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ABSTRACT

This paper is one of a series to guide research linking educational policy and management with student achievement. It specifies the determinants of key paradigm variables and teacher and principal work. The paradigm developed for this type of research is presented in an earlier paper in the series. The constructs of the paradigm are defined, including the multiple influences that must be controlled in such studies, the importance of hierarchical decomposition of variance in teacher work variables, and the sequential nature of reciprocal causal relationships between teacher and principal work. Outlined are the determinants of teacher work, school organization and climate, and principal work. The paper infers that research on policy and management would be relevant to student educational outcomes. The relationship of the three sets of determinants, though, needs to be discussed further. The complexity of models and methodology implied by this paper indicates the importance of co-oriented and cumulative research programs. Included is a four-page bibliography of references and eight illustrated tables. (MD)

Specifying Determinants of Teacher and Principal Work

by Kenneth Duckworth

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Introduction

This paper is one of a series sponsored by the Center for Educational Policy and Management (CEPM) to guide research linking educational policy and management with student achievement. The first paper in the series sketched a comprehensive conceptual framework, or "paradigm," for such research (Duckworth, 1981a). In another paper, Hersh and others (1981) have elaborated a section of the paradigm with regard to staff development. Also Duckworth (1981b, 1982) has described available instruments for measuring variables in the paradigm and has suggested limitations to a technically focused research strategy. The present paper specifies determinants of key paradigm variables, teacher and principal work.

To date, attempts at CEPM to develop and test research models based on the paradigm have encountered a number of methodological problems: operationalizing and measuring policy and management variables; finding the appropriate level of data aggregation to measure relationships of achievement to policy and management variables; and disentangling reciprocal causal effects among variables. CEPM convened a seminar to review these problems and suggest guidelines for future efforts. Reading and discussions, however, led to the conclusion that methodology problems were endemic in the vague and primitive nature of the paradigm itself. Burstein argues that "the specification of appropriate analytic models... should predominate over more typical concerns about cross-level inference and appropriate units and levels of analysis" (1980, p. 162).

The author is grateful to Gail MacColl of the National Institute of Education and to members of the CEPM Methodology Seminar, including W.W. Charters, Jr., Richard Carlson, Meredith Gall, Randall Eberts, Nancy Pitner, and William Hartman, for suggestions and criticisms. Also, Wynn DeBevoise helped in the editing and Sissel Lemke typed the numerous drafts. However, the author is responsible for the final text and any errors therein.

Hence, the first order of business was to differentiate the major variable clusters in the paradigm and to specify the determinants of each of these clusters.

In this effort, the author is indebted to Barr and Dreeben (Barr and Dreeben 1977; Barr 1980) and Bidwell and Kasarda (1980) for the distinction among levels of the social organization of schooling. There are, at least, three different levels within the school. First, there is the individual student in a learning situation; models of student learning constitute the guiding frameworks of experimental research on learning and related psychological processes (Bloom 1976). The paradigm draws on nonexperimental research from the Beginning Teacher Evaluation Study to identify aspects of student work on a learning task -- called "academic learning time" by Fisher and colleagues (1980) -- that serve as predictors of learning.

The next level of the social organization of schooling is the instructional group, in which a number of students are taught together and assigned similar learning tasks. Barr (1980) identified student work at this level of aggregation to be most affected by teacher instruction and pacing. Instruction and pacing are thus indirect determinants of student achievement. Fisher and colleagues specified three predictors of academic learning time related to instruction and pacing: aspects of presenting material, monitoring work and providing feedback.

The third intraschool level is the class, where management decisions and practices, including establishment of behavioral norms (Smith and Geoffrey 1968, Kounin 1970), selection of materials, organization of instructional groups, and time allocation, affect the constitution and conduct of instructional groups. Classroom management decisions and behavior thus also are indirect determinants

of student achievement. Fisher and colleagues identified two such determinants, consisting of teacher diagnosis of student needs and prescription of tasks (including groups), which together are called teacher preparation, in distinction to the direct instruction variables mentioned above.

Barr and Dreeben argue that the impact of school and district policy and management processes is to be found primarily in changes in the conditions of teaching and learning rather than in learning itself. Confining our attention to teaching, we may ask how teacher work variables identified as indirect predictors of learning are themselves influenced by school and district policy and management. Because teacher work is known to proceed with some autonomy in classrooms, the question will be rephrased in terms of the salient conditions of work.

Teacher work variables are treated as results of the interaction of three sets of variables describing the conditions of teacher work -- agenda, incentives, and resources. The teacher work agenda includes the teacher's perception of what is to be done and its elaboration in purposeful plans of action like lesson plans and instructional objectives. The teacher work incentives include the teacher's perception of rewards and penalties contingent on pursuing various agenda items. The teacher work resources include the human qualities, materials, and knowledge available for pursuing various agenda items.

After specifying the work condition variables that influence criterion variables of teacher work, the task will be to specify determinants of work conditions. This task will proceed in three stages. First, direct determinants of teacher work conditions will be sought in intraclassroom variables, teacher work itself, school organization and climate, the work performance of the school

principal, and district factors. Second, school organization and climate variables will be traced to determining factors. Third, principal work variables will be treated as criteria in their own right and traced to their determinants. The second and third stages thus focus on indirect determinants of teacher work.

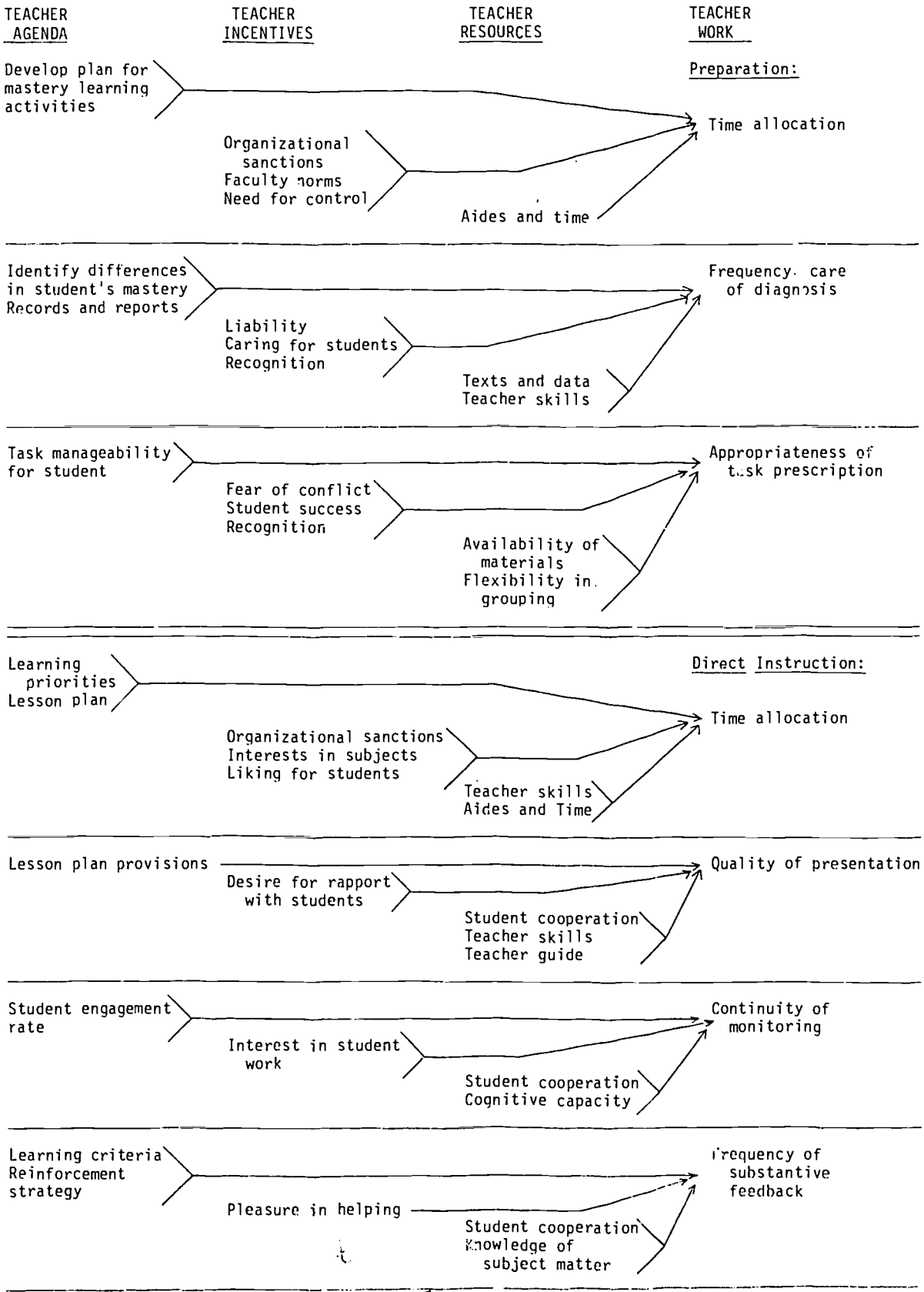
The purposes of this effort are to

1. specify further the general constructs of the paradigm and their ultimate impact (direct or indirect) on teacher work,
2. indicate the multiple influences and their interactions which must be controlled in designing and studying the impact of particular management interventions or policy variants on teacher work,
3. indicate the importance of hierarchical decomposition of variance in teacher work variables, which is attributable to differences among individuals, among schools, and among districts, and
4. indicate the sequential nature of reciprocal causal relationships between teacher and principal work.

Determinants of Teacher Work

Teacher work variables indicated as indirect predictors of student achievement are the main criterion variables. The present specification effort will focus on the two general teaching functions identified by BTES (Fisher and colleagues 1980) -- preparation and direct instruction. Determinants will be specified for the time allocated to these two functions and the quality of their components. Preparation is further specified as diagnosing student readiness and learning problems and prescribing tasks appropriate to overall learning objectives and student needs. Direct instruction is further specified as presenting task information to students, monitoring their work, and providing feedback to the student on task progress (which in turn provides information for the next phase of diagnosis). Figure 1 displays the criterion variables. The first task for specification then is to elaborate the conditions -- agenda,

Figure 1
Teacher Work and Work Conditions



incentives, and resources -- that together determine the BTES teacher work variables.

Figure 1 indicates that the time a teacher allocates to preparation work may be envisioned as a result of

> an agenda to develop lesson plans for mastery learning activities, with instructional objectives and learning criteria as a guide for actual teaching;
>
> incentives to devote time to such an activity derived from organizational sanctions, faculty norms, and a personal need for the control of instruction; and
>
> resources such as aides and time available for preparation.

Similarly, the time allocated to direct instruction in a given subject is a result of priorities among different subjects on the teacher agenda; incentives derived from sanctions, personal preferences, and an enjoyment of interaction with students; and resources of time, aides, and personal skills.

The various behaviors within these two general work activities are also traced to work conditions in Figure 1. The frequency and care of diagnosis of student attainment and learning problems result from an agenda to identify differences in student mastery, possibly in connection with recording or reporting; from incentives provided by liability for misdiagnosis, personal caring for students, and recognition for bringing an instructional group to mastery; and from resources such as the availability of diagnostic instruments as well as teacher skills in using such instruments. The appropriateness of the tasks prescribed to students will result from an agenda to assign manageable or low-error-rate tasks to students; incentives such as fear of conflict with parents or students if students are given tasks that are too hard or too easy, pleasure in high student success rate on tasks, and recognition for success; and the resources

available in materials at different levels of difficulty and flexibility in regrouping students for task readiness.

