

The Science and the Art of Teacher Effectiveness: An Examination of Two Research Traditions

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This review of the literature examines two diverse schools of research on teacher effectiveness, the first based upon the process-product paradigm and the second based on an ethnographic approach. The former has been the most productive. Earlier empirical, process-product studies that correlated observed teacher behaviours and student achievement were later augmented by experimental research. The results suggest that many teacher behaviours show fairly consistent and important, although sometimes weak, relationships to student achievement. Experimental studies indicate that changing teaching practices can cause desirable changes in student achievement. The ethnographic tradition, on the other hand, focuses less on defining achievement and more on the context, conditions, and interactions that lead to achievement. Ethnographers have contributed to the study of teacher effectiveness by emphasizing the contextual constraints and rules in everyday classroom life, by stressing the importance of the thoughts, feelings, perceptions, and attitudes of classroom participants, and, particularly, by calling into question our rational models of human behaviour.

Cette revue des écrits porte sur deux écoles de pensée en matière d'efficacité pédagogique, l'une qui se fonde sur le paradigme processus-produit et l'autre qui adopte une approche ethnographique. C'est la première qui se révèle la plus prolifique. Les premières recherches empiriques sur le processus-produit, qui tentaient d'élucider les corrélations existant entre les comportements des enseignants et les résultats scolaires des étudiants, ont été complétées par des recherches expérimentales. Les résultats laissent supposer qu'il existe des liens assez systématiques et importants, quoique parfois ténus, entre un bon nombre des comportements des enseignants et la réussite des étudiants. Des recherches expérimentales indiquent que les modifications apportées aux pratiques pédagogiques peuvent influencer sur les résultats obtenus par les étudiants. La tradition ethnographique, pour sa part, privilégie moins une définition de la réussite et insiste davantage sur le contexte, les conditions et les interactions qui favorisent la réussite. Les ethnographes ont fait avancer la recherche sur l'efficacité pédagogique en mettant en lumière les contraintes et règles en jeu dans le contexte d'une salle de classe, en soulignant l'importance des pensées, sentiments, perceptions et attitudes des personnes présentes dans une classe et, surtout, en mettant en question nos modèles de comportement humain rationnels.

Inquiries designed to shed light on the question "What makes an effective teacher?" are almost as old as civilization. Exemplars of teaching method in Western culture alone include Socrates, Protagoras, Abelard, the Jesuits,

Comenius, and Froebel. As intuitive rather than systematic observers and practitioners, these historic greats called upon theories of learning and teaching to justify their particular methods. To a large extent, their varied styles of teaching evolved from the social climate and social demands made upon schooling in each era.

The modern history of research on teaching may be dated from a literary contribution in 1896 (Flanders, 1972, p. 430). Since then, there have been periods of intense interest in the topic, followed by intervals of comparative indifference. The social or academic climate has largely determined the framework within which research is carried out. Kuhn (1970) suggests that in a specific time frame one conception or model tends to be accepted by the leaders of a scientific community, and that the prevalent paradigm dictates a particular way of structuring and observing data. Each model fosters a general conviction that there is but one way to look at a problem and one set of questions worth asking. Eventually, the prevailing paradigm is replaced by another, through what Kuhn describes as a scientific revolution.

Teacher effectiveness research over the past 28 years reveals the extent to which educators and other social scientists have relied on a specific, empirical, observational method that correlates student achievement with observed teacher behaviours. More than other researchers, behaviourists have been searching for a generic set of effective teaching skills. This paper begins with discussion of appropriate criteria for measuring effectiveness, then offers an overview of some major findings from research. These findings have limitations, and this paper will explore some of the underlying assumptions and methodological problems surrounding the process-product paradigm that dominates teacher effectiveness research. The less common but equally important ethnographic research is also discussed. The conceptual gaps that afflict these two kinds of research suggest that a broader range of approaches to the study of teacher effectiveness would yield greater insight.

The Problem of Assessing Teacher Effectiveness

People do not always share the same value system, and this is fundamental to the problem of evaluating teaching. What is judged good teaching by one particular person, community, or school of thought may not be similarly judged by other persons, by different communities, or by proponents of a competing paradigm. Criteria of good teaching are often said to be specific to some teacher, student, time, or place. Ethnographers frequently suggest that there are no universally applicable criteria of what constitutes a good teacher since teachers always work in concrete situations which make different demands on teaching capacities.

Other educators question the alleged impossibility of establishing universally applicable criteria of good teaching. Researchers working to establish a scientific base for effective teaching by correlating teacher behaviour with student achievement are especially concerned with such criteria. Although there are many variations in method among the sciences, it does not follow that there can be no general or generic principles of scientific method that would be applicable in all contexts. Just as the sciences share some methodological features, so good teaching can share some methodological features across different subject areas. Whether these common teaching behaviours prove very important, interesting, or helpful to researchers and practitioners is another question entirely.

Criteria of Effectiveness

The possibility that some teaching behaviours will be effective across all cultures, subject areas, and types of curricula introduces a second query about appropriate criteria of effectiveness. Different types of variables, with complex interrelationships among them, have been isolated. Most current research follows from the early work of Medley and Mitzel (1959), who identified four types of variables. First, we find *prediction or presage variables*, the human characteristics that distinguish teachers (attitudes, abilities, and interests), along with teacher training factors (achievement in student teaching, and knowledge of the subject). Second are *context or environmental variables* (school size and location, community socioeconomic status, pupils' attitude and ability, grade, and subject), which modify the behaviours of student and teacher. Third come *process or classroom behaviour variables* including pupil and teacher behaviour, and pupil-teacher interaction. Fourth are *product or standards variables* which reflect educational goals (pupil growth or pupil change in behaviour) and are characterized as the measurable outcomes at the completion of an instructional time period.

