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ABSTRACT

The basic problem in designing change efforts and in assessing them is determining which processes or consequences count and by how much. Whether it is teaching or learning that needs to be changed has to be determined. So it is with class size. What is to be changed as well as how that change is to be measured needs to be determined. The key question in considering class size is whether it is the nature of the school as an organization--in which the smaller classes exist--that accounts for the larger share of any observed increase in student learning, or whether increased learning can be brought directly, simply by increasing the number of small classes, regardless of other aspects of the school organization. It is suggested that discussions and research of class size would be more useful if they dealt with some of the significant relationships that exist between a resource allocation plan and the social processes that constitute the environment of these smaller classes. In attempting to point out the significance of the school context in looking at the question of class size, the question of criteria of success is also dealt with. However, it is suggested that student learning is not the criterion of success. It is suggested that the social slogan "smaller classes equals better learning" is a useful aphorism whose utility has been demonstrated. Its current validity or future validity, without redefinition of terms is in doubt. (Author/AM)

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Update Report III

The Class Size/Quality of Educational Process Relationship

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Efforts to improve schools, whether changes in class size or in instructional practices, often fail to make a distinction between the act of teaching and the experience of learning. Because the criteria and performance areas involved in school changes are not clearly delineated, the evaluation of projects often focuses too sharply on some aspects of the situation — what pupils do on tests — and focuses insufficiently on other dimensions — what teachers do in classes. It is true that pupil learning is generally assumed to be the intended outcome of the act of teaching. But, the teaching act and the student's learning are not the same.

Teachers and students may engage in the teaching act, yet both parties may remain uncertain as to whether, or in what way, learning took place. Since the teaching act is a reciprocal process and is not entirely a repetitious patterning of uniform behavior, it is at least reasonable to assume that instances of the teaching act lead to some types of student learning. (We admit that we may not always be able to link each teaching act to its specific consequences.) Nevertheless, it is not essential in designing school improvement programs that we state the relationship between teaching and learning — if professionals teach better, then students will learn more — as the major claim to be investigated or as the basic rationale of the improvement project.

Administrators can legitimately implement improvement programs that seek to change the quality of teaching per se. By changing the behavior of the teaching, one is also changing the role or daily life of the student, even if these changes are not reflected on indicators of cognitive knowledge. On the other hand, administrators often design change programs to improve learning without incorporating efforts aimed at altering the nature of the teaching act directly or at altering the role of the teacher.

The basic problem in designing change efforts and in assessing them is determining which processes or consequences "count" and by "how much." Is it teaching or learning that is to be changed? In what ways? So it is with class size. One needs to know what is to be changed, and how that change is to be measured.

The distinction between teaching and learning is a useful one in analyzing change efforts. In analyzing the issue of class size, other distinctions are necessary. What is needed is some working sense of what a school is: a loose confederation of classes, or a complex social organization. School is a place where both class instruction and learning take place. While student learning may be the raison d'etre both for the school and for the act of instructing, the school as an organization and the process of instructing are related, but they are quite different things.

When one talks about the school, one may mention the students' rate of learning. One must also consider the unit's social context and the processes it engages in while interacting with its environment — an area frequently called "public relations." One must give some thought to the structure and functioning of the decision-making process, as well as to efforts to coordinate various components within the school unit. When one talks about the instructional process, one is in fact considering the technological or production processes of the school. Instruction, therefore, is one, but only one, of the critical processes that are evident in the school as a social organization. With respect to the issue of class size, therefore, to say that smaller classes lead to, or relate to, better student learning largely begs the question. By relating class size, or the allocation of resources only (or largely) to the impact on the nature and consequences of the instructional process, one tends to ignore the impact of decisions to maintain smaller classes on other critical social processes of the school and also to ignore the contribution of these other processes to the welfare of the school and to student learning.

The key question in considering class size, is whether it is the nature of the school as an organization — in which the smaller classes exist — that accounts for the larger share of any observed increase in student learning, or whether increased learning can be brought about directly, simply by increasing the number of small classes, regardless of other aspects of the school organization.

In relation to the cost-benefit notion, the question is whether for a given amount of money one would improve organization viability and/or student learning more by investing in more small classes, or by investing in other efforts of the school as an organization, such as supervision, curriculum development tasks groups, joint planning time or student directed activities. In all probability, it is not an either-or proposition, but rather a matter of balance: smaller classes are beneficial, but only if they exist in combination with other strong support structures and social processes. In short, converting a school into a confederation of small classes, into a relatively simple undifferentiated social unit, is an unwise policy choice, since such

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a decision would fail to take into consideration the concept of the total school as a social organization.

