; Rosenshine,

1983; Taylor, 1981) and *warm* (Cruickshank, 1976; Evertson, 1975; Evertson et al., 1980; Heitzmann & Starpoli, 1975; Moskowitz & Hayman, 1976; Rosenshine, 1979, 1983; Rosenshine & Berliner, 1978). Second, an effective climate is deemed to be *pleasant* (Anderson, Evertson, & Brophy, 1979; Anderson et al., 1980; Berliner & Piñero, 1985; Powell, 1978), *fair* (Anderson et al., 1980; Emmer et al., 1980; Manatt et al., 1976), and *democratic* (Cantrell et al., 1977; Powell, 1978; Rosenshine, 1979; Rosenshine & Berliner, 1978). Lastly, other terms such as *personal* (Anderson et al., 1980; Hamacheck, 1975), *congenial* (Anderson et al., 1980; Powell, 1978), and *understanding* (Moskowitz & Hayman, 1976; Sandefur & Adams, 1976) often parallel or complement some of the more proverbial descriptors. These recommendations are limited, by and large, to elementary and junior high school students from working, and, to a lesser extent, middle class neighbourhoods.

Classroom Management

Definition. Management, sometimes called *instructional management*, is concerned with the daily functional or maintenance aspects of the classroom. Specifically, management includes the implementation, administration, and enforcement of work habits, regulations, and routines.

Comment. Evidence overwhelmingly shows that well-managed classrooms are strong determinants of student learning (Anderson, 1981b; Anderson et al., 1979; Anderson et al., 1980; Brophy, 1979b; Doyle, 1981; Emmer et al., 1980; Emmer & Evertson, 1981; Evertson, 1975; Evertson & Anderson, 1979; Evertson et al., 1980; Evertson, Emmer, Sanford, & Clements, 1983; Good, 1979; Good & Grouws, 1977; Lasley, 1981; McGarity & Butts, 1984; Moskowitz & Hayman, 1976; Ornstein & Levine, 1981). Effective managers run classrooms with a minimum amount of student disruption (Good, 1979; Ornstein & Levine, 1981). Transitions are smooth (Anderson et al., 1979; Arlin, 1979; Brophy & Evertson, 1976; Kounin & Doyle, 1975), and potential problems are nipped before they get out of hand (Berliner & Piñero, 1985; Brophy, 1983a; Brophy & Evertson, 1976; Evertson & Anderson, 1979; Evertson et al., 1980). At the beginning of the year, effective managers quickly assume control by methodically instilling and consistently reminding individuals of their responsibilities (Berliner & Piñero, 1985; Emmer & Evertson, 1981; Emmer et al., 1980; Evertson & Anderson, 1979; Evertson et al., 1983; Moskowitz & Hayman, 1976). In a well-managed classroom, the teacher emphasizes positive behaviour, learners have maximum opportunity for success, and the teacher is fair but firm (Emmer et al., 1980; Evertson & Anderson, 1979). These findings extend primarily to urban working and middle class students in elementary mathematics and reading classes and to junior high school mathematics, English, and science classes. (See Emmer & Evertson, 1981, for an elaboration.)

Teacher Clarity

Definition. Defining clarity is a challenge as whole articles have been devoted to the subject (Bush, Kennedy, & Cruickshank, 1977; Cruickshank, Kennedy, Bush, & Myers, 1979; Kennedy, Cruickshank, Bush, & Myers, 1978). A lack of clarity usually pertains to such items as vagueness terms, mazes, utterances of *uh*, and additional unexplained content. Vagueness terms are "words or phrases indicating approximation, unclarity, or lack of assurance" (Land, 1979, p. 795). Mazes are "false starts or halts in speech, redundantly stated words, and tangles of words" (Land, 1979, p. 795). Utterance of *uh* is determined by the number of times a teacher utters *uh* per minute (Land, 1980a). Additional unexplained content consists of extra terms related to the lesson but not essential to the main idea of the lesson (Land, 1979).

Clarity, on the other hand, is characterized by emphasis on the content to be learned, and clear transitions. Emphasis on the content to be learned includes an example of the concept definition itself (Land, 1980a). Clear transitions refer to the number of times a teacher clearly indicates a transition between the ending of one part of a lesson and the beginning of another part (Land, 1980a).