The third type of variables Medley and Mitzel (1959) depict as holding the most promise for improving teacher effectiveness research. The dominant paradigm is process-product, the attempt to establish relationships between the third and fourth types of variables. That is, the bulk of research on teacher effectiveness has focused on process-product correlations and, to a lesser extent, on experimental research to demonstrate causal relationships between teacher behaviour and pupil achievement. Classroom behavioural studies have also spawned over 100 different observational systems or rating scales.

The change in focus around 1960 to performance criteria was probably the result of increasing emphasis on behavioural objectives in instruction, a change parallel to developments in the field of behavioural psychology and

to the rise of behaviour modification. The behavioural school charged that teaching was unscientific because teachers failed to consider their objectives in precise behavioural terms—that is, what the teacher and student were expected to do. (Instead, objectives centred on nonmeasurable concepts such as understanding or awareness.)

The shift to performance criteria offered several benefits. First, it is much easier to design research on measurable and observable behaviour than to try to define the psychological or rational processes underlying that behaviour. Second, performance criteria offer guidance for teacher training. If one can determine which teacher behaviours correlate with desired pupil change or achievement, then teachers can be trained in the preferred behaviours. Third, behavioural variables are easier to specify unambiguously and to identify in practice.

PROCESS-PRODUCT RESEARCH

The methodology of process-product research relies on structured observation of classroom processes in natural settings as well as on achievement tests and attitudinal tests and the correlations between processes and achievement. Experimental studies restrict the scope of inquiry by asking only empirically answerable questions, by randomly assigning cases, and by altering teaching practices specifically to determine whether changes cause improvement in student achievement, behaviour, or attitudes.

Before reviewing the findings from process-product research, it is important to stress that such research is based on a particular perception or definition of effective teaching. That definition can mean those characteristics or teacher behaviours found through empirical research to be related to improved student achievement. The research links changes in teacher behaviour to desired achievement increases in students. There is, however, an underlying assumption of unidirectionality from the teacher to the student. Correlation does not prove causation, and it may well be that different students will alter a teacher's performance. Furthermore, although most modern research tends to be based on the process-product paradigm, other effectiveness measures are associated with different sets of concepts, variables, and criteria that may equally well define "effective teaching."

There are also limitations on the degree to which the studies are generalizable. The most consistent findings are restricted to the subject areas of elementary reading and mathematics. More recently, research into secondary mathematics also shows consistent results using process-product variables. Still, it would be premature to conclude that a generic set of effective teaching behaviours had been identified when the results are restricted to particular subject areas. Research is needed in totally unrelated fields such as art, music, and creative writing.

Notwithstanding the above limitations, Gage (1985) concludes that process-product research has provided a scientific basis for effective teaching. Researchers in the field are equally optimistic about the established knowledge base, particularly since the mid-1970s. With the application of meta-analysis, a method for quantitative synthesis of research findings (Glass, 1976), the many replications of studies of relationships between process-product variables have been synthesized and integrated. Dozens of meta-analyses have been performed on the relationships between teacher activity and student learning and these analyses have led to new and significant conclusions.

Two kinds of studies emerge from the process-product literature. One area deals primarily with discrete teaching behaviours or practices, such as clarity and enthusiasm, and the second deals with patterns of teacher behaviour, such as direct instruction and classroom management. This review of the literature will outline briefly the results of research into the most frequently cited discrete teaching behaviours and some of the major conclusions from studies of intact patterns of teaching in which discrete variables are aggregated or synthesized into a new composite. The review is not intended to be all-inclusive; it focuses on the significant findings in the literature. The studies cited are mainly recent, although some earlier important works are included. Sources consulted include the Canadian Education Index (CEA), Current Index to Journals in Education (ORYX), Directory of Education Studies in Canada (CEA), and Resources in Education (ERIC).

Discrete Teaching Behaviours

Clarity

A brief definition of clarity is "simplicity of expression." Early rating scales for clarity tended to include many higher-level inference ratings, items that require the observer to infer constructs from a series of events. Recently, researchers have used low-inference variables like vagueness terms, mazes, and additional unexplained content. *Vagueness terms* are words or phrases which are unclear, indicate approximation, or lack assurance. *Mazes* are semantic problems such as halts in speech or false starts, redundancy, and tangled words (Land & Smith, 1979). Teachers who present information clearly avoid these speech patterns.

Process-product studies have quite consistently found a positive relationship between teacher clarity and pupil achievement (Brophy, 1982; Evertson, 1982; Good, Grouws, & Ebmeier, 1983; Hines, Cruickshank, & Kennedy, 1982; Land & Smith, 1979; Smith & Bramblett, 1981; Smith & Cotten, 1980; Smith & Land, 1981).