The different notions about the school, that is, whether it is perceived as a complex organization or a loose confederation, lead to different questions for the instructional staff. The difference is that the staff would have to move beyond asking "What does one do differently in small classes?" to asking, "What does one do about small classes?"

The "in class" question assumes that the instructor's scope of concern and time frame relates to strategies for teaching the given group of children assigned to him as a class. The focus of attention is either a particular child, a few children within the class group, or the class as a whole. Whatever strategy the teacher designs, that response will apply only to those particular students, not to other classes and not to the school as a whole.

To ask the questions "about small classes" is to ask about institutional design, and not about particular instructional strategies as they relate to a given group of individuals. When considering institutional design, one's scope of concern and time frame, for example, would shift to consideration of the need to integrate differentiated instructional strategies found to exist among the small classes and to determine how small class units could relate to family life styles and educational preferences.

In effect one would shift the social perspective from that of the psychologist's who looks at learning as a personal event to the perspective of the social psychologist or sociologist who looks at social processes as useful social structures existing in an organizational setting. Attempting to observe the impact of class size without considering the school context that surrounds the classes is something like trying to study families without noting their community. It can be done, and in fact is done, but perhaps the environment, which is being ignored, makes the greater and more meaningful difference. To ignore the context in which classes exist is to assume, in effect, that classes are interchangeable units; that is, that class A of 16 students in school X is like class B of 16 students in school Y. In assuming that classes of the same size are interchangeable from school to school, is assuming that they are equivalent, one must then also either assume that differences between schools are so slight as to be overcome by differences among classes of various sizes or simply assume that there are no differences among schools that relate to what goes on in classes. In discussions with laymen or indeed in negotiation sessions, classes are often referred to as if they were all of a kind: we talk about classes within a district, sometimes about types of classes for special types of youngsters, but rarely do we talk about classes within a school in a district. Upon reflection, however, it is clear that classes are not interchangeable, largely because there are very important differences among schools. Let us consider this point briefly:

Perhaps there are identifiable types of schools. We believe that there are three sets of variables that can be used fruitfully in attempting to identify types of schools in which classes exist: 1) environmental exchanges (or types of relations that exist between families in the school), 2) authority-reward systems (way of involving staff in decisions with different scopes and time frames), and 3) learning technologies (the predominance of selected instructional strategies that create varying roles for youngsters as learners). While the intent here is simply to suggest that types of schools provide different social environments in which classes of varying sizes exist, some brief description of the variables used to describe schools may be helpful.

First, it should be pointed out that the variables do not directly deal with status variables, such as the social or economic status of the child or his family. Status variables are obviously important, but as surrogates, or stand-ins for performances or actual behavior, they are too gross and static to capture the slight but very important variations in what schools actually do in their efforts to educate children. Further, schools with assigned attendance areas cannot change the status of the families they serve, but they do have some flexibility in changing the patterns of interaction and the sense of values that guide their behaviors.

As for the first area in which schools may vary, patterns of school-community relations, Litwak and Meyer have developed what they call a "balance theory."[1] According to their perspective, families operate as primary groups, while schools exist as formal organizations called "bureaucracies." These two different group structures are antithetical, in terms of what one does to become a member and the tasks he is expected to perform. Difficulties in coordinating their various activities arise over the involvement of experts and non-experts in uniform and non-uniform behavior. School employees, as experts, have largely non-uniform tasks to perform. Non-experts, who frequently demand uniformity, can undermine the effectiveness of the staff. What the school must do is to find a way to coordinate home and school by balancing involvement and detachment so that neither structure, home nor school, unjustly dominates the other. Coordinating efforts involve use of communication linkages or linking mechanisms, such as, detached worker opinion leaders, auxiliary voluntary associations, mass media, etc. Schools, or administrative styles of working with this task, can be classified as to types. Classes in different types of schools are not the same, even though the number of students assigned to a single teacher may be the same.

Authority-rewards systems, reflecting styles of leadership behavior, can also be changed over time; thus, their impact upon the effectiveness and efficiency of the school as a social organization can be modified and is not a constant from school to school nor class to class. Schools might be described as being of three types: those that foster among teachers autonomous power and individualistic rewards, derived largely from direct interaction with pupils; those that foster hierarchical power, with teacher rewards derived from exchanges with the principal, who enforces or exempts people from centrally formulated rules and regulations; and finally, the third type, those schools that foster cooperative power arrangements that encourage joint problem solving ventures. These are not, of course, pure types. No school is either all one, or all the other, but schools do tend to stress different patterns. Classes taught by teachers in context are not, we suggest, the same as classes that exist in a different context.