The three direct instruction behaviors of presentation, monitoring, and feedback also are determined by work agenda, incentives, and resources:

> The quality of presentation depends on the lesson plan's provision for the teacher to both model learning tasks and orient students precisely to the task procedures; the reward (for the teacher) of student interest in what the teacher has to say; and teacher skills (or a written guide) and student cooperation.
>
> Continuous monitoring of student work depends on teachers giving priority to keeping students engaged and to correcting errors in progress; sufficient interest in the efficiency of student seatwork to override the temptation to use such time for clerical tasks; and student cooperation with task and the teacher's cognitive capacity to deal with multiple, simultaneous student work processes.
>
> The frequency of providing substantive feedback to students depends on the clarity of learning criteria and the teacher's reinforcement strategies; the desire to help the student; and teacher knowledge of the subject matter and student cooperation with the task.

The elaboration of work conditions for even such a limited set of teacher work variables may suggest the level of complexity in specification required to identify determinants of teacher work behavior in general. The task of influencing teachers is not simple, and attention given solely to agenda (e.g., promulgating an instructional strategy), incentives (e.g., imposing sanctions on teacher work), or resources (e.g., supplying the teacher with additional time or materials) may not produce the desired effect on teacher behavior.

The treatment thus far has been at the individual teacher level, even though some conditions of teaching are by inference collective (e.g., reporting requirements). The next step is to identify determinants of these individual conditions of teacher work. Four sets of variables will be considered: student work and achievement; other aspects of teacher work itself; school organization

and climate; principal work; and district factors.

Student Work and Achievement. There are direct connections between student performance in class and teacher work conditions. Although the selection of teacher work criteria (Figure 1) was based on their observed productivity in terms of student work and achievement, predicting those work variables requires attention to preexisting and developing patterns of student work and achievement. Teacher agendas are affected by expectations regarding initial states of student attainment and variation therein; assignment to a heterogeneously as opposed to a homogeneously grouped class shapes the experienced teacher's sense of what is to be done and what will work. Teacher work incentives are vulnerable to feedback in terms of student work and achievement; the expectancy model of work motivation (Lawler 1976) sees motivation as an ongoing function of perceived instrumentality of effort in terms of desired rewards. Where, for any number of reasons, student work and achievement do not respond immediately to teacher efforts, one can expect incentives for continued effort to weaken. Finally, the resources necessary for direct instruction include cooperation and satisfactory completion of lessons. The teacher with students who do not cooperate and fail to finish work has inadequate resources for further progress through the work agenda. While mastery learning programs structure such contingencies into teacher agendas, often some students remain unprepared after a reasonable time to move on with the class. Here teachers may need to resort to special placements or pull-out programs; their importance as resources depends on the rate of student work in the classroom.

Teacher Work. While it may seem illogical to introduce teacher work as a determinant of the teacher work conditions in Figure 1, which were selected for their interactive effect on the teacher work variables of preparation and direct

instruction, in fact, other aspects of teacher work are considered here. Outside the sphere of instruction, a teacher acts in many ways to define one's* overall work agenda, make one's situation rewarding or at least less punishing, and improve one's resource base. Some of this is indicated by the distinction between the instructional group and the classroom group introduced earlier from the writings of Barr and Dreeben. In managing a classroom, teachers make decisions about grouping of students for instruction, about discipline and classroom social activities, and about the procurement of supplies or assistance. The teacher work conditions in Figure 1 depend on this teacher work activity. Furthermore, teachers respond to problems related to preparation and direct instruction practices by initiating special requests during the year for alterations in their work conditions (e.g., removing a student from the class). These teacher actions must be included in a specification of the determinants of teacher work conditions.

School Organization and Climate. The CEPM paradigm was constructed deductively from research on effective teaching, with an awareness of the limits posed by the weak hierarchy of instructional management in public school systems. Determinants of teacher work include school-level characteristics found by research to be associated with effective school-wide teaching practices. An example is Stallings' list of implications for school administrators based on her study of effective teaching (1981, pp. 23-24): staff development provided for teachers; classroom intrusions kept to a minimum; absenteeism and tardiness reduced; parental support obtained. These implications have clear links to some of the work condition variables of Figure 1. For example, staff development builds teacher diagnostic skills, and reducing tardiness is a way to

* The author uses the pronoun "one" throughout as a substitute for "he or she."

increase student cooperation with instruction. Such derivations from teacher effectiveness research are rare, unfortunately.

There is, however, a recent body of research that describes effective schools selected on the basis of superior student achievement, usually elementary schools serving low-income populations. Such studies (Brookover and others, 1979; Edmonds 1979; Little 1982) describe attributes of the schools without close attention to teaching practice. The state of the art of this research is well described and criticized in a recent paper by Purkey and Smith (1982). To summarize attributes of effective schools that are indicated by several studies, Purkey and Smith list nine organization characteristics, which "can be set into place by administrative and bureaucratic means," and four climate characteristics, which "need to grow organically in a school and are not directly susceptible to bureaucratic manipulation" (pp. 37-41). The organization and climate variables are as follows:

Organization

School-site management
Leadership
Staff stability
Curriculum articulation and organization
Staff development
Parental involvement and support
School-wide recognition of academic success
Maximized learning time
District support

Climate

Collaborative planning and collegial relationships
Sense of community
Clear goals and expectations commonly shared
Order and discipline

These lists of variables include prime candidates for the specification of determinants of teacher work conditions. The full specification of linkages

would be long and complex, given the possible combinations of variables in the above lists and the variables in Figure 1. Four of the organization variables can be treated as a cluster called "instructional program development": leadership, curriculum articulation and organization (including regular evaluation of student progress), schoolwide recognition of academic success (and failure) of both students and teachers, and staff development. This cluster is related to the climate variables of collaborative planning and collegial relationships and to the sharing of clear goals and expectations. Together these variables are likely to determine the clarity and strength of teacher work agendas on time alloted to and quality of the BTES teaching variables. Although such teacher agenda variables can stem from an individual teacher's philosophy and experience, research on the decay of innovations suggests that a common interactional and cultural framework is essential to the persistence of complex teaching agendas (Fullan and Pomfret 1977; Intili 1977). At the very least, the between-schools component of variance in teacher agendas is likely to be affected by instructional program development. Similarly, this cluster is likely to contribute to the faculty norm of continuous improvement that Little (1982) found in effective schools. Finally, teacher work resources depend on the increments to teacher skills resulting from staff development activities.

The organization variables of school-site management and parental involvement and support can be treated as a cluster called "school governance," emphasizing empowerment of school decisions and flexibility in implementing district policies. This cluster is related to the climate variables of sense of community and collaborative planning and collegial relationships and provides incentives for teachers to participate in instructional program development and to attempt to improve their own work conditions. With respect to the variables

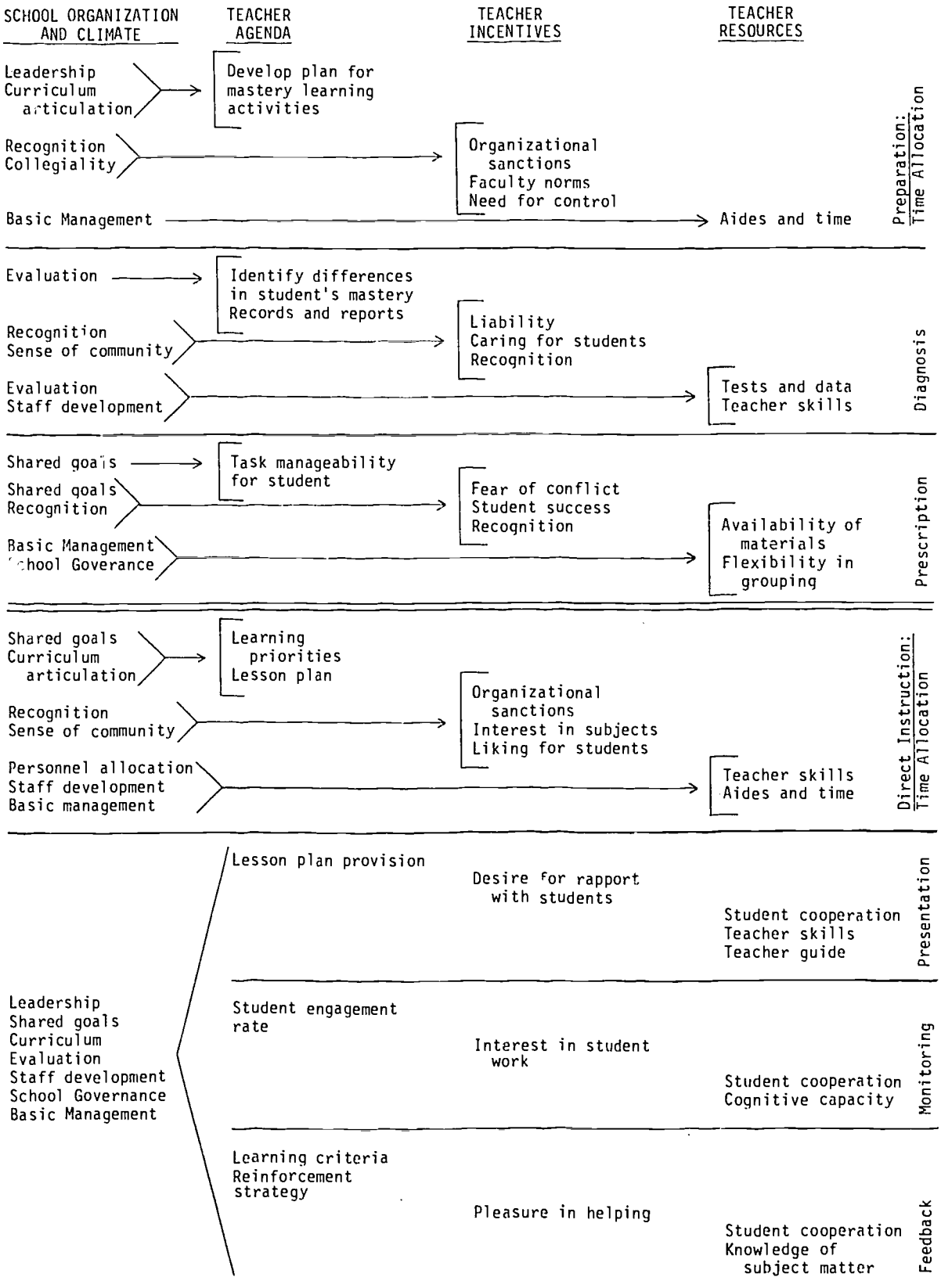
in Figure 1, this cluster is likely to affect the strength of faculty norms for teacher work, of incentives for teachers to invest time in planning work and searching for alternate tasks for students, and of the reliance on parental support to achieve student cooperation with direct instruction, especially feedback.

The organization variable of staff stability and the climate variable of order and discipline, in contrast, seem to belong to a separate category of variables not mentioned in Purkey and Smith's list that deal with basic school management activities: adopting and enforcing rules and procedures (e.g., on student attendance), scheduling and boundary-maintaining activities that are necessary to keep the school running, and allocating personnel and financial resources. These processes figure importantly in the list of management implications in Stallings' (1981) study mentioned above. Therefore, there seems to be a cluster of variables we can call "basic management" that also influences teacher work conditions, primarily resources. For example, student cooperation, which is a vital resource for direct instruction variables, involves compliance with school attendance and disciplinary rules and acceptance of the teacher's services. Hence teacher work resources are likely to vary with the efficiency and equity of basic management.