Opportunity to Learn

Also referred to as *time allocation* or *time on task*, opportunity to learn is the amount of time that students actively engage in task-oriented activities. Opportunity to learn has been consistently related to student achievement in many studies (Anderson, 1981; Borg, 1979; Duncan & Doenau, 1980; Emmer, Evertson, & Anderson, 1980; Fredrick & Walberg, 1980; Gambrell, Wilson, & Gantt, 1981; Gettinger & White, 1979; Good & Beckerman, 1978; Rosenshine, 1979). The International Association for the Evaluation of Educational Achievement (IEA) analyzed student achievement in 22 nations; Holsinger (1982) reported a principal finding was that time for instruction and opportunity to learn were key characteristics associated with high test scores and achievement.

Brophy and Good (1986) suggest that *time on task* is a less desirable term than *opportunity to learn* because the latter indicates a need to consider quality of academic activities rather than merely time spent on them. Moreover, in studies of time on task, relationships vary according to definition and measurement of time on task (Karweit & Slavin, 1982) with high achievement gains associated with time spent in teacher-directed lessons or teacher-supervised seatwork and low gains associated with large amounts of time spent working without teacher supervision.

Enthusiasm

Enthusiastic teaching is generally described as stimulating, energetic, animated, exciting, and inspiring. Movement, gesture, and voice inflection comprise part of the low inference behaviours associated with enthusiasm. Wyckoff (1973) found that secondary students achieved higher scores on immediate recall when mobility, gesture, and pausing were used. Fairly consistent positive associations between teacher enthusiasm and student achievement have been found (Brophy, 1979; Evertson, Anderson, Anderson, & Brophy, 1980; Gillett, 1980; Gillett & Gall, 1980; McKinney & Larkins, 1982).

Collins (1976) developed a program for training elementary teachers to raise their enthusiasm level. These teachers' pupils appeared to have significantly higher levels of at-task performance (Gillett, 1980; Gillett & Gall, 1980). However, Bettencourt (1978) compared one group of elementary teachers trained in Collins' program and another group not so trained and found no achievement differences between the two groups of students.

In summary, enthusiasm frequently correlates with achievement, particularly among older students (Brophy & Good, 1986; McKinney & Larkins, 1982). However, enthusiasm is more strongly related to affective than to cognitive outcomes (Brophy & Good, 1986).

Expectations

Since the milestone work, *Pygmalion in the Classroom* (Rosenthal & Jacobson, 1968), there have been literally hundreds of studies of self-fulfilling prophecies. Research into teacher expectations reveals that they are associated with student achievement and that some teachers treat low- and high-achieving students differently (Brophy, 1983a; Cooper, Findley, & Good, 1982; Crano & Mellon, 1978; Fry, 1982; Good, Cooper, & Blakey, 1980; Good & Grouws, 1977; Jeter & Davis, 1982; Swan & Snyder, 1980). Although not universal, the results indicate that there is a Pygmalion effect in certain circumstances and at all grade levels. Research to date suggests that teachers tend to give more writing time, feedback, praise, interaction, and eye contact to students whom they expect to be high achievers (Babad, Inbar, & Rosenthal, 1982; Good et al., 1983; Taylor, 1979). Expectations which are slightly above a student's past performance appear to achieve optimum results. Unreasonably high or unattainable expectations tend to retard rather than encourage achievement in students.

Feedback

Feedback refers, amongst other things, to the teacher's response or reaction to a student. Brophy & Good (1986) stress the importance of overt feedback when a student does or does not respond. Feedback may consist of verbal acknowledgements ("correct," "right") or non-verbal responses such as head nods. Research supports Brophy & Good's assertion that regular, continuing feedback correlates with higher student achievement (Anderson, Evertson, & Emmer, 1980; Brophy, 1983b; Brophy & Evertson, 1976; Good, 1979; Hannafin, 1982; Rosenshine, 1983).

Criticism

One form of negative feedback is criticism. It is important to distinguish between simple correction, letting the student know an incorrect response has been given, and personal criticism such as sarcasm, ridicule, scolding, shouting, or shaming. With incorrect responses, research indicates that mild criticism or corrective feedback can actually enhance achievement among students, particularly among elementary students in the high ability, high socioeconomic status group (Brophy, 1979; Brophy & Evertson, 1976; Gage, 1978). On the other hand, the teacher's use of sarcasm, ridicule, scolding, or other belittling kinds of criticism consistently correlates negatively with achievement among students (Brophy, 1979; Brophy & Evertson, 1976; Evertson et al., 1980; Rosenshine & Berliner, 1978; Soar & Soar, 1979). Belittling criticism appears to depress achievement, and Brimner (1982) also

reported the development of unhealthy attitudes toward writing in students who received this type of negative feedback.

Praise

Praise is a form of positive feedback in which the teacher responds to the student with verbal approval. Stringer and Hurt (1981) report that praise and criticism more effectively reinforce pupil achievement than does indifference. Praise has been consistently and weakly associated with improved student achievement in much research of the past 15 years. However, contextual qualifications suggest that praise is more effective for certain students and in certain situations. Praise is more important to girls than to boys, in low- than high-income settings, and when it is personalized rather than automatic (Brophy, 1981; Evertson et al., 1980; Good, 1979; Jensen, 1983; Stallings & Kaskowitz, 1974; Stringer & Hurt, 1981; Taylor & White, 1982).