Comment. Numerous studies have found a positive relationship between teacher clarity (few vagueness terms, mazes, and *uhs*, much emphasis on content and clear transitions, and some additional unexplained content) and pupil achievement, especially in mathematics and science classes (Brophy, 1979a, 1982c; Evertson et al., 1983; Good & Grouws, 1977; Good & Power, 1976; Land, 1979, 1980a, 1981; Land & Smith, 1979a, 1979b; Smith, 1977; Smith & Cotten, 1980; Smith & Edmonds, 1978; Smith & Land, 1980). This research has been confined mostly to students (primary to college) from rural and urban working and middle class backgrounds.

Advance Organizers

Definition. Advance organizers, also known as *cognitive scaffolding* or *structuring comments*, are introductory activities "deliberately introduced in advance of learning material to bridge the gap between what the learner already knows and what he needs to know in order to learn new subject matter effectively" (Ausubel, 1978, p. 253). There are two types of organizers, namely, expository and comparative. Expository organizers are employed with new, completely unfamiliar concepts. They "provide inclusive subsumers that are both related to existing ideas in cognitive structure and to the more detailed material in the learning passage" (Ausubel, 1978, p. 252). In contrast, comparative organizers are used with new concepts that are either

relatively familiar or *relatable* to previously learned materials. They “increase discriminability between the new ideas and the previously learned ideas by pointing out ‘explicitly’ the principal similarities and differences between them” (Ausubel, 1978, p. 253).

Comment. While some discrepancies exist in the literature (Anderson, Spiro, & Anderson, 1978; Barnes & Clawson, 1975; Hartley & Davies, 1976), most studies indicate that, when properly implemented and adequately evaluated, advance organizers facilitate learning, retention, and transfer in mathematics, the sciences, and the social sciences (Ausubel, 1978, 1980; Ausubel, Novak, & Hanesian, 1978; Lawton & Wanska, 1977; Lott, 1983; Luiten, Ames, & Ackerson, 1980; Mayer, 1976, 1979; Slater, Graves, & Piché, 1985; Stone, 1983). Further, the effects appear to be fairly consistent across all grade (primary to college) and ability levels (Luiten et al., 1980), although recent data suggest that they may be more advantageous in urban than in rural or suburban contexts (Lott, 1983).

Instructional Mode

Definition. Instructional mode is defined in terms of teaching arrangements: individualized, small group, or large group. Individualized instruction involves the “extensive use of self-paced materials, individualized contracting ...[and] some student choice about what is studied” (Evertson et al., 1980, p. 55). Small group instruction includes teacher-directed work groups of approximately three to seven students (Rosenshine, 1979), while large group orchestration is generally synonymous with whole class instruction.

Comment. Strictly speaking, individualized instruction has met with little success in standardized classrooms because “when teachers are working with only one or two children they are unable to provide supervision for the remaining children. As a result, children have less academic engaged time” (Rosenshine & Berliner, 1978, p. 9). Nonetheless, minimal support exists for individualization in intermediate science classes (Anderson & Butts, 1980; Marchese, 1977), and there is some support for closely supervised small group activity in mathematics and reading at the primary level (Brophy, 1979a; Rosenshine, 1979; Rosenshine & Berliner, 1978). But in general the literature strongly favours large group or whole class instruction in mathematics and to a lesser extent favours reading at the primary (Bennett, 1978; Good & Grouws, 1977; Medley, 1979; Ornstein & Levine, 1981; Rosenshine, 1979; Rosenshine & Berliner, 1978), intermediate (Bennett, 1978; Brophy, 1979a; Good & Grouws, 1977, 1979), and junior high school (Evertson et al., 1980) levels. This research has been restricted, for the most part, to students from urban working class communities.