Of the remaining variables in Purkey and Smith's lists, maximized learning time is a characteristic of teacher work and has already been dealt with as a criterion variable. District support will be dealt with separately in terms of district determinants of teacher work conditions.

Figure 2 specifies the school organization and climate variables as determinants of teacher work conditions. However, Purkey and Smith and Rowan, Dwyer,

Figure 2
School Organization and Climate and
Teacher Work Conditions



and Bossert (1982) have pointed out a major problem in the effective schools literature: the research is descriptive and correlational and hence provides little basis for inferring causal effects. The relationships specified in Figure 2 must be regarded as tentative and needing further research, particularly on specific interventions in these variables and their apparent consequences.

Principal Work. The principal's effect on teacher work conditions is implied in the leadership variable in Purkey and Smith's list, although they suggest other sources of leadership as well. In any event, the leadership function is often vaguely stated and seems a narrow concept of how principals affect the variety of work agendas, incentives, and resources displayed in Figure 1. The original paradigm paper (Duckworth 1981) emphasized the model of task control set forth by Dornbusch and Scott (1975), although this model has been criticized as too rationalistic and contradicts evidence that principals exercise little formal control of teaching (Cohen, Deal, Meyer, and Scott 1976). A more comprehensive formulation of principal work is needed.

The National Institute of Education recently commissioned three papers on the contribution of principals to effective schools (Greenfield 1982; Persell 1982; Yukl 1982). All three papers take a broader view of principal work. Greenfield reviews the tradition of research on principal leadership per se (with no central emphasis on effects on the quality of teaching). He offers no recipe for principal contributions but does cite findings of his earlier work with Blumberg (1980) that principals deemed to be having an impact on their schools possessed a vision of what the school might be, took initiative to set activities in motion towards realizing such a vision, and were resourceful in terms of focusing their own and others' energies on such activities. These

notions will be retained in drawing up a list of principal work variables.

Persell's approach is to synthesize implications for the principal from the same effective schools research that Purkey and Smith reviewed. Her nine implications also warrant our attention. Principals of effective schools

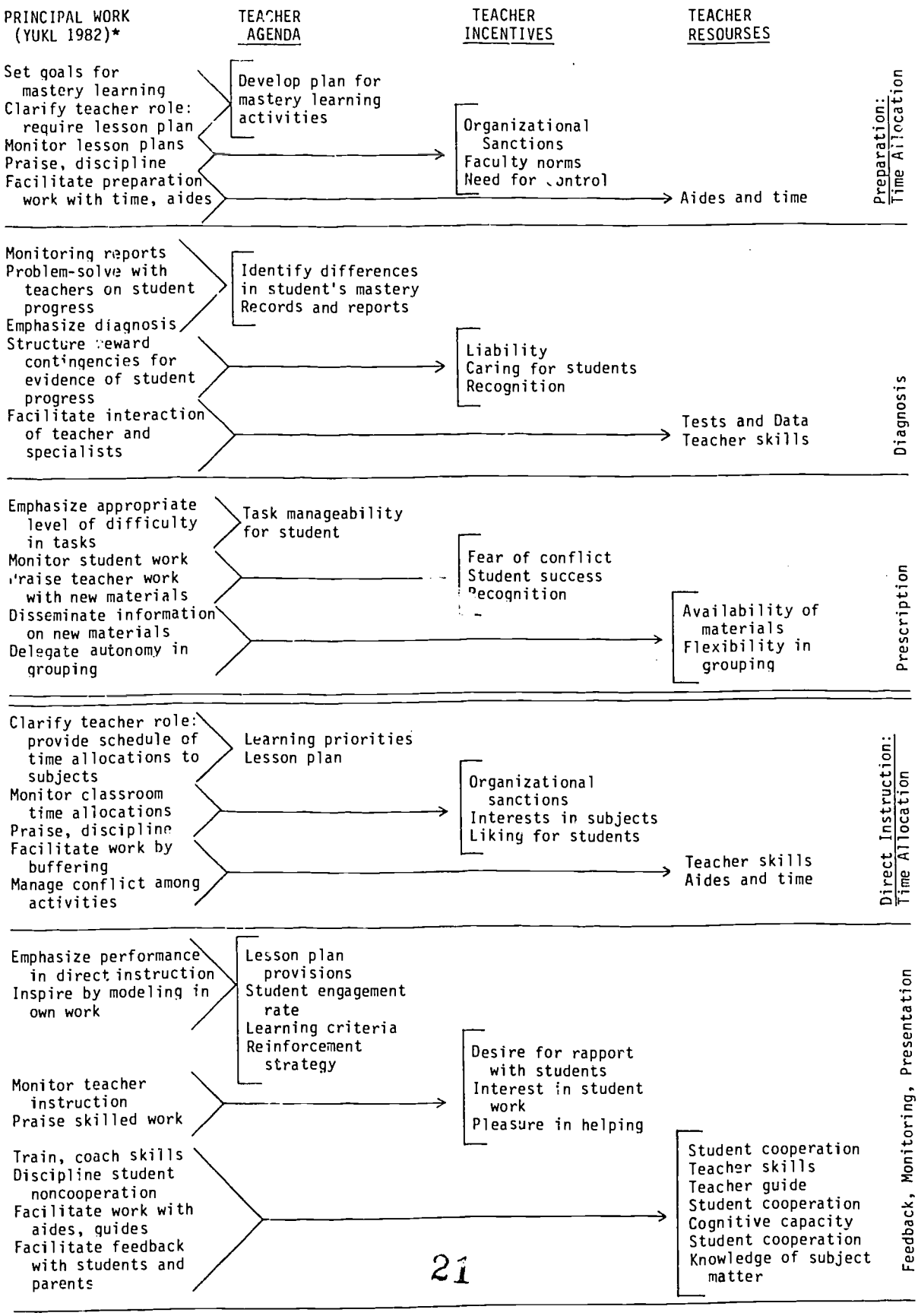
> display commitment to academic goals,
> create a climate of expectations and respect,
> provide instructional leadership,
> are forceful and energetic,
> exercise interpersonal skills,
> facilitate instruction, especially through discipline,
> develop organizational potency,
> devote time to instructional matters, and
> observe, monitor and evaluate.

The third paper, by Yukl, is the most helpful for our purpose because it provides a comprehensive and detailed system of categories for management behavior that is synthesized from previous work and Yukl's own research. The 22 categories are somewhat unwieldy but seem to provide the level of discrimination necessary for specifying determinants of the teacher work conditions in Figure 1 (Yukl 1982, pp. 17-18). They will be grouped into four clusters: leadership, task control, environmental transactions, and personnel involvement and support:

Leadership	Environmental Transactions
Goal Setting	External Monitoring
Inspiration	Representation
Innovating	Information Dissemination
Task Control	**Personnel Involvement and Support**
Planning	Decision Participation
Role Clarification	Autonomy Delegation
Performance Emphasis	Consideration
Structuring Reward Contingencies	Career Counseling and Facilitation
Monitoring Operations	Interaction Facilitation
Problem Solving	Work Facilitation
Praise and Recognition	Training and Coaching
Discipline	Conflict Management

The specification of determinants of teacher work conditions in terms of this set of principal work variables is displayed in Figure 3. This listing is

Figure 3
Principal Work and Teacher Work Conditions



*General impact: Representing in hiring, personnel involvement and support

heuristic and awaits confirmation by research. The teacher's agenda for developing a mastery learning program is traced to the principal's setting of goals for such learning. Similarly, the teacher's incentive to develop such a program is traced to the principal's monitoring of teacher plans, and the teacher's resources for developing such a program are traced to the time and aides provided in order to free the teacher from classroom supervision responsibilities.

With respect to the conditions for teacher diagnosis and prescription, the salient aspects of principal work are emphasizing performance and facilitating work and interaction. The teacher's agenda to identify differences in student mastery will be influenced by the principal's emphasizing continuous diagnostic work, monitoring of progress reports, and problem-solving with the teacher about variable student progress. The agenda to make tasks manageable to students will be influenced by the principal's emphasis on the appropriateness of work assigned to students. Incentives for diagnosis and prescription will be affected by the rewards a principal offers for evidence of student progress, by the principal's monitoring of student work during classroom observations to assess error rate, and by the principal's publicly recognizing teacher success with new materials designed for students at different levels of mastery. Teacher resources for these tasks will depend on the facilitation of interaction with specialists regarding diagnosis (as in the frequency of communication with reading diagnosticians), the dissemination of information about successful materials, and the delegation of autonomy to teachers in regrouping students for instruction.

Teacher priorities for time allocation to direct instruction depend on the principal's emphasis on performance and the master schedule of the time alloted

to different subjects, which is controlled by the principal. The incentive to comply with such a schedule, of course, will depend on the frequency of principal classroom observation (or mere visiting around the building) and hence monitoring of teachers' actual use of time. Although the teacher's concern about the principal's judgment may often make such monitoring a source of incentives, the principal who encounters widespread misuse of scheduled lesson time may need to use praise of compliant teachers and sanctions (discipline) of non-compliant teachers. Teacher time resources depend on the principal's buffering the classroom from interruptions during lessons and managing conflicts with competing activities, such as specialized instruction and extracurricular activities.

The principal's influence on the instructional practices of presentation, monitoring, and feedback is collapsed in Figure 3 to reflect the intricate mesh of these teacher practices and hence the contributory work conditions. Emphasis on planning for lesson presentations and principal modeling for teachers are avenues of influence on the teacher agenda to implement such practices. Incentives come from principal monitoring of instruction and praise of skilled work (negative sanctions are less likely to be used here than in the areas of time allocation and student discipline). Resources for direct instruction include the training and coaching of skills, disciplining of students for non-cooperation (and thus facilitation of work), provision of aides and guides (such as scripts for drill and practice sessions) and facilitation of interaction with students and parents (such as scheduling conferences with parents) regarding feedback on performance.

Underlying many of these teacher work conditions, of course, is the influence principals exert representing school needs when hiring teachers in

accordance with their instructional goals. Not only are agendas more likely to be aligned and essential teacher skills more available, but teachers are more likely to be loyal to a principal who has hired them and thus regard that principal's praise as an incentive. Other incentives to comply with principal requests come from principal work variables cutting across principal-teacher relationships. These are the personnel involvement and support variables of consideration and career counseling and facilitation. Just as teachers will respond to work facilitation with gratitude, so personal kindness and the advancement of the teacher's professional career are likely to result in incentives to cooperate with a work agenda suggested by the principal.

The behavior of auxiliary building administrators should be considered here as well. Assistant principals, counselors, and instructional specialists can prod individual teachers regarding agenda (e.g., goals for exceptional students), incentives (reinforcing norms of high expectations for students), and resources (advice, materials, cooperation in treatment), via the same set of behaviors listed in Figure 3.

District Factors. An adequately specified model of determinants of teacher work conditions must include the direct impact on teachers of district personnel, policies, and regulations. Purkey and Smith include district support as an organization variable important in effective schools. Districts may affect teacher work conditions most directly through technical assistance. For example, subject-matter and child-development specialists shape the instructional plans of particular teachers for particular children, create an incentive to comply with district policy through the teacher's desire to win recognition or merely avoid notoriety, and increase the teacher's work resources by reducing

class size during lessons (when some children are taught by the specialist) and providing tests and materials to aid in diagnosis and prescription. The influence of such district people, including district administrators charged with supervising their services, has been noted by Loucks and Cox (1982), Cohen, Deal, Meyer, and Scott (1976), and Carnine, Gersten, and Green (1982).