Conclusions About Discrete Teaching Behaviours

Hundreds of variables or specific dimensions of teaching have been correlated with pupil achievement. The specific variables outlined in this paper are among those that quite consistently show high correlations with student achievement. Other variables that show high correlations with student achievement are frequently included in experimental teacher training programs and manuals as components of intact patterns of teaching. Discrete variables include: structuring comments such as advance organizers used to bridge or compare cognitive concepts (Ausubel, 1980; Emmer, Sanford, Clements, & Martin, 1982; Lawton & Wanska, 1977), variability or diversity in teaching strategies and techniques (Anderson et al., 1980, Emmer et al., 1980; Stallings, 1976), and monitoring and pacing of learning experiences (Anderson et al., 1980; Evertson, et al., 1980; Good & Grouws, 1979; Rosenshine & Berliner, 1978).

In correlational studies of discrete variables, the investigator does not attempt to discern whether the teacher is using any particular style or pattern of teaching such as direct instruction.

Intact Patterns of Teaching

A second method of research focuses on the relationship between patterns of teaching and what pupils learn. Thus, many of the discrete variables are aggregated or synthesized by the investigator into a new composite, a distinctive pattern or style of teaching.

Chronologically, experimental studies of intact patterns of teaching grew out of naturalistic, correlational studies. One of the promises of the process-product research was to show which behaviours of teachers correlate with desired pupil change or achievement so that teachers could be trained to adopt appropriate behaviours. A series of experimental teacher training treatments emerged, based on established correlations. In them, teaching practices were altered to determine if change caused improvement in student achievement. Space limitations prevent the discussion of each experiment, but numerous manuals and treatments mentioned terms such as *classroom management*, *mastery learning*, *explicit instruction*, *direct instruction*, *teacher-directed learning*, *systematic teaching*, and *active teaching*. Classroom management, for example, deals with the problem of order in classrooms and includes discrete variables such as opportunity to learn, feedback, and monitoring and pacing. Research-derived, effective management strategies have been successfully communicated to teachers (Borg & Ascione, 1982; Emmer, Sanford, Evertson, Clements, & Martin, 1981; Emmer et al., 1982; Good & Grouws, 1977; MacKay, 1979; Ornstein & Levine, 1981; Soar & Soar, 1979; Solomon & Kendell, 1979).

Similarly, direct instruction or teacher-directed learning includes key instructional behaviours like clarity, advance organizers, flexibility, time on task, feedback, and monitoring and pacing. Experiments suggest that certain elements from the direct instruction model and others from indirect instruction are both supported (Evertson et al., 1980). Most students show greater achievement in classrooms where there is more direct teaching or active instruction. Active instruction means teacher presentation in a clear, structured, personal manner with appropriate demonstration, elaboration, questioning, control, and monitoring of student seatwork (Arehart, 1979; Clark et al., 1979; Crawford, Gage, Corno, Stayrook & Mitman, 1978; Gall et al., 1978; Modike, 1980; Smith & Saunders, 1981). However, direct instruction is not equally effective for all students in all contexts, and the findings are frequently limited to a particular grade level, ability group, socioeconomic status, or subject area. Since the contextual qualifications apply to most process-product research, we will return to this matter later. Interestingly, there has been a shift in preference towards direct teaching during the current back-to-the-basics era. Teacher-directed instruction is businesslike, formal, didactic, systematic, and highly structured. The results of experimental studies indicate that some direct instruction models have been consistently successful at increasing the percentage of children able to master basic skills. Since there is currently an emphasis on improving students' basic skills, this greater interest in teacher-directed instruction or direct teaching is not surprising.

There has been considerable research into intact patterns of teaching since 1970. The results of research into some patterns have been highly consistent. For example, both the Direct Instruction-Follow Through model and the Mastery Learning approach have consistently yielded better student achievement test scores when compared to conventional teaching (Gage, 1985). Although programs that use intact patterns of teaching have problems and have come under criticism, they have successfully achieved one goal—to increase the proportion of students able to master the basic curriculum (Anderson et al., 1980; Borg & Ascioni, 1982; Crawford et al., 1978; Emmer et al., 1981; Emmer et al., 1982; Good & Grouws, 1979; Stallings, Needels, & Stayrook, 1979).

A Critique of Process-Product Research

The process-product program has dominated the study of teacher effectiveness for more than two decades. Its emphasis on developing skills and improving achievements is compatible with the current back-to-the-basics trend. While the program has not been completely successful in identifying a generic set of teaching behaviours, it has succeeded in producing an accumulation of findings linking teacher behaviour to student achievement. The program has also answered the charges of behavioural psychologists that teaching is unscientific because teachers fail to consider their objectives in precise behavioural terms. Moreover, those who develop professional development programs for experienced teachers perceive the process-product program as the most valuable (Shulman, 1986).

However, process-product research has drawn criticism for both its underlying assumptions and its methodology. For example, pupil gain is measured in various ways. Standardized tests have frequently been used to measure pupil gain but these can be biased, unfair, and unreliable. Second, important outcome variables other than pupil achievement are often ignored in this research. Students' attitudes towards self, school, and subject area may be as important as student achievement. A third and related criticism concerns teachers' objectives. All teachers may not be teaching for the same objectives, such as better grades on student exams. The validation of performance tests of teacher effectiveness depends on all teachers teaching for the same objectives (Popham & Baker, 1966).