Questioning Level

Definition. Questioning level is depicted in terms of either higher-order or lower-order cognition. A higher-order cognitive or divergent question asks "the student to mentally manipulate bits of information previously learned to create an answer, or to support an answer with logically reasoned evidence" (Winne, 1979, p. 14). Questions of prediction, interpretation, generalization, and explanation fall into this category. Conversely, lower-order cognitive or convergent questions, also known as knowledge, fact, or product questions, ask the student to merely "recall verbatim or in his own words material previously read or taught by a teacher" (Winne, 1979, p. 14). The information required could comprise either a single answer or a multiple response. In terms of Bloom's (1977) taxonomy, higher level questions correspond to application, analysis, synthesis, and evaluation while lower ones parallel knowledge and comprehension.

Comment. Although many educators relate higher order questions to gains in student achievement, research does not, as a rule, support such claims. Winne (1979), for instance, reviewed and evaluated 18 studies including various grade levels (nursery to senior high school) and subject areas (history, geography, literature, reading, science, and social studies) and concluded that "the studies reviewed here indicate that whether teachers use predominantly higher cognitive questions or predominantly fact questions makes little difference in student achievement" (p. 43). And, despite periodic dissension in the literature (Kniep, 1977; Kniep & Grossman, 1979), most reports favour Winne's conclusion (Gage, 1976; Gall, Ward, Berliner, Cahen, Winne, Elashoff, & Stanton, 1978; Good, Ebmeier, & Beckerman, 1978; Martin, 1979; Medley, 1979; Rosenshine, 1976a, 1976b, 1979; Rosenshine & Berliner, 1978; Stayrook, Corno, & Winne, 1978; Taylor, 1981; Wilen, 1984). A distinction in the types of samples, though, is imperative as the first two inquiries were based on intermediate geography classes in urban, middle class settings while the latter were based mainly on samples of urban, elementary working class students in mathematics, science, and reading classes. In addition, isolated support exists for a mix of high- and low-level questions in both science (Tobin & Capie, 1982) and mathematics (Evertson et al., 1980) at the junior high school level.

Direct Instruction

Definition. Direct instruction is synonymous with *teacher-directed behaviour*, *formal instruction*, or *teacher-centred instruction*. In direct instructional situations, the teacher is businesslike, student choices are limited, goals are clear to students, materials are properly sequenced and highly structured, coverage of

content extensive, and lessons geared carefully to the learner's ability. Thus, the term is limited to formally controlled didactic instruction, instruction which is academically focused, systematically induced, rational, behaviour-analytic, and detailed-specific (Rosenshine, 1979; Rosenshine & Berliner, 1978).

Comment. That direct instruction is highly associated with increased learning gains among primary children from working and middle class backgrounds is a common, almost universal conclusion of recent research (Anderson et al., 1979; Brophy, 1979a, 1979b; Cruickshank, 1976; Doyle, 1983; Gage, 1978a; Good, 1979; Manatt et al., 1976; Ornstein, 1982; Ornstein & Levine, 1981; Peterson, 1979a, 1979b; Powell, 1978; Rosenshine, 1976a, 1979; Rosenshine & Berliner, 1978). However, the effects appear to be more pronounced for low-ability pupils (Brophy, 1979a; Doyle, 1983; Ebmeier & Good, 1979; Peterson, 1979a) with an external locus of control (Peterson, 1979a).

Time-on-Task

Definition. Time-on-task, also known as *academic learning time*, *active learning time*, or *direct instructional time*, is restricted to the amount of time students are actively engaged in task-oriented activities. Allotted or allocated time, on the other hand, is the initial amount of time apportioned to a particular assignment, unit, or program (Brophy, 1979b; Nerenz & Knop, 1982; Rosenshine & Berliner, 1978). The concepts are not necessarily the same, as two teachers could assign the same amount of time to a mathematics unit but one group might have less academic time-on-task because of unexpected or uncontrollable disruptions.