In addition, recent studies have given special attention to district policies and regulations in analyzing the implementation of federal programs (Berman and McLaughlin 1978). Superintendent support for new instructional policies is a key ingredient in the salience of such policies for teachers. For example, the superintendent can authorize a shorter teaching day in the interest of increased preparation time for the implementation of new instructional technologies.

An important source of district-level influence on teacher work is the employment contract. District policy and collective bargaining are intertwined. Eberts and Pierce (1980,1982) argue that teachers in districts with collective bargaining allocate their total work time differently than teachers in districts without collective bargaining. In their sample, teachers with bargaining devoted slightly less time to direct instruction and slightly more time to preparation, parent conferences, and administrative matters. While this study relates district influences directly to teacher work behavior without specification of intervening factors such as work incentives (the study actually infers incentives from behavior), the finding is provocative and merits further research with a more fully specified model.

The determination of teacher work resources by district processes is implied by research by Bidwell and Kasarda (1975), who compared districts in Colorado with respect to the effect of district human resource profiles on student

achievement. Bidwell and Kasarda focused on the pupil-teacher ratio (a proxy measure for the division of the teacher's work time among students), teacher qualifications, the ratio of professional support staff to the teaching staff, and administrative intensity (a measure of the district's tendency to hire administrators rather than additional teachers).

These proxies for teacher work resource variables were analyzed for relationships with district fiscal resources, size, and socioeconomic makeup. Thus the study, like Eberts and Pierce's, leaps over school organization variables to connect district factors to classroom factors.

The study found that fiscal resources were positively related to professional support, higher teacher qualifications, and lower pupil-teacher ratio. Thus increasing district fiscal resources might increase teacher work resources. Size and socioeconomic characteristics of the district, however, seemed not to be associated in a clearcut way with the staff resource profile.

It may be noted that in the Bidwell and Kasarda study, the contribution of the proxies for teacher work resources to student achievement was generally supported (the professional staff support variable alone failed to correlate to achievement in the expected way), but this finding has been challenged on methodological grounds. Hannan, Freeman, and Meyer (1976) argue that the model is improperly specified by relating district-level variables to individual student achievement without specifying intermediary resource allocations. Alexander and Griffin (1976) point out that the analysis is limited to the inter-district component of variance in student achievement and thus overestimates the significance of variables in terms of the overall explanation of student achievement. These criticisms are significant for model specification efforts which attempt

to distinguish effects at different levels of the social organization of schooling and to include measures of differential effects as well as central tendencies in criterion variables.

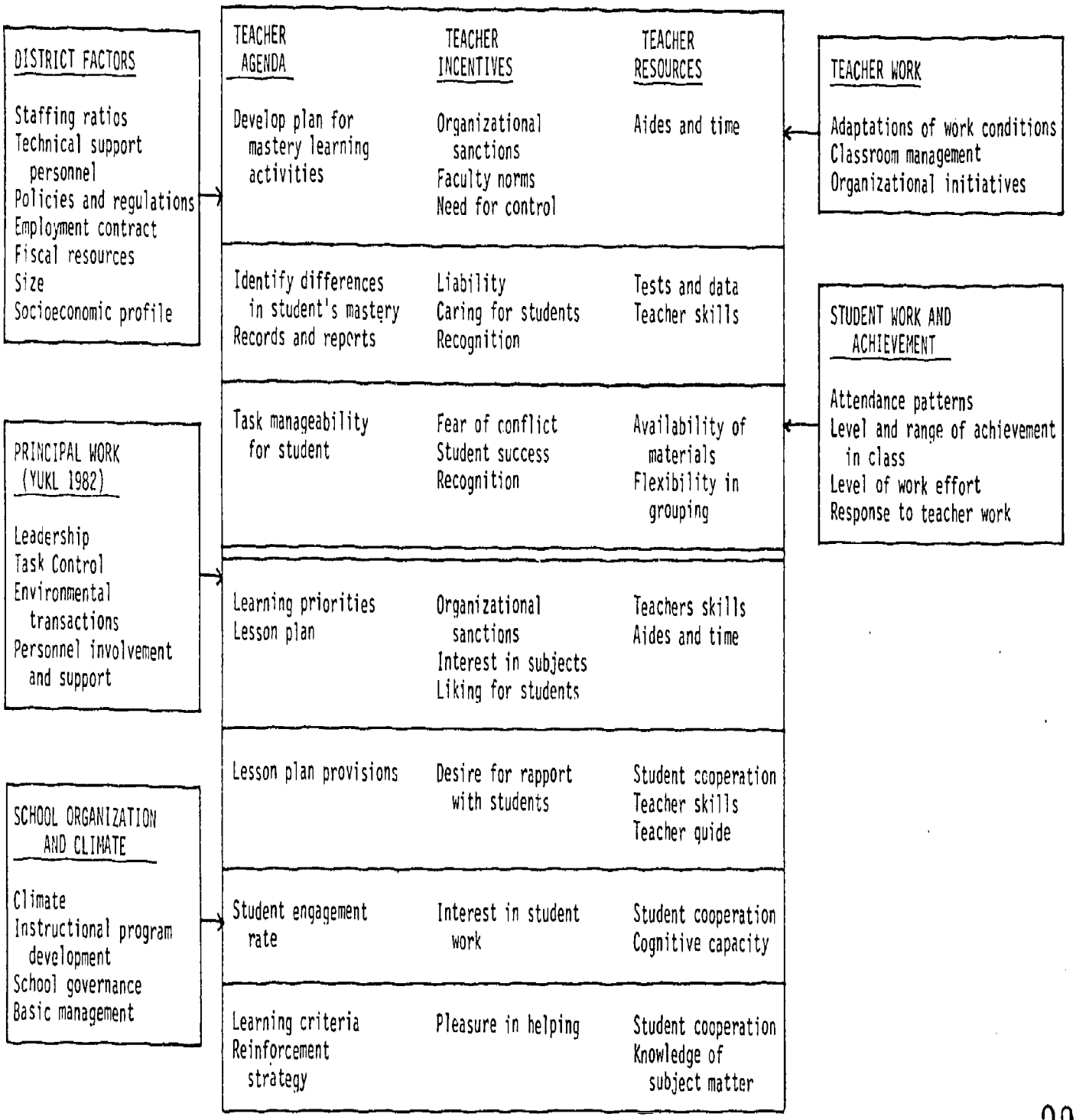
Summary. We have seen the multiple determinants of teacher work conditions in student work and achievement, teacher work, school organization and climate, principal work, and district factors. These are displayed schematically in Figure 4.

In estimating effects of these determinants, researchers must first control for variation among individual teachers in prior work conditions. Teacher autonomy in the classroom implies that prior agendas, incentives and resources may persist over time.

Research on the multiple determinants of teacher work conditions also must be sensitive to interactions among determinants in their effects on the criterion variables. Different patterns of organization and climate variables may be important in different schools. For example, the climate variable of order and discipline may be more important in schools where teachers fear students than in schools where teachers see students as docile.

There is one set of interactions that is of considerable interest. This is the interaction of principal work behavior, as categorized in Yukl's terms, with each of the other classes of determinants. For example, does principal leadership behavior interact with school climate in its effects on teacher work conditions? There is a fledgling theory in management science on just this question -- substitutes and neutralizers of leadership. Kerr and Jermier (1978) and Pitner (1982) argue that the effect of leadership on productivity depends on certain characteristics of the task, the staff, and the organization. Some characteristics make leadership unnecessary and thus tend to suppress observed

Figure 4. Schematic Model of Determinants
of Teacher Work Conditions



effects of leadership on productivity. These are substitutes for leadership and include characteristics of:

Task--invariance, feedback, intrinsic satisfaction
Staff--teacher ability and professional orientation
Organization--cohesive work group, formalization, advisory functions.

Student work can make teacher work intrinsically satisfying and thus reduce the importance of other teacher work incentives listed in Figure 1. Similarly, where the organization variable of curriculum articulation results in task invariance and feedback, additional principal work directed to these aspects of teacher work agenda may be superfluous. Where teachers are highly skilled to begin with or where they are responsive to professional (e.g., faculty) incentives for improvement of instruction, the principal's task control behavior likewise may be unnecessary. Finally, where the curriculum articulation variable has resulted in a highly formalized teaching agenda, where frequent teacher interaction about work stimulates new agendas, or where the district provides advisory personnel to supplement teacher work resources, the principal's leadership and task control may be redundant. This list of substitutes for leadership indicates the importance of analyzing the conditions under which principal work has different magnitudes or foci of effects on teacher work conditions. As an example, Cohen, Miller, Bredo, and Duckworth (1977) found that close supervision by the principal was negatively related to teacher morale for teachers involved in ambitious collaborative work, but not for teachers working alone.

Whereas the substitutes for leadership include variables that are likely to boost productivity, there are other variables among the determinants of teacher work conditions that can <u>neutralize</u> principal leadership without any compen-

sating benefit to productivity. The neutralizers include characteristics of teachers--need for independence and indifference to organizational rewards--and organization--spatial dispersion of workers, rigidity of rules and low administrative control over rewards. The analysis of effects of principal leadership on teacher work conditions for neutralizers is important because the discovery of interactive effects with such nonproductive variables suggests targets for policy and management strategies to counteract neutralizers.

Research on the multiple determinants of teacher work conditions also needs to identify the differential times of impact and lags in effect among the various predictors. For example, the impact of organization variables may be important early in the school year, whereas the impact of student work and achievement becomes increasingly important as the year progresses. Similarly the novice teacher may be more sensitive to principal influence than the veteran. Both in accurate estimation of differential effects and in assessing potential levers on teacher work, attention must be given to the time of year when variables are measured.

When time is added as a dimension of the model, there arises the possibility that teacher work affects not only teacher work conditions, but also the other determinants of teacher work conditions. A design of repeated measures giving attention to both autocorrelations of predictor and criterion variables as well as correlations between predictor and criterion variables over time is one way to sort out reciprocal effects. Mowday, Porter, and Steers provide an example in the development and reciprocal influence of organizational commitment and performance over time (1982, pp. 67-71). It should be noted, however, that this technique has critics: Rogosa (1980) counsels against the use of cross-lagged regression to determine the priority of reciprocal effects.

In developing a model of teacher work conditions incorporating the various determinants discussed above requires that one be specific about the level of aggregation at which effects of predictor variables are theoretically to be expected. The criterion variable must ultimately be specified at the level of the individual teacher, for it is at that level that the particular mix of agenda, incentives, and resources results in predictable work behavior. However, it is legitimate to study effects on teacher work conditions at higher levels of aggregation. For example, school climate variables theoretically should influence the school mean on teacher incentives. Of course, it may be interesting to look at the interaction of climate with some other variable, such as teacher experience, in terms of differential effects on teachers within a school, but this analysis might still be done with measures of dispersion in data aggregated to the school level.

The impact of the principal on teacher work conditions likewise operates at both the individual teacher and school levels. In this section of the paper, we have given most attention to principal behavior directed to specific teachers and requiring measurement of such principal variables at the point of impact--the individual. However, principal behavior addressed to or influencing teachers as a group, such as inspirational speeches delivered at faculty meetings, may be related to school-level measures of teacher work conditions. Similarly, although some district factors impact teachers individually rather than as a group, there is, however, the theoretical possibility of looking for district-level differences in teacher work agenda where some factor affects all teachers equally, such as a contract item. The point being made here is that to examine such district effects without the other potential determinants discussed

above is to use an underspecified model.