Finally, schools differ in their use of specific instructional strategies. While much is said about open schools, or structured schools, such labels frequently lack clear operational definitions. On the other hand, the Indicators of Quality (IOQ) research did clearly define and record the observed frequency of specific classroom activities, such as lecture, demonstration, small group work, individual work, etc. Furthermore, the style of activity in the IOQ research was the best predictor of positive mean scores. Thus, the evidence suggests that schools vary in their relative use of selected classroom activities. Schools, we suggest, could usefully be described if a profile of their instructional strategies could be constructed.

In summary, we suggest that discussions and research of class size would be more useful if they dealt with some of the significant relationships that exist between a resource allocation plan (more teachers for smaller classes) and the social processes that constitute the environment of these smaller classes. We should start looking for types of schools in which varying types of classes exist. In addition to being more fruitful for research, the focus on school types as the context for classes of various sizes is also pragmatically more useful. In effect, we are saying that school administrators have more influence over schools as social organizations than they have influence over the political processes of school boards and communities, whose actions

would be necessary to change the resource allocation pattern significantly.

In attempting to point out the significance of the school context in looking at the question of class size, we are also dealing with the question of criteria of success. By focusing the debate regarding the use of resources on class size and student performance, we tend to ignore the welfare of the school as a whole, and criteria that might be applied to the school's functioning.

As with other school improvement programs, student learning and/or better teaching are most often stated as criteria to be used in measuring the impact of changes in class size. While the encouragement of student learning may be the school's primary social function, or, at least, the purpose most acceptable in the rhetoric of school politics, there are criteria of success other than student learning that we could use in judging the quality of a school. Teacher morale, parental support, esthetics of the physical facilities, or the adaptability of the school as an organization are examples of other valid criteria. In looking at the policy question of class size, it is obviously very important that we select appropriate criteria before we enter into an interpretation of the data related to the criteria being used. There is without doubt a vested interest for some parties in attempting to cast the research question in terms of student learning: Do smaller classes promote more learning? Given the primacy of the learning rhetoric, one has a better chance of getting public support for his particular resource demands — more classroom teachers for smaller classes — if he can at least imply that these smaller classes are critically related to some set of highly valued or desired outcomes: student learning, rather than better schools or happier teachers.

To pose the question about class size in terms of student performance, however, is to yield two fundamental points. First, the claim "if more classroom teachers, then smaller classes, and if smaller classes than more learning" states the economic aspect of the issue in terms of more or fewer classroom teachers. In so doing, we have at least implicitly said that schools are composed essentially, if not exclusively, of classroom teachers; we have accepted the loose confederation notion of the school. Schools are currently much more complex than that. We know that measures of staffing adequacy, attempts to count instructional and support personnel of various types, are more accurate and useful ways of viewing the array of expertise and positions found within schools.

Perhaps the notion that "schools = classroom teachers" as indicated by a range or average class size was a ble notion during the expansive years. In the 60's the general economy was good and school staffs were increasing in size, due to rising student enrollments and the greater range and variety of services that were being included in the school program. Now, the general economy and enrollment patterns are quite different. Choices also become different. Perhaps policy makers shift from considering how many classroom teachers and how many specialists are needed to whether classroom teachers or specialists are needed.

The choice between classroom teachers and specialists takes on new meaning in the new socio-economic context. With an increasing awareness that the new economy will increasingly depend upon growth in human potential, not in the accumulation of material goods that require exploitation of natural resources and increased production, the schools' interest in developing instructors and other personnel who function programmatically outside the classroom and with clients who are outside the 5-18 age range will also increase. Thus, schools as organizations, in order to survive in their new social environment, will become more complex. School growth will be in personnel who perform in jobs that are largely just now emerging. To commit larger blocks of the school's current resources to classroom teacher positions in order to reduce class size may in fact jeopardize the schools' chances for survival and the schools' effectiveness as one of the communities central agency of education.

The relative economic question, therefore, is not "more of fewer classroom teachers" but is rather "classroom teacher or other instructional personnel."

Second, the "more classroom teachers equal more learning" claim narrows the scope of the economic policy question, and it also introduces the black box notion of organizational change. It fails to deal with the specific behaviors that people are to undertake within the environment created by establishing smaller classes. Like the mysterious electrical black box; two wires (resources) lead into the box and two other wires (outputs) lead out the other side, but nobody knows what, if anything, goes on inside the black box. Since nobody knows what the black box is supposed to do, nobody can judge whether the box does its job well. To make this type of claim in the discussion of