A fourth concern about process-product research is whether it is reliable. In behavioural observation, how does one know whether perception or reporting is biased? Any form of observation produces bias, one might argue. But consistency among judging observers, although not a guarantee of truth or plausibility, may simply indicate a shared outlook or a common training program among researchers. A fifth concern is the need to explore nonverbal as well as verbal behaviour of teachers and students. Scales

such as Flanders' Interaction Analysis depend on teachers' verbal behaviour and teacher-student verbal interaction. The emphasis on verbal behaviour suggests an ethnocentric bias towards Western, white culture and is less appropriate for Eastern or Native American populations.

A sixth criticism of process-product research is that it may not be valid. We have a myriad of observational systems. Do we have any evidence that we are observing the appropriate things? Many argue that we do not.

A seventh concern is to generalizability. Early studies dealt with correlations occurring in natural settings. Later research shifted from natural classroom settings to experimental teacher training settings to determine if altering teaching practices could improve student achievement. However, even the later experiments create doubts about generalizability because they continue to use teacher volunteers—who are quite possibly more highly motivated than a random sample of non-volunteers.

Shulman (1986) points to an eighth concern about the experimental teacher training programs when discrete variables are aggregated into new composites. "There was little evidence that any observed teacher had ever performed in the classroom congruent with the collective pattern of the composite" (p. 12). Shulman implies that all the variables in the composite may not be necessary for effective teaching and learning. In other words, the whole may not be equal to the sum of its parts. Moreover, even in an experimental program it is very difficult to control variables. Perhaps it is not the intact pattern of teaching but rather some unidentified variable that causes the achievement gains in students.

In the review of both discrete variables and intact patterns of teaching, it becomes apparent that there are conditional, context-specific findings in the research. Achievement gains in students have been measured using a process-product paradigm primarily in the subjects of mathematics and reading at the elementary school level. The necessity for further study became evident in classroom management experiments, which revealed that elementary students need more direct instruction in basic skills and classroom routines, and require more praise and symbolic rewards than do older students.

An important context-specific finding that emerges from the correlational and experimental research is the effect of socioeconomic status and academic ability. Low-SES, low-ability students reveal a different cluster of cognitive and affective variables than do high-SES, high-ability students. Low-SES, low-ability students need more control, structure, direct instruction, drill, practice, low-level questions, and praise and are generally less secure, confident, eager to participate, or responsive to challenge than high-SES, high-ability students (Brophy & Evertson, 1976; Good & Grouws, 1977; Soar, 1973; Soar & Soar, 1979; Stallings & Kaskowitz, 1974).

Soar & Soar (1979) conclude that high cognitive level interaction may be dysfunctional for young students, especially low-ability pupils, but may be functional for older elementary students, particularly those with higher ability. Soar and Soar introduced the notion of non-linear relationships, the inverted U curvilinear process-product relationships. That is, although teachers who exert more control over students generally elicit higher achievement, beyond an optimal level control becomes dysfunctional. Thus, additional teacher direction, drill, or recitation become unnecessary when the skills are already acquired, not because the skills are undermined but because the time would be better spent on other objectives or skills.

The final context-specific qualification that emerges from the process-product program concerns subject matter or even the content area of a subject. Rosenshine and Stevens (1986) excellently summarize the content areas where experimental teacher training programs are most applicable. The training programs emphasize explicit teaching procedures most effective in teaching a general rule, facts to be applied in the future to new situations, or step-by-step skills. Thus, arithmetic facts, vocabulary, English grammar, science facts, map reading, algebraic equations, or even the repair of broken household appliances constitute well-structured content areas where successful experimental teacher training programs have been able to increase achievement. Process-product paradigms have been least applicable to ill-structured content areas such as creative writing, problem solving, and the analysis and discussion common in literature and social studies classes. Teacher effectiveness training has limited value in teaching students to evaluate, to criticize, or to give creative or unique responses.

In summary, effective teaching in one context could differ from effective teaching in others. The contextual limitations inherent in the process-product program lead one to that conclusion. However, these limitations do not preclude the existence of general, effective teaching behaviours for all contexts.

THE ETHNOGRAPHIC TRADITION

There is, then, nothing wrong with studying how particular teacher behaviours are linked to gains in student achievement. It is equally important though to recognize the limitations of that genre of educational research. At this point, it is beneficial to describe a competing tradition, ethnographic-sociolinguistic research. The remainder of this paper summarizes this alternate approach and its findings. The intended goal of this exercise is to emphasize that education can benefit only if researchers are not myopic in their methods. Both ethnography and process-product research can broaden our knowledge of teacher effectiveness. Critics suggest

that process-product research has focused too exclusively on a narrow definition of achievement, the product, while ethnography tends to look at the much-neglected context, conditions, and interactions leading to these achievements or products. Ethnography may provide teachers with essential information about everyday classroom practice.

The philosophical foundations of the field of ethnography were laid shortly after the process-product era of research began (Cazden, 1972; Gumperz & Hymes, 1972; Jackson, 1968). This research provides rich qualitative descriptions of classrooms. In contrast with process-product researchers who reduce classroom events to discrete behaviours notable on an observation scale, ethnographic researchers see classrooms as organized social and cultural environments where members make sense of, define, interpret, and even change their environment. Ethnographers seek to understand the meaning of particular classroom events, unlike researchers in the process-product tradition who look for patterns and predictability. Classroom interaction seems to them to be governed by context-specific rules, and not all instances of behaviour are considered equivalent. Meanings arise out of social interaction, from both verbal cues and nonverbal ones—physical distance, facial expressions, gestures. The rules are implicit and are learned from the interaction itself. Communication in a classroom is very complex and makes demands upon both teacher and learner.