Determinants of School Organization and Climate

Teacher Work, Student Work, and Student Achievement. The school organization and climate variables in Figure 2 are dependent on existing patterns of teacher work and student work and on the prevailing levels of student achievement. The cluster of organization variables called instructional program development depends on teacher participation in curriculum committees and staff development events, and this participation is in turn sensitive to teacher-initiated problem-solving and action directed towards the organization of the school in response to problems encountered in teaching. When teacher efforts to alter one's own work conditions are unavailing because of organizational constraints, teachers may attempt to remove those constraints. The result may be a change in the curriculum itself. Similarly the climate variables are dependent on teacher work. For example, a teacher's withdrawing from a teaming arrangement because of work problems may reduce the overall expectation of collaboration among teachers.

The effects of student work and achievement on school organization and climate are largely mediated through teacher activity. When students are not responding to a curriculum, this nonresponse becomes a school problem when teachers begin talking about it with each other. However, students have a direct effect on some elements of instructional program development. If the student body does not participate in the celebration of outstanding accomplishments of teachers and students, the effect of such recognition on work incentives is likely to be weakened. Similarly, student noncooperation with instruction, expressed outside the classroom or in terms of absenteeism, influences the school climate variable of order and discipline. Student achievement is

likewise a determinant of changes over time in the climate variables of shared goals and expectations. As administrators and teachers are apprised of gains or declines in achievement, their collective sense of efficacy is likely to adjust accordingly.

Principal Work. The dependency of organization and climate variables on principal work can be described in terms of Yukl's taxonomy introduced earlier in the discussion of principal effects on individual teacher work conditions. School governance and the leadership function in instructional program development are obvious loci for principal determinants. School governance is likely to depend on the work of the principal as convener and coordinator. In Yukl's terms, the principal delegates decision participation rights, sets goals, clarifies roles, and facilitates interaction among teachers involved in governance. The principal also participates directly in problem-solving. Furthermore, the principal's effectiveness in representing the school to higher authorities can be critical in winning the measure of autonomy and the resources necessary for school-site management to proceed. Similarly, leadership in the sense of articulating a vision and initiating activities towards its realization (Blumberg and Greenfield, 1980) is the prerogative of the principal, who is officially situated to bestow or withhold legitimacy from such efforts. It is, in fact, the principal's initiation of activities to raise and sustain expectations of student performance that is implied in the emphasis on strong administrative leadership found in many effective school studies.

The principal's control of resources and thus of work facilitation makes curriculum articulation and staff development activities at the school level dependent on his or her support. The principal's monitoring of school-level

data and response to failures is likewise critical for schoolwide evaluation processes.

Staff stability, parental involvement and support, and the climate variables of collegiality and community are likewise dependent on the principal's environmental transactions and supportive management in general. Of the other goal-setting and climate variables, shared goals and expectations depend on inspirational actions of the principal, and order and discipline depend on the principal's effectiveness in structuring reward contingencies, disciplining, and managing conflict.

District Factors. Purkey and Smith (1982) identify district support as one of the organization variables--i.e. a variable amenable to direct alteration by the action of administrators. However, by district support they mean the provision of special help such as the professional support staff variable in Bidwell and Kasarda's study (1975) and a generally benign and helpful attitude to school efforts. Morris and others (1981) argue that the principal is critical in altering district supports and constraints, but there are limits to what can be done to override general district conditions.

Purkey and Smith imply that strong, centralized district policy may be counterproductive when they argue for the importance of school-site management--principal and teacher flexibility in mounting school improvement efforts. District policies on curriculum and evaluation thus may not be important levers on school organization and climate variables. Rather, the provision of resources for staff development, parental involvement, and school-level efforts to articulate and organize curriculum may be more important influences on those variables. District management of teacher recruitment, transfer, and retention, especially under fiscal duress and contract limitations, has implica-

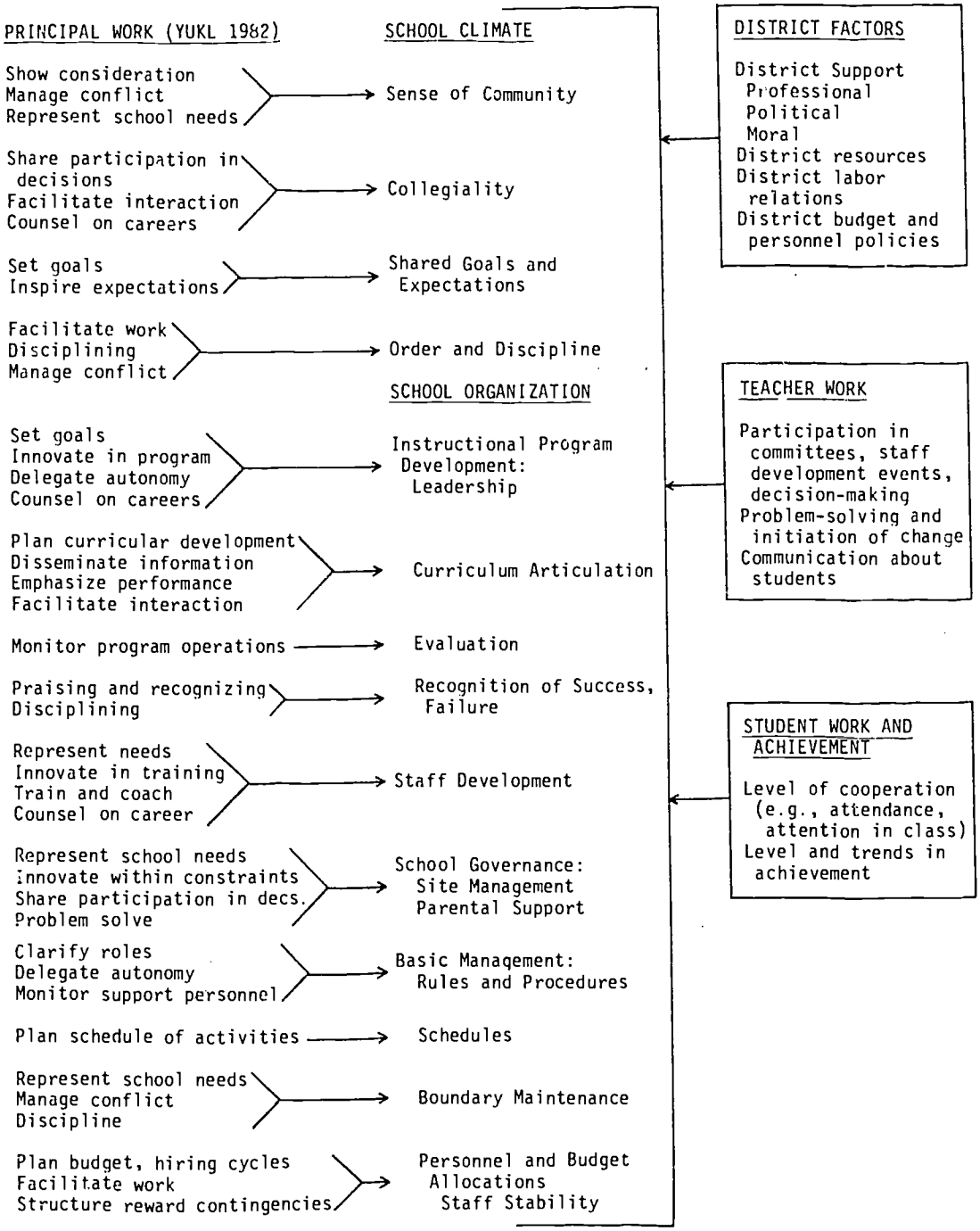
tions for school staff stability, shared goals, and collegiality. Some fruitful directions for research on district effects on such variables have been suggested by Johnson (1982).

Summary. The modeling of determinants of school organization and climate has resulted in the inclusion of several clusters of variables, displayed in Figure 5. As with determinants of teacher work conditions, the first task in analyzing the effects of such variables on organization and climate is to control for the inertia of these schoolwide variables. The formal structures and patterns of interaction comprised in the organization variables have their own stability, almost by definition, and the primary determinant of any observed state of organization or climate is likely to be the previous state of the variable involved. This may involve autocorrelations or more sophisticated comparisons of yearly cycles of the waxing and waning of activity. Similarly, the annual seasons of enthusiasm and exhaustion in the school (Burlingame 1977) must be considered in estimating a climate shift.

The distinction between teacher work and principal work, on one hand, and school organization, on the other, is problematic and requires care in operationalizing the variables to avoid tautological findings. To some extent, the focus in this paper on teacher and principal efforts to initiate change serves to distinguish such determinants of teacher work conditions from variables of school organization and climate. Organization may be taken to represent conventional and authorized patterns of interaction for carrying on the management of the school, whereas the work of individual actors is signficant in enhancing, altering, or undermining (e.g., through withdrawal) such patterns.

Another distinction between school organization and climate, on one hand,

Figure 5
Determinants of School Organization and Climate



and teacher work and principal work, on the other, is similar to that introduced between organization and climate and teacher work conditions. Organization and climate operate at the level of the school as a whole. This is true whether measures of central tendency or dispersion are used. In the latter case, the data would describe patterns of polarization or diffusion of activity or affect as school-level attributes. In contrast, teacher work conditions are primarily individual and may be analyzed in relation to determinants at the level of school-aggregated data only where it is known or presumptive that school determinants have operated equally on all individual teachers. Otherwise, teacher work conditions are traceable to particular teacher work such as the spontaneous act of forming a two-person team and to principal work variables directed to individual teachers. The same distinction in levels of aggregation of data applies to analyzing the impact of district determinants on school organization and climate. Where district factors are known or presumed to act on all schools equally, school organization and climate variables may be aggregated to the district level. Where district factors are likely to be targeted to different schools, the appropriate level of aggregation is the school.

Determinants of Principal Work

The specification of principal work variables likely to influence the conditions for effective teacher work--directly (Figure 3) as well as indirectly through the intermediary variables of school organization and climate (Figure 5) -- provides researchers with numerous relationships to study in analyzing the components of variance in teacher work conditions attributable to differences between schools, differences within schools, and the interaction of such differences. However, the implications of such research for the improvement of practice are ambiguous if, as at present, the performance of the principal is

seen as idiosyncratic and unalterable. There is sufficient reason, therefore, to specify determinants of principal work; and these will be located, as with teachers, in work agenda, incentives, and resources. Thus, the first step is to specify conditions for each of the principal work variables argued to be important predictors of teacher work conditions in Figure 3 and of school organization and climate in Figure 5.

The task of elaborating principal work conditions will be simplified by focusing on Yukl's 22 categories. Within the four main clusters of leadership, task control, environmental transaction, and personnel involvement and support, work behavior variables (e.g., goal setting, inspiration, and innovation) are specified in terms of the aforementioned contributions to school organization and climate and teacher work conditions. Then, principal work agenda, incentives, and resources are suggested for each of Yukl's categories of work behavior. Figure 6 presents the total array of variables.