Comment. Evidence clearly reveals that the amount of time spent on a task powerfully predicts student achievement (Anderson, 1981a, 1981b; Anderson et al., 1979; Bennett, 1978; Berliner & Piñero, 1984; Brophy, 1979b, 1982b; Fredrick & Walberg, 1980; Gage, 1978b; Good, 1979; Good & Beckerman, 1978; McDonald, 1976; Medley, 1979; Ornstein, 1982; Ornstein & Levine, 1981; Powell, 1978; Rosenshine, 1976a, 1976b, 1979; Rosenshine & Berliner, 1978; Shalaway, 1981; Stallings, 1976). This finding is limited, in general, to urban elementary working class youngsters although there is growing support at the junior high school (Brophy, 1979b; Nerenz & Knop, 1982) and senior high school (Brophy, 1979b; Fredrick, Walberg, & Rasher, 1979; Nerenz & Knop, 1982) levels. (See Noon, 1981, and Shalaway, 1981, for some excellent time-management suggestions.)

Variability

Definition. Variability is characterized by diversity in teaching behaviours,

techniques, and strategies. Basically, there are three formats: the expository, the discovery, and the experimental (Bergman, 1980). Each requires a distinct set of activities on the part of the learner.

Comment. Variability has not been researched extensively, but it does appear frequently in the literature (Anderson et al., 1980; Cruickshank, 1976; Emmer et al., 1980; Good & Power, 1976; Manatt et al., 1976; Powell, 1978; Stallings, 1976). Most references pertain to primary working class children from rural and urban residential locales.

Monitoring and Pacing

Definition. Monitoring and pacing are complementary concepts in that the correct pacing of a lesson depends largely on the teacher's ability to monitor successfully the lesson. In other words, a teacher cannot decide whether to speed up or to slow down a lesson (pacing) without continuous input on student performance (monitoring). Monitoring then is either a formal or informal recording mechanism whereby the teacher systematically checks each child's progress or level of attainment. In terms of seatwork assignments, monitoring is often equated with the expression *classroom supervision*. In contrast, pacing is concerned more with the speed or momentum of a particular lesson, seminar, or colloquium. Here, the teacher must gauge the rate of exchange so as to move all individuals along at an optimum pace.

Comment. Research indicates that effective teachers continually monitor learning experiences (Anderson, 1981b; Anderson et al., 1979; Anderson et al., 1980; Berliner & Piñero, 1985; Brophy, 1979a, 1979b; Brophy & Evertson, 1976; Cruickshank, 1976; Evertson & Anderson, 1979; Gage, 1978a; Good, 1979; Good, Ebmeier, & Beckerman, 1978; Manatt et al., 1976; Ornstein & Levine, 1981; Powell, 1978; Rosenshine & Berliner, 1978) and, in turn, adjust the pace (fast or slow) according to student needs (Anderson et al., 1979; Brophy, 1979b; Brophy & Evertson, 1978; Evertson & Anderson, 1979; Good, Grouws, & Beckerman, 1978; Manatt et al., 1976). As a rule, teachers are encouraged to maintain a rapid, brisk pace (Arlin, 1979; Brophy, 1979a, 1979b, 1983a; Gage, 1978a, 1978b; Good, Grouws, & Beckerman, 1978; Taylor, 1981), but the steps between activities should be small, discernible, and easily understood (Brophy, 1979a, 1979b, 1983a). Teachers are also encouraged to constantly monitor pupil progress by moving around the room during periods of seatwork (Brophy & Evertson, 1976; Gage, 1978a, 1978b). These results are confined mainly to primary students from urban working and middle class backgrounds.

Teacher Flexibility

Definition. Flexibility refers to the teacher's potential "to meet the demands

of the moment" and "to move with the shifting tides" (Hamachek, 1975, p. 246). Stated alternatively, a flexible teacher can capitalize on unexpected events and, if necessary, quickly adopt appropriate measures to overcome temporary obstructions.

Comment. Although the value of flexibility is not strongly supported by research, the term does appear occasionally in discussions on effective teaching (Bennett, 1978; Cruickshank, 1976; Hamachek, 1975; Heitzmann & Starpoli, 1975; Stallings, 1976).

Postactive Stage

Feedback

Definition. Feedback is a simple, impartial teacher response (reaction) that is confined strictly to the degree of pupil success or failure on an oral or written assignment. This affirmation or negation usually involves neutral gestures such as nodding, saying *okay*, *right*, or *correct*, or giving a letter grade (Brophy, 1981b). As such, the concept does not include elaborate information about the child's work. Rather, feedback is restricted solely to the reinforcement pattern, the timing sequence, and the type of solution tendered.