Some branches of ethnographic research include the sociological, anthropological, and linguistic perspectives. For example, ethnographic-sociolinguistics emphasizes communication, leading a number of researchers to focus on the coding and qualitative analysis of classroom discourse (Cazden, 1972; Delamont, 1983; Green, 1983; Koehler, 1978; Stubbs & Hillier, 1983). Frequently, audio and video recordings of classroom life are transcribed to provide both qualitative and quantitative data.

The *new sociology of education* describes interpretive or ethnographic research characterized by a radical or critical tone. Beginning in Britain with the work of Young (1971) and Karabel and Halsey (1977), these researchers concentrate on the reproduction of inequality within the school. The more critical frequently conduct research in culturally unique settings to reveal how the system fails to serve the disadvantaged, the poor, or ethnic minorities (the anthropological roots of ethnography).

The role of criticism in ethnographic research goes beyond notions of equality of opportunity and the hidden curriculum. Eisner (1985), whose background is in art education, sees criticism as a tool, a dialogue between teacher and critic through which professionals become aware of their strengths and weaknesses as teachers.

The central constructs of ethnography differ in several ways from the process-product paradigm. First, the context-specific rules may be emphasized. The classroom exists in the context of a broader cultural milieu—the

community, the school, and the family—all of which are bound to influence rules and meanings within the classroom. A second characteristic of the research is its emphasis on the significance of continuing interaction within a classroom. Thus, it downplays the causal relationships central to the process-product paradigm. So too ethnographic research questions the assumption of unidirectional influence from teacher to student. The constant interaction of people with their environments means that students elicit various teacher behaviours just as teacher behaviour influences student achievement. A final characteristic distinguishing ethnographic from process-product research is the acceptance of unobservable phenomena as important sources of data. The perceptions, feelings, thoughts, and attitudes of the participants are considered significant. The observer attempts to interpret the significance of events for actors themselves. The opinions and attitudes of students expressed in peer talk are excellent feedback for a classroom teacher.

The volume of ethnographic research has not equalled the mass of data produced by users of the process-product program. However, ethnography's contribution to the study of teacher effectiveness is immense. Jackson's early work (1968) gave then-unique insight into effective teaching. The author interviewed a group of teachers whom administrators identified as outstanding to determine how they viewed life in the classroom. Jackson's inquiry had three aspects: how teachers knew they did a good job in the classroom, what their reactions were to their own as well as to administrative superiors' authority, and what personal satisfactions were gained by being a teacher.

Jackson identified four recurrent themes which appear consistently to underscore the teachers' responses to all three question sets: immediacy, informality, autonomy, and individuality. Immediacy is the spontaneous, intuitive activity of everyday classroom life. The identified teachers tend to spurn objective measures of achievement in favour of day-to-day feedback from students. Student responses provide satisfaction and feelings of success. The outstanding teacher's mode of presentation is casual and informal. Professional autonomy is zealously guarded from excessive supervision. Finally, the effective teachers are individualists with a sense of personal usefulness and feelings of accomplishment, excited by the challenge of work, and interested in student well-being, frequently operating on intuitive hunches.

In another early ecological description, Campbell (1972) presented a similar account of a sample of outstanding teachers. The teachers unanimously rejected so-called universal learning principles that Campbell presented to them. A closer examination of the work suggests that the teachers objected to clearly specified behavioural goals. Their responses indicated that the

behaviourist's rigid stimulus-response-reinforcement view of teaching is foreign to outstanding practitioners. The latter reject formal and tangible student rewards as incongruous, distracting, or even harmful. Nevertheless, among the teachers there is consensus about the need to create a supportive classroom atmosphere in which students are appreciated and respected. In other words, they prefer intrinsic rewards to mechanical, formal, extrinsic, and test-evaluative rewards.

Both Jackson (1968) and Campbell (1972) stressed that it would be wrong to create the impression that outstanding teachers reject all rational principles and teach by the seat of their pants. Rather, such teachers adhere tenaciously to a few highly idealistic principles. They have a deep respect for pupils and think of the teacher as a resource person providing enjoyable classroom activities for students who become partners in setting goals. Both sets of outstanding teachers expressed the idea that evaluation should be informal and based on such criteria as student enjoyment, attention, enthusiasm, and willingness to continue with stimulating experiences.

Other ecological research has emerged from the work of Eisner (1985) and his students (Alexander, 1977; Berk, 1977; Davidman, 1976; McCutcheon, 1976; Sternberg, 1977; Vallance, 1975) at Stanford University. Advantages can be gained from classroom observation unfettered by a pre-arranged coding sheet. Eisner described a case study in which his student observer uncovered a teacher's extraordinary use of satire in her teaching. The author is quick to point out that nowhere in his search of the research on teaching is the topic ever mentioned.