With respect to the leadership cluster, the principal's work in setting goals for the school organization variable of curriculum articulation, the climate variable of shared goals and expectations, and the teacher agenda of mastery learning goals is traced to the principal's agenda to improve the school and one's own performance, district incentives regarding goal statements to be submitted, and the principal's self-confidence regarding ability to improve school performance. The principal's work in inspiring a climate of high expectations and teacher agenda for direct instruction is a result of the vision of what the school might accomplish and what good teaching is, the incentive to realize that vision, and the resource of personal skill and energy. Innovation in instructional program development, initiation of new staff development

Figure 6. Principal Work and Work Conditions

PRINCIPAL AGENDA	PRINCIPAL INCENTIVES	PRINCIPAL RESOURCES	PRINCIPAL WORK (Yukl 1982)
			Leadership
Improve school's, own performance	District policy	Confidence	Setting Goals: S:*Shared goals Curriculum articulation T:*Mastery learning
Vision	Self-realization	Personal force	Inspiring: S: expectations T: modeling interaction
Take initiative	Intrinsic satisfaction Increased autonomy Fear of conflict	Courage Imagination	Innovating: S: leadership, staff dvpt., school flexibility
			Task Control
Control of instructional program, quality of teaching	Accountability pressure, Need for control Fear of grievance	Knowledge of tasks Mental organization	Planning: S: curriculum, schedule, resource allocations
Implement plans	Teacher understanding, cooperation	Leeway in rules, detail of plan and knowledge	Clarifying Roles: S: rules and procedures T: lesson plans, schedules
Promulgate goals, criteria; Direct efforts	Success of plans, career advancement	Expertise and expert advice	Emphasizing Performance: S: program learning criteria T: direct instruction
Reinforcement strategy	Avert charge of favoritism, conflict	Control of rewards, leeway in rules	Structuring Reward Contingencies: S: evaluation, resource allocs. T: evidence of student progress
Ensure compliance, increase knowledge of operations	Accountability pressure, personal interest in teaching	Teacher cooperation, time	Monitoring: S: evaluation T: plans, time use, teaching
Avert conflict, prevent failures	Reduce need to discipline, increase teacher loyalty	Analytic skills, interpersonal skills, knowledge of school	Problem Solving: S: school flexibility T: change own work conditions
Publicize models, follow through on contingencies	Teacher gratitude, morale	Lack of teacher jealousy, public opportunities	Praising and Recognizing: S: academic success T: general incentives
Confirm organizational potency, follow through on contingencies	Power, liability, reprisals, compassion	Leeway in rules, personal force, interpersonal skills	Disciplining: S: order, evaluation, boundaries T: general incentives, students
			Environmental Transaction
Anticipate demands and opportunities	Reduce anxiety, increase teacher dependency and loyalty	Access to officials, politicians; time free from building	Monitoring Environment: S: boundary maintenance, school flexibility
Obtain resources and flexibility in decision-making	Enable own plans, power in district, teacher loyalty	Support of teachers, parents; personal force	Representing: S: community, staff development, flexibility, resources
Enlarge faculty perspective, stimulate teacher growth	Justify own demands, teacher gratitude	Own participation in professional meetings, contact with schools	Disseminating Information: S: curriculum articulation T: new materials, practices
			Personnel Involvement and Support
Staff consensus and commitment to plans	District policy, teacher support	Trust in teachers, own security, interpersonal skills	Sharing Participation in Decisions: S: collegiality, flexibility
Delegate responsibility, daily routines	Task unpredictability, reduce own burden; fear of loss of control	Staff skills and cooperation, district support; school flexibility	Delegating Autonomy: S: collegiality, flexibility, leadership role, management
Humane administration	Satisfaction in helping, teacher loyalty, level of performance	Interpersonal skills	Showing Consideration: S: community T: support
Stimulate teacher growth	Satisfaction in nurturance, teacher gratitude	Control over teacher career opportunities, knowledge of staff	Counseling and Facilitating Careers: S: collegiality, staff development T: general incentives, skills
Increase teacher collaboration, feedback processes	Cooperation in performance emphasis, reduce demands on self	Contact with teachers, knowledge of skills, own interpersonal skill	Facilitating Interaction: S: collegiality, curriculum T: specialists, students, parents
Realize own plan, prevent interruption inservice	Power, liability; increase teacher loyalty	Knowledge of operations, control over resources, management team	Facilitating Work: S: order, boundaries, resources T: buffering, resources
Improve teacher skills	Realize own plan, increase own authority, avert terminations	Personal expertise and access to experts, reputation as teacher	Training and Coaching: S: staff development T: skills
Maintain harmony, avert crises	Fear of notoriety, liability; career advancement	Personal security, interpersonal skills, flexibility in decisions	Managing Conflict: S: community, order, boundaries T: competition among activities

*S=school organization and climate
T=teacher work conditions

efforts, and modification of district policy are seen as results of an agenda to take the initiative, the predominance of intrinsic satisfaction and increased autonomy in making changes over the fear of conflict, and the resources of courage and imagination. These relationships are displayed in Figure 6.

The heavy emphasis on leadership conditions in the personal qualities of the principal is taken from Blumberg and Greenfield's (1980) argument and suggests the importance of the expectations principals bring to their jobs and the conditions that nourish them rather than the formal requirements of their employment situation. Wolcott's (1973) study of a principal revealed apparent disincentives toward such expectations of leadership. Sally, McPherson, and Baehr (1979) likewise found little orientation to change among principals in their study. Hence these work condition variables are difficult targets for alteration.

The task control cluster of variables involves more trainable and controllable conditions. Planning in curriculum and basic management stems from agendas to control the instructional program and the basic management operations. These agendas are motivated by external pressures for accountability and the personal need for control, but they are also inhibited by fear of teacher grievances. The key administrative resource is knowledge of the system under consideration. The attempt to clarify roles is governed by agendas to implement a plan and specify responsibilities, incentives to avoid misunderstanding and subsequent conflict, and the resources of discretion afforded by legal and regulatory constraints and skill in forecasting implementation activities. The next two variables, emphasizing performance and structuring reward contingencies, depend, in the context of a mastery learning program, on agendas to promulgate goals and employ reinforcement strategies, incentives of principal career

advancement and being seen as fair, and resources of expertise in learning assessment and discretion in reward management.

The remaining task control variables of monitoring, problem solving, praising and recognizing, and disciplining constitute the controversial component in the ambitious concept of instructional leadership found in Persell's (1982) and others' accounts. Here the principal engages in evaluation of teaching and the handling of rewards and sanctions. The agenda variables required for this sort of work involve the principal developing a mental map of school operations and following through on reward contingencies in order to improve performance and weed out noncompliance. Incentives for this activity depend on the administrator's personal interest in teaching and the hope of increasing teacher gratitude through giving positive recognition. The fear of alienating teachers through negative evaluations must be over-shadowed by a commitment to school improvement. The resources include time set aside for such activity, teacher security and cooperation, the principal's knowledge of teaching and use of personal force, and the leeway allowed by law and regulation.

The task control variables, like the earlier direct instruction variables of teacher work, are intricately intermeshed, and conditions need to be specified for their integration. Also an important type of variation would entail tact and finesse as opposed to mechanical or blunt performance. Thus the self-organizational skills of principals and their interpersonal skills in dealing with teacher performance are implicit in the list of work resources.

The cluster of variables called environmental transaction deals with prin-

cipal work involving the relationship between school operations and external factors like district requirements, professional developments, and public support. These work variables are implicated more in the determination of school organization and climate variables than in individual teacher work conditions. The principal's success in monitoring the environment is influenced by the strength of the agenda to anticipate demands upon and opportunities for the school. Primary among the incentives for such work is the payoff in teacher loyalty mentioned by Lortie (1982); when the principal can buffer the impact of new developments on the teachers, teachers respond cooperatively. Principals also reduce their own anxiety over performance evaluations by staying abreast of new pressures from society. The primary resources would involve time away from the school (thus implying a tradeoff with resources for other principal work functions) and access to district officials and community leaders.

Representing the school's needs for resources and flexibility likewise springs from the principal's incentive to buffer and support teacher work in exchange for loyalty, but here the incentive is balanced against the disinclination to antagonize superiors. Morris and colleagues (1981) report the variety of indirect methods principals use to obtain needed resources. Hence there may be reluctance to articulate the school's needs directly to superiors, depending on the presence of expectations that a principal manage "one's own house." The agenda for representation is an outgrowth of other principal behaviors--innovating, planning, problem solving, and maintaining good relations with personnel. Implicit is the need to identify supplemental resource needs and present such requests to external agents, which may not be apparent to every principal.

Disseminating information may result from an agenda to enlarge faculty

perspectives and catalyze growth. This effort may be ancillary to leadership and thereby derive incentives or may be motivated by anticipated teacher gratitude. The important resource is professional reading and knowledge of new technical developments or other schools' practices. Thus maintaining a general network of professional interaction is an important condition for disseminating information.

The final cluster of variables is personnel involvement and support. The first two variables, sharing participation in decisions and delegating autonomy, indicate the attempt by the principal to get teachers to take responsibility for decisions and their implementation. These two activities are frequently recommended to principals, yet they often only approximate the appearance of participation and result in the devolution of discretion without accountability. Hence it is important to identify the conditions for the principal's achievement of these goals. The attempt to establish participatory decision-making is generated by the desire to foster staff consensus and commitment. This type of decision-making may be mandated by the district or driven by an incentive to develop teacher support for future actions and reduce the likelihood of conflict. However, the critical resources include interpersonal skills in listening and responding, which not all principals possess in such settings, and trust in teacher judgment, again not a universal characteristic of administrators. These resources must be provided in many cases if the agenda is to be carried out. Likewise, the delegation of autonomy is a function of an intention to develop allies in task control and to deal with task unpredictability without constant personal surveillance. The incentive is clear--reduce the burden on one's time and thus increase discretionary time--but the disincentive is no less

powerful--fear of loss of control. Staff skills and cooperation and district support are important resources for such delegation of autonomy. In addition, the adequacy of other principal work variables, such as monitoring of results and problem solving, will contribute greater security.

Three other variables that affect personnel involvement and support are also rooted in work conditions related to the task control cluster. The facilitation of work and interaction depend on preventing interruption of service and increasing teacher collaboration in work, both in turn traceable to the principal's perceptions of teacher work needs. Similarly, training and coaching can be traced to the desire to ensure that teachers possess the necessary skills for particular instructional activities. However, these three principal work variables have incentives other than the task control imperative. They can also increase teacher loyalty in return for support, reduce the likelihood of grievances or other personnel crises (such as terminations), and reduce the day-to-day problems brought by teachers to the principal's attention. The resources for these variables include contact with teachers and knowledge of their situation, interpersonal skills, expertise, and the variety of resources involved in the basic management processes of the school (time, materials, equipment).

The remaining variables in this cluster deal more directly with personal relationships. Showing consideration, counseling on and facilitating career development, and managing conflict involve the "people" dimension so salient in schools. The agendas here are straightforward: behave humanely towards colleagues, stimulate professional ambition and growth, and maintain harmony and stay out of trouble. Incentives derive from interpersonal exchanges of gratitude and the overall climate variable of sense of community to which these prac-

tices contribute so much. The resources are found within the personal qualities of the principal, particularly in the security in dealing with conflict, but an important external resource in career facilitation is control over access to opportunities for advancement, a control that not all principals possess.

The relative straightforwardness of the incentives for variables in the personnel involvement and support cluster (excepting delegation) may be responsible for principals' apparent emphasis on these work characteristics. The observed frequency of deal·ngs with people and accessibility (particularly for unscheduled meetings) found in the studies analyzing principal use of time (Morris and colleagues 1981; Martin and Willower 1981; Willower and Kmetz 1982) may illustrate the tendency of principals to become the leaning post and fix-it person for teachers. In part, this tendency may result from problems in the other clusters, particularly task control.

The full list of principal work conditions in Figure 6 is too long for an item-by-item specification of determinants in this paper. There are implications in this fact for research methodology, and those will be drawn in the summary of this section. The task of specifying determinants will instead be to point out important and pervasive influences on work conditions as a way of indicating variables that might be manipulated or controlled in order to render work conditions more favorable to the principal work item indicated.