Comment. Evidence suggests that feedback is most effective on a regular or systematic basis (Anderson et al., 1980; Brophy, 1979a; Swift & Gooding, 1983), when it is immediate and prompt (Anderson, 1981b; Bennett, 1978; Berliner & Piñero, 1985; Brookover, Schweitzer, Schneider, Beady, Flood, & Wisenbaker, 1978; Brophy, 1983a; Cruickshank, 1976; Good, 1979; Moskowitz & Hayman, 1976; Powell, 1978; Rosenshine, 1976a, 1983), when it is academically focused (Anderson, 1981a; Good, 1979; Powell, 1978; Rosenshine, 1976a), when it is specific and clear (Anderson et al., 1980; Elawar & Corno, 1985; Weber, 1978), and when it is corrective (Anderson, 1981a; Anderson et al., 1979; Bennett, 1978; Brophy, 1982b, 1983b; Brophy & Evertson, 1976; Cruickshank, 1976; Elawar & Corno, 1985; Gage, 1976; McDonald, 1976; Taylor, 1981). These findings are restricted primarily to urban elementary students from working class communities.

Teacher Praise

Definition. Praise is defined as intense, detailed reactions that go beyond simple, affectively neutral feedback about appropriate or correct pupil behaviour. In short, "praise statements express positive teacher affect (surprise, delight, excitement) and/or place the student's behaviour in context by giving information about its value or its implications about the student's

status" (Brophy, 1981b, pp. 5 & 6). Praise then is specific teacher responses to specific student endeavours expressing degrees of approval or admiration.

Comment. Historically speaking, praise has been liberally prescribed by educators as a facilitator of effective teaching (Brophy & Evertson, 1976; Good & Grouws, 1977). But, recent data suggest that correlations between praise, however defined, and learner gains are weak and mixed in direction (Brophy, 1979a, 1981b, 1983b; Good & Power, 1976; Ornstein & Levine, 1981). In fact, too much or inappropriate praise may not facilitate learning at all (Good & Grouws, 1977). Still, private praise does appear to be effective among primary and intermediate children when teacher initiated (Bennett, 1978; Brophy & Evertson, 1976, 1978; Evertson, 1975), when given in the form of symbolic rewards (gold stars, smiling faces) instead of verbal or monitorial rewards (Brophy & Evertson, 1976; Evertson, 1975), and when administered especially to low socioeconomic (Bennett, 1978; Brophy, 1979b, 1981b; Brophy & Evertson, 1976; Evertson, 1975; Ornstein & Levine, 1981), low ability (Brophy, 1979b, 1981b; Brophy & Evertson, 1976; Cantrell et al., 1977; Stallings, 1976) students. Conversely, praise is least effective when pupil initiated, when verbal or monitorial, and when given to high socioeconomic, high ability students. Further, praise of good student answers seems to correlate weakly but positively with learning in junior and senior high school English and mathematics classes (Brophy, 1981b; Evertson et al., 1980). To be truly effective, though, praise "has to (a) relate clearly to the topic under consideration, (b) be genuine and credible rather than perfunctory, and (c) be used judiciously in relation to individual differences" (Bennett, 1978, p. 143). (See Brophy, 1981a, 1982a, for additional teaching strategies on effective praising.)

Teacher Criticism

Definition. Teacher criticism "refers to negative teacher responses to student behaviour which go beyond whatever level of simple feedback (negation) is needed to indicate that behaviour is inappropriate or answers are incorrect" (Brophy, 1981b, p. 6). In essence, criticism has a personal connotation that denotes expressions of contempt, disdain, disgust, scorn, or rejection.