The pervasive and important theme of human rationality pervades many ethnographic studies and constitutes a notable contribution to teacher effectiveness. The schism between process-product and ethnographic research turns out to be philosophical, methodological, and practical. The process-product paradigm assumes a positivist and experimental view of science and scientific research. Scientific knowledge progresses through the cumulative aggregation of various studies of empirical relationships with emphasis on observable or directly measurable behaviours or actions. By implication, a teacher's rational adherence to scientifically proven, effective teaching skills or behaviours consistently should improve student achievement and help meet long-range goals. By contrast, the ethnographer views science more broadly and in a humanistic fashion. Ethnography focuses less on scientific consensus than on refinement of debate. Emphasis is not on measurable behaviour but on the inferred or stated intentions, feelings, attitudes, expectations, or goals of individual participants. Ethnographers say that if one were to identify scientifically based classroom laws, important knowledge about human affairs would be lost, and, anyway, this is not how people reason in everyday thinking and problem solving. Herein lies the

biggest pair of gulfs between the perspectives—competing views of science and knowledge and competing views of intelligent human action.

The ethnographic notion of *bounded rationality* is neither new nor limited to the field of educational research. In 1978, Herbert Simon won the Nobel Memorial Prize in economics for his theory of bounded rationality which describes how people invent rules of thumb to muddle through a complex world. People simplify in the face of complexity because there are psychological limits to the amount of information they can process in a given span of time. Those who adhere to this view would suggest that teachers are overwhelmed by the myriad of rules and skills derived from research. Teachers are likely to benefit from the thoughts and reactions of students because such information is akin to their daily practice.

This theme underlies much recent literature. Peters and Waterman (1984) launch a scathing attack on university business faculties for their fixed, rational approach to management. Schön (1983) notes that most professionals spurn technical rationality for reflection-in-action. He believes that what has been called soft knowledge or intuitive knowing is not as elusive as we might believe. These writers all concur that people simplify the rules and cope with uncertainty, conflict, and novelty by using their intuitive capacities. The rejection of narrowly rational models lies at the back of all this literature.

Pittman's (1983) cognitive ethnography of a first grade classroom supports the idea of bounded rationality in classroom management. He found that the teacher developed a management plan from selection criteria considered relevant and that reflected her beliefs rather than from a program of successful management techniques. Rohrkemper and Brophy (1979) found that teachers who viewed themselves as both instructors and socializers more effectively coped with behaviour problems than those who viewed themselves as just instructors. Again, effective teachers go beyond a repertoire of effective methods and adhere to highly idealistic principles based on a deep respect for pupils as persons.

The element of critical self-reflection on the part of teachers emerges from the ethnographic studies cited. The teacher's beliefs and thinking style are reflected in the observed style of teaching. These writers disagree with the many proposals for new and "scientific" teacher education programs which rest on the assumption that teachers can become more rational by using a priori models not corresponding to the beliefs and feelings of the individual teacher. Floden and Feiman (1980) admonish us not to provide prescriptions in preservice and inservice teacher training programs since few teachers ever follow the steps provided in a priori models.

It should be apparent that the dichotomy between process-product and ethnographic research is most evident in differing views of rationality. In

the former, we are presented with a tough-minded, rational, organized, deliberate, and controlled view of classroom teaching. The ethnographer is more concerned with the overall, diffused, interactive, psychological context in which learning occurs. From this view, teaching appears a spontaneous, flexible, moment-to-moment business. The effective teacher engages in critical self-reflection and is directly accountable to students.

A Critique of the Ethnographic Tradition

It would be remiss not to provide a brief critique of interpretive research. Ethnographers argue that the starting point for research is the ecosystem of a classroom over an extended period of time and that the way to improve classroom teaching lies not in applying rules based in a behavioural science but in a more common sense recognition of the teacher as a practical reasoning agent with limited information. Ethnographic research has its share of methodological and practical problems.

One unresolved problem continues to be the great deal of time and money needed for ethnographic research. It takes much longer to describe a teacher's performance than to check off prearranged categories. In research, time is money and controls the volume of research that can be done. The ethnographic description is based on the observer's judgment, whereas a checklist count is considered more precise. Furthermore, descriptive, colourful language often influences readers to conclude that the ethnographic observer or describer is biased. The dilemma is that without qualitative description, important classroom events may be ignored, but with the description there is suspected bias.

The tasks that ethnographers set for themselves are formidable: ignoring generalizations in favour of particular cases, interpreting the thoughts, feelings, and acts of participants, and producing a fully elaborated classroom model. Unfortunately, the reported research does not live up to these expectations. Frequently, ethnographers limit themselves to specific aspects of the classroom (e.g., patterns of classroom discourse) and ignore or allude only briefly to many central features of classroom life. The rhetoric emphasizes that community and school contexts and the system of organized relations are vital aspects of the classroom. In practice, many such features are treated superficially in the research.

Researchers' understandings of generalizability are problematic. The ethnographic approach generalizes from an examination of concrete and detailed particular cases. However, some ambivalence exists among researchers about generalizing from case to case, and about communicating to the public for whom the research is intended.

A final criticism of ethnographic research is that, to date, the eclecticism of its program has produced neither principles nor maxims for policy and

practice. The common complaint that process-product research does not inform practice is equally applicable to ethnographic research, though in a different way and on different grounds.