Student Work and Student Achievement. It is reasonable to expect principal agenda and incentives to be affected by prevailing patterns of student work and achievement. Where students are misbehaving in class or performing poorly on tests, a principal is likely to develop an agenda for school improvement. Such an agenda for leadership will only result in action, however, if it is

accompanied by a vision of a more benign and productive student body, the incentives are right (e.g., teachers recognize that career advancement may result from improved performance), and the essential resources are available (e.g., confidence in the efficacy of improved practice). The main point for researchers is that the principal's instructional leadership is likely to depend on the nature and severity of deficits in student performance. One should not expect such leadership to be equipresent in schools with students performing below national averages and in schools with students performing above national averages. Furthermore, research should attend to the effect of student work and achievement on principal incentives once leadership work has begun.

Teacher Work and School Organization and Climate. The earlier discussion of the possibility that leadership, one aspect of school organization, can emerge from teachers raises the question of how principals respond to such leadership. For example, a teacher who proposes to institute a new instructional program and begins to train other teachers in materials and techniques poses both a challenge (a source of agenda) and an opportunity (a resource) for the principal. In the beginning of such a venture, one might explain changes in teacher work conditions in terms of teacher-initiated leadership in the school and attribute little influence to principal work. However, the principal may enter the project in an intrusive or facilitative way as matters progress, and this change in principal work is the matter under consideration here. (Subsequently, such principal work might well prove a major determinant of future teacher work conditions.)

Figure 6 included teacher cooperation among principal work resources. To the extent that existing states of organization variables such as curriculum articulation and staff development exhibit high levels of teacher cooperation in

improving instruction, these variables determine the resources available to the principal. Similarly, where existing teacher skills are high, the principal is supplied with a resource for new vent res. On the other hand, where student achievement is high, the principal is not likely to experience a work agenda for instructional change.

Particularly important among the internal school conditions affecting principal work conditions are those variables designated substitutes and neutralizers of leadership in the earlier discussion of determinants of teacher work. There, the focus was on the interaction of such variables with principal work in predicting teacher work conditions. Here, the focus is on the influence of such variables on principal work conditions. Where the curriculum is dominated by tasks with high intrinsic satisfaction, invariance, and feedback, the principal may feel spared the necessity to exert any special effort to improve instruction. Over time, the principal's exercise of instructional leadership may be diminished by evidence of its superfluity. The same may be said for a skilled and professionally oriented faculty and for an existing formal structure of work responsibilities, a cohesive and collaborative faculty, and active district specialists providing advice and assistance directly to faculty. In this sense, the situation confronting the principal in schools implementing federal compensatory education programs, as reported by Carnine, Gersten, and Green (1982), may be rich in substitutes for leadership. Hence it is not surprising that such principals may experience no pressure in that direction themselves.

The fact has been noted, however, that some principals react to what might be considered substitutes for leadership with jealousy and sabotage. One reason for such behavior might be that such substitutes are intermixed with neutrali-

zers of leadership, such as faculty preference for independence, indifference to rewards mediated by the principal, and district reward contingencies outside the control of the principal. Where the principal encounters neutralizers to leadership, the work condition may be experienced as a threat (withdrawal of teacher cooperation for any principal initiative) and generate an agend remove that threat. Hence it is reasonable to expect principal work conditions to be affected by neutralizers of leadership and the result to be principal work that intrudes in or attempts to undercut certain school organization and climate states.

Principal Work. Like the teacher, the principal is by all accounts autonomous in significant ways in determining one's own work conditions. The principal work variables of representation, planning, delegating autonomy, and monitoring can influence future principal work conditions. In particular, the principal's success in requesting discretion and auxiliary administrative personnel from the district is a powerful enabler of leadership behavior. Similarly, the principal's planning of one's own work agenda, to the extent that it both reduces ad hoc responses to immediate pressures and structures discretionary time, is a powerful source of integrity and consistency in the principal's attending to particular goals for the instructional program. Delegating autonomy will likewise affect the principal's ability to preserve time for instructional leadership, to the extent that other administrators and teachers take on various basic management functions. Finally, the principal's periodic self-monitoring of one's own work patterns and time allocation is a determinant of the persistence of work agendas throughout the school year.

District Factors. The principal is an employee of the school district and depends for career advancement on district favor. Furthermore, many of the

principal work resources listed in Figure 6 depend on district-level provision. Hence, it is reasonable to argue that district-level variables are as powerful a lever on principal work conditions as are the self-shaping activities of principals themselves.

The manifold mention of personal qualities in the list of principal work resources, including mental capacity, forcefulness, and interpersonal skills, suggests the importance of district policies on selection, rotation, evaluation, and promotion. Clarity in district selection personnel about the personal resources required for particular schools may have a large impact on the consequent performance of the principal. There may be tradeoffs here. Candidates with personal dynamism may lack interpersonal skills. Hence the match between principal strengths and existing teacher strengths in a school is an important variable. Baltzell and Dentler (1982), in their study of principal selection, report that an important criterion is "fit" with the school faculty.

Principal selection processes affect the agenda carried by the new appointee into the job. In Baltzell and Dentler's study, principals reported ambiguity about what they were expected to accomplish in their new situations. Hence principal agenda may be in some cases underdefined by district superiors.

District policies on administrator rotation, evaluation, and promotion seem likely to influence the incentives and resources of the principal through expectations for tenure, cumulative knowledge about school conditions and work, and practices, and perceptions of criteria for career advancement. Emphasis on experience and credentials rather than accomplishments (Carlson 1979) can reduce principals' incentives to risk their reputations in attempting to improve their schools.

Interacting with the career movement policies enumerated above is the

district superintendent's set of priorities. These priorities influence the agenda of principals regarding goals and task control and the focus of environmental transactions. In addition, the [illegible] incentives [illegible] career advancement process inasmuch [illegible] powerful supplements to formal [illegible] job opportunities.

The principal work conditions pertaining to task control behavior depend on the relevant contract language negotiated by the district. Goldschmidt (1982) enumerates the variety of restraints on principal ability to evaluate and sanction teachers that can diminish the impact of official work agendas. Johnson (1982), however, has reported evidence of variation by site within the same district, which may depend in some part on district officials' and union officials' willingness to tolerate flexibility in school management, a variable that also was seen earlier to influence that school organization variable.

Task control activity is also dependent on the expertise possessed by or available to the principal. Important here is whether principals are included in the arena of participation in district curriculum adoptions and development. Also, districts vary in providing staff development activities that provide principals with the knowledge base and techniques of program and personnel evaluation. Finally, districts vary in the complement and competence of technical support personnel as well as in their cooperative relationships with principals. In these various ways, district factors can sustain and develop principal agendas for task control and enhance and supplement principal resources for such endeavors. Conversely, district factors can handicap and divert principals from such endeavors.

The conditions for principal transactions with the environment depend on

many of the same district functions as were identified under the rubric of basic management as a school organization variable. The clarity of district rules and procedures will affect the time needed for the principal to monitor the environment in order to resolve ambiguities. The centralization or decentralization of administrative resources and authority will determine how many of a school's needs for resources and flexibility will have to be represented to external officials and how many routine administrative duties may be delegated. Finally, district size, fiscal resources, demography, and community support will determine the incentives for principal's seeking improvement of school conditions through district assistance. Bidwell and Friedkin (1980) have developed a model describing the contribution of district administrative structures and community structures to the articulation of aggregate preference functions resulting from the allocation of resources. These processes will influence principal agenda and incentives in transacting with the environment.

The district's influence on principal work directed towards personnel involvement and support is somewhat less obvious. Beyond selecting principals who can get along with faculties and who have interpersonal skills for facilitating interaction, showing consideration, and managing conflict, districts are likely to encourage principals to keep their own houses in order rather than to depend on district officials for solving personnel problems. However, district staff development programs can increase the goodwill resources available to principals by training all personnel in problem solving and conflict management skills. Moreover, districts can develop opportunities for teacher recognition and professional growth that in turn are plums to be allocated by principals. Also, the tenor of relations between district officials and union leaders can

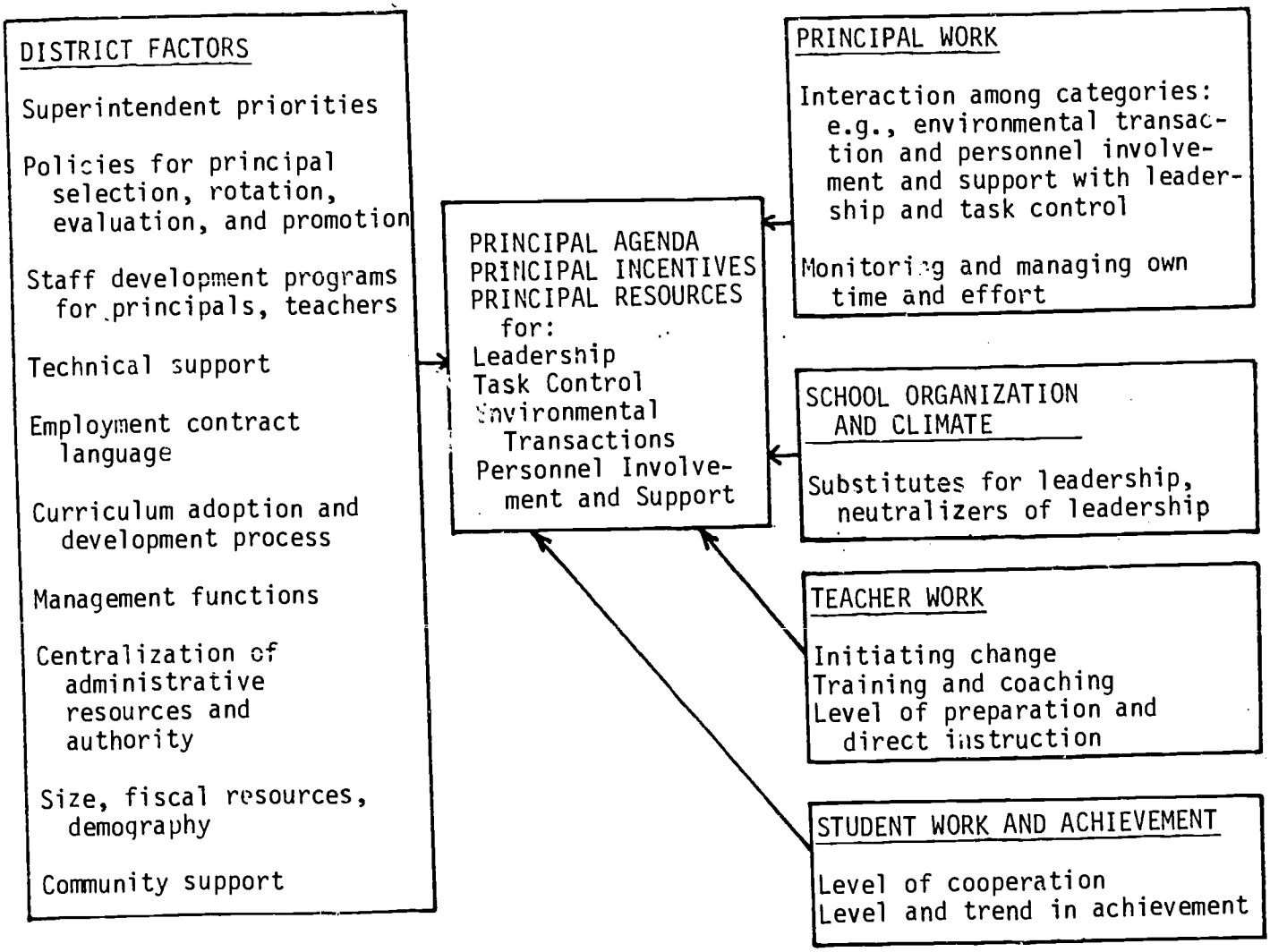
profoundly affect principals' abilities to sustain cooperation during negotiations. Finally, district programs of public relations can develop community support that eases the principal's difficulty of resolving conflicts between teachers and parents.