Comment. Research indicates that effective teachers minimize criticism (belittling, scolding, shaming, shouting, sarcasm, and ridicule) as it consistently correlates negatively with achievement (Bennett, 1978; Brophy, 1979b; Cruickshank, 1976; Evertson et al., 1980; Gage, 1978a; Martin, Veldman, & Anderson, 1980; Rosenshine, 1979; Rosenshine & Berliner, 1978; Sandefur & Adams, 1976). Interestingly, the most detrimental effects appear among low socioeconomic (Bennett, 1978; Brophy, 1979b; Brophy

& Evertson, 1976), low ability (Brophy, 1979b; Brophy & Evertson, 1976) students in the elementary grades. In contrast, *infrequent* but *justified* criticism of a child's work, which is sloppy or below capacity, has been found to correlate positively with achievement among high socioeconomic (Bennett, 1978; Brophy, 1979b; Brophy & Evertson, 1976; Evertson, 1975; Gage, 1978a), high ability (Brophy, 1979b; Brophy & Evertson, 1976) students in the elementary panel.

CONCLUSIONS

This article has provided an overview of the latest research on teaching effectiveness. Although the 20 factors were separated for purposes of presentation, they should not be applied in isolation. That is, the factors should be viewed as interrelated, interdependent, and inseparable in contributing to teaching and learning. For example, time-on-task by itself is important, but teaching effectiveness is maximized when, and only when, applied in conjunction with the other factors. In other words, time covaries with the other factors just as the other factors covary with time. Thus, rather than focus on one or two factors in isolation, teachers should strive to optimize as many factors as possible. Initially, a teacher may wish to concentrate on one or two factors, but ultimately the goal should be one of collective application.

Of course, collective application by definition implies diversity in intensity and frequency. For instance, all lessons require basic preparation (teacher organization), but some require more intense preparation than others. Likewise, the frequency of certain factors will vary depending on individual differences. Praise, for example, should be administered judiciously as, with some youngsters, too much may depress rather than enhance learning. Obviously, then, teachers must exercise discretion when applying the factors to a given situation.

Finally, as stated earlier, application is limited, for the most part, to the teaching of basic skills in mathematics and reading at the primary and intermediate levels. Many findings apply equally well to the teaching of key concepts in science and social studies, but the evidence is more fragmented than for either mathematics or reading. Similarly, growing support exists for many factors, particularly in mathematics, at the junior and senior high schools levels. Beyond these immediate boundaries, employers of the text would be wise to tread cautiously.

At the same time, though, these restrictions should not be seen as a deterrent to additional applications. In fact, teachers are encouraged to apply the research findings to teaching subjects such as art, health, and music. However, when doing so they should realize that they operate on tenuous grounds: the assumption being that effective teaching is a universal enterprise. To some extent, this assumption is probably valid, but, to date, little

scientific support exists for such a claim. Therefore, additional applications should be viewed as explorations, explorations that could shed new light on teaching effectiveness research.

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Dieser Aufsatz bietet einen umfassenden Überblick in die Untersuchungen über die Wirksamkeit von Lehrern. Über 150 primäre und sekundäre Quellen werden vorgelegt. Die Resultate zeigen, daß seit der ersten bedeutenden Bestandsaufnahme vor 17 Jahren (durch Rosenshine & Furst), ungeheure Fortschritte gemacht worden sind. In der Tat sind zwanzig Untersuchungsfaktoren des Lehrens identifiziert worden; siebzehn davon sind dokumentarisch gut belegt. Trotz Kritikern wird daher angenommen, daß experimentelle Untersuchungen zu wertvollen Einsichten in bestimmte Perspektiven des Lehrens und Lernens führen können. Diese Rezension dürfte besonders für Lehrer/Erzieher, Lehrer im Klassenzimmer und Schulverwalter von Interesse sein.

Este artículo da una importante idea general de la investigación llevada a cabo acerca de la eficacia del docente. Más de 150 fuentes están representadas, tanto a nivel primario como secundario. Los resultados indican que ha habido un gran progreso desde un primer inventario realizado hace unos 17 años (Rosenshine y Furst, 1971). En efecto, el estudio identifica 20 factores de investigación educacional, 17 de los cuales están bien documentados. Así, se puede creer que, a pesar de las críticas, la investigación empírica puede echar bastante luz sobre aspectos específicos de la enseñanza y el aprendizaje. Este estudio será de interés especial para los docentes, los maestros, y los administradores de escuelas.

G. Patrick O'Neill is an associate professor in the Graduate Department, College of Education, Brock University, St. Catharines, Ontario L2S 3A1.