CONCLUSION

By definition, ethnography is ideographic, that is, designed to comprehend more fully a particular classroom, while process-product research is nomothetic, used for generalizing across classrooms and teachers. However, logic suggests that numerous ethnographies can contribute to nomothetic knowledge, that is, can reveal central tendencies, broad areas of similarity, or how frequent and probable certain phenomena will be in a given population. In other words, ideally, the rich detail emerging from ethnographic studies is best combined with existing process-product research. The coexistence of competing schools of thought signifies maturity in the social sciences and suggests the wisdom of a mixed strategy for research in teacher effectiveness. This need not mean undisciplined eclecticism, but an atmosphere in which representatives of competing traditions can work collaboratively in new institutes. The two paradigms explored in this paper are not necessarily incompatible.

The reliance of empirical research on the process-product paradigm puts excessive emphasis on behaviour. The thoughts, feelings, intentions, reasons, and motives underlying behaviour constitute another—and crucial—study. Classroom decision making may rest on premises derived from the generalizations of empirical research on teaching. These premises, not necessarily determining decisions, can form the base for practical reasoning about teaching in particular situations. But the knowledge base of teaching is twofold. There is the scientific knowledge of rules and principles from empirical research. There is also the knowledge needed to apply, modify, adapt, or even invent rules when necessary.

The revelations about bounded rationality that emerge from classroom ethnographies show how rationality sometimes fails to govern behaviour. Two possible reasons come to mind. People resort to shortcuts because they can only process so much information in any minute of classroom life and, second, there is a pervasive tendency for human beings to allow feelings to override logic. Both evidence and personal observation suggest that people are very reluctant to abandon their cherished beliefs. "Many people will become either angry or anxious if confronted with evidence that others whom they respect see the 'good teacher' differently than they do" (Sorenson & Gross, 1967, p. 17). Notions of bounded rationality suggest that a normal classroom, and human interaction in general, is governed by a less than fully rational model of decision making. Although acknowledging this pervasive human tendency, I suggest that the traditional wisdom of the practitioner is nevertheless frequently grounded in logic and may be optimally

combined with selected generalizations from process-product research in a worthy, though less than fully rational, model of decision making.

Our own intuitions, as careful observers of the world around us, would suggest that ethnography has much to add to process-product research. It would be reasonable to conclude that there is no cookbook teacher—no universally-recognized, single, best teacher—who is better than all other types for all students in all contexts. The evidence in this paper suggests that a wise teacher is aware of and utilizes effective teaching behaviours derived from research but also employs intuitive judgment in specific contexts. A deep respect for students as persons would seem to be an essential quality for very good teachers.

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Diese Rezension der Fachliteratur prüft zwei verschiedene Forschungsrichtungen auf dem Gebiet der Wirksamkeit von Lehrern; erstens das Prozeß/Produkt-Paradigma und zweitens die ethnographische Betrachtungsweise. Die erste Methode hat den größten Erfolg erbracht. Frühere empirische Prozeß/Produkt-Untersuchungen die sich auf die Wechselbeziehung zwischen den beobachteten Verhaltensweisen der Lehrer und den Erfolgen der Schüler stützten, wurden später durch experimentelle Untersuchungen ergänzt. Die Ergebnisse deuten auf eine ziemlich beständiges, bedeutendes, und doch manchmal schwaches, Verhältnis zwischen dem Verhalten der Lehrer und den Erfolgen ihrer Schüler. Experimentelle Untersuchungen deuten darauf hin, daß durch eine Änderung der Lehrverfahren, die Erfolge von Schülern *gesteuert* werden können. Die ethnographische Betrachtungsweise andererseits, stützt sich weniger auf eine enge Definition von Erfolg, sondern mehr auf die Zusammenhänge, Umstände und Wechselwirkungen die zu diesen Erfolgen führen. Ethnographen haben die Untersuchungen in die Wirksamkeit von Lehrern dadurch gefördert, daß sie die Umstandsbedingungen und Regeln des täglichen Ablaufs im Klassenzimmer, die Wichtigkeit der Gedanken, Gefühle, Empfindungen und Haltung der Teilnehmer im Klassenzimmer betont haben und, ganz besonders, daß sie die vernunftgestützten Modelle für menschliches Verhalten in Frage gestellt haben.

Este estudio examina dos escuelas de investigación acerca de la eficacia del docente: el paradigma "proceso-producto," y el encaramiento etnográfico. La primera escuela fue hasta ahora la más rendidora. Los resultados de los primeros estudios empíricos, llamados de "proceso-producto," fundados sobre las correlaciones que existen entre la actitud y el comportamiento de los docentes y el rendimiento escolar han sido ampliados por investigaciones empíricas subsiguientes. Las conclusiones parecen indicar que existen relaciones bastante constantes e importantes entre el comportamiento de buen número de profesores, si bien esta relación es a veces débil, y los resultados escolares de los alumnos. Estudios experimentales indican que la modificación de prácticas pedagógicas de los docentes pueden *resultar* en cambios positivos en el rendimiento de los alumnos. La tradición etnográfica, por su parte, insiste menos sobre una definición estrecha del rendimiento, y más sobre el contexto, las condiciones y las reacciones que llevan a estos cambios. La contribución de los etnógrafos en el campo de la eficacia de los docentes ha sido de hacer hincapié en las restricciones y los reglamentos del medio escolar para la vida cotidiana del escolar, enfatizando la importancia de las ideas, los sentimientos, las percepciones, las actitudes de los que están en la clase, y, especialmente, poniendo de nuevo sobre el tapete nuestros modelos racionales de comportamiento humano.

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