Summary. The principal work variables identified in Figures 3 and 5 were related in Figure 6 to principal agenda, incentives, and resources that together determine such work. These work conditions in turn are traced in Figure 7 to determinants in student work and achievement, teacher work, school organization and climate, principal work, and district factors. As with earlier criterion variables, research on determinants of the state of principal work variables at any particular time must examine the strength of autocorrelations among measures of the variables over time and recognize habitual patterns in principal work.

Some principal work conditions are appropriately aggregated to the district in identifying the effects of district determinants across districts. An example would be the effect of contract language restricting teacher evaluation. However, an individual principal's development of an agenda to work "around the contract" might be as influenced by particular school conditions, such as a sense of community, as by any district-wide policy of protecting principals in such endeavors. As before, careful attention to the plausible causal processes operating will indicate the hierarchical differentiation of the model in terms of analyzing variance in the criterion variables along the lines suggested by Burstein (1980).

The sheer multiplicity of principal work condition variables outstrips any likely research design. Hence it may be important to focus attention on specific work conditions tied to principal work variables of interest--e.g., the task control sequence--while controlling on the other work variables. Alternately,

Figure 7. Determinants of Principal Work Conditions



one might use the variable array in Figure 6 (somewhat streamlined, to be sure) as a sensitizing device for principals and study the impact on their work of the new condition of having such a self-monitoring scheme. Given the situational complexity, rapid response demand, and autonomy of the principal, the more productive research strategy may be on professional development rather than on systematic comparison of large numbers of principals. The weakness of this variable array--its unwieldliness in generalizing research--might then become a strength of richness of detail in idiographic and, as Greenfield (1982) recommends, collaborative research.

Overview

The hierarchy of three models implied in this paper--the determinants, respectively, of teacher work, school organization and climate, and principal work--provide guidance in designing research on the effects of educational policy and management on teaching. The focusing of the criterion variables of teacher work on effective practices identified by a study of the determinants of student work and achievement (the Beginning Teacher Evaluation Study) allows the inference that such research on policy and management would be relevant to student educational outcomes.

The BTES variables of teacher preparation and direct instruction, further elaborated into the time allocated to each of these functions and the quality of the component practices--diagnosis, prescription, presentation, monitoring, and feedback--were treated as the outcomes of three work conditions--teacher agenda, incentives, and resources.

The specification of determinants of teacher work conditions included the effects of the intraclassroom variables of student work and achievement and the

self-adjusting effects of teacher work itself, thus alerting researchers to the dynamics of work conditions over time. The main emphasis in this discussion, however, was that individual teacher work conditions are embedded in the collective conditions of school organization and climate and are dependent on the performance of managerial functions in principal work. The elaborate categorical systems in the effective schools research (Purkey and Smith 1982) and in research on managerial effectiveness (Yukl 1982) were employed in specifying determinants of teacher work conditions. In addition, the determinants of teacher work conditions in district factors were discussed. Researchers were alerted to the possible interactive effects of such determinants on teacher work conditions, as suggested by the recent work on substitutes and neutralizers of leadership (Kerr and Jermier 1978; Pitner 1982).

The emphasis on school organization and climate and principal work as determinants of teacher work conditions led to the further specification of models of the determinants of each of these constructs and thus of indirect determinants of teacher work conditions. School organization and climate variables were traced primarily to principal work directed towards the school as a whole rather than towards teachers individually. Hence, although the same categorical system was used, somewhat different principal work variables were specified than in the discussion of teacher work conditions. In addition, school organization and climate variables were traced to school-level patterns of student work and achievement, to the agency of teachers in school-level processes, and to district factors.

The third and final model implied was that of the determinants of principal work conditions. Here the work variables identified as determinants of teacher work conditions and school organization and climate were themselves

traced to principal agenda, incentives, and resources, which in turn were linked to intraschool determinants, the latitude of the principal in shaping his or her own work conditions, and the district factors that direct and constrain principal work.

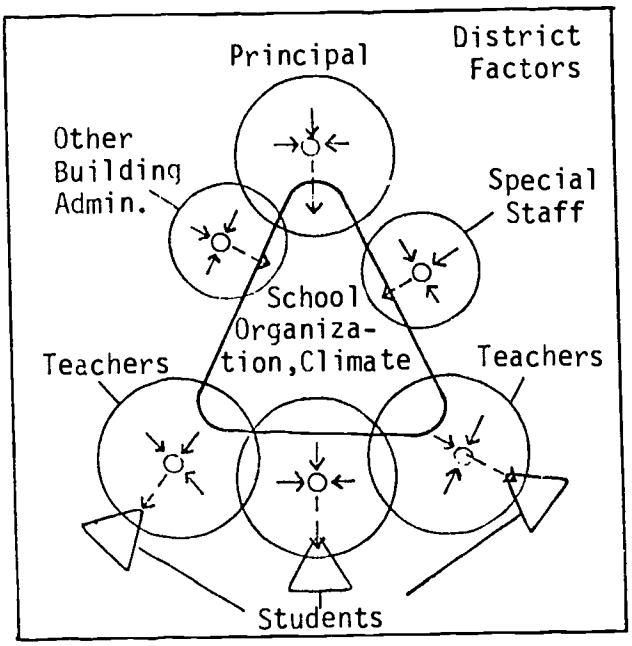
While additional models of indirect determinants of teacher work conditions could be specified--e.g., of the work of district officials and of community support for the school--the present set of models provides an ample foundation for research on the variation in and alteration of teacher work conditions.

The relationship of the three sets of determinants thus specified, however, remains to be discussed. Any notion of a single row of dominoes--changes in the principal's work, which changes the school organization and climate, which alters teacher work conditions, thus leading to different patterns of teacher work--is inadequate to the intricate network of feedback effects included in the models. Instead, the three models might be conceived in terms of the relationship between a hierarchy of biological organization such as an organ within a body. In looking at the performance of an organ, one would need to maintain concurrent measures of intraorganic chemical and cellular processes, the chemical environment of the organ, the simultaneous function of the other organs, and the messages sent to the organs by the body's activity and environmental stress. These messages would vary with the information possessed by the more inclusive structures about the less inclusive structures and thus allow for the organ to influence the body as well as vice versa. This relationship is presented schematically in Figure 8.

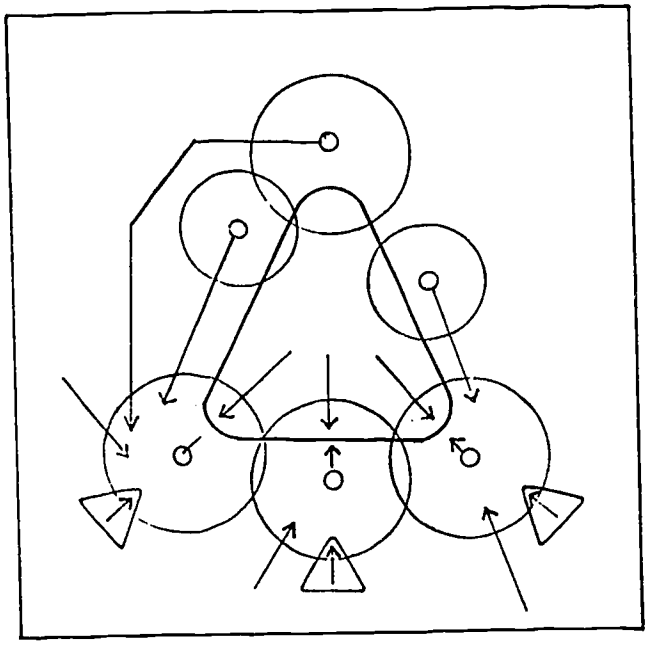
The complexity of model specification and methodological refinement implied

Figure 8. Concurrent Models of Teacher and Principal Work

Work Conditions and Work

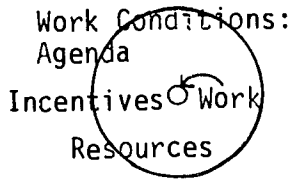


Determinants of Teacher Work Conditions

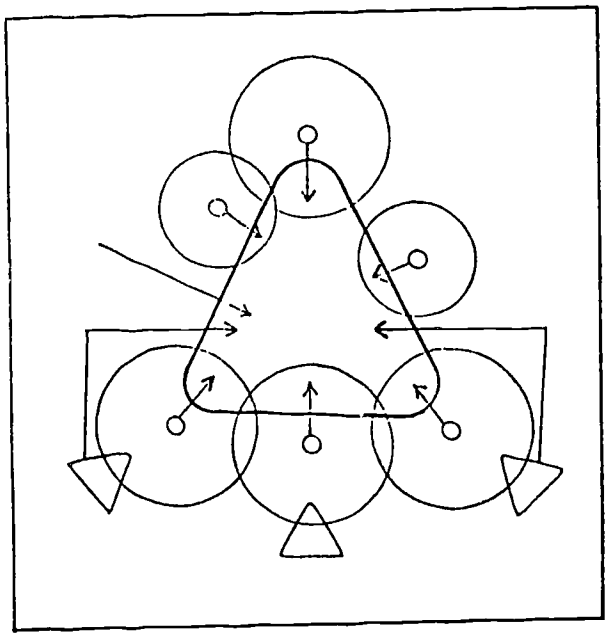


Note: The four models are regarded as operating concurrently but with different phases and critical intervention times. Moreover, changes in any one model are seen as occasioning subsequent changes in the others, both in multiplying effects and in homeostatic effects.

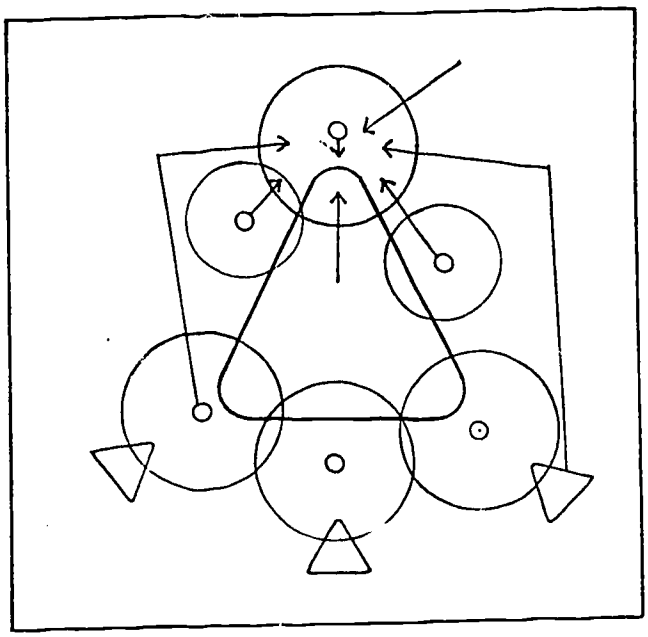
Key:



Determinants of School Organization and Climate



Determinants of Principal Work Conditions



by this paper indicates the importance of co-oriented and cumulative research programs and the difficulty in covering all the required bases in small, independent efforts. While the complexity might seem to call for a descriptive research effort such as that argued by Greenfield (1982), in fact such an effort is likely to result in cumulative knowledge development and practical import only to the extent that the network of relationships and processes are codified and quantified. The reason for this assertion is that such codification and quantification will lead to more precise and, most importantly, better controlled experimentation with individual components of the whole, which is necessary for ultimate unravelling of the multiple causal effects involved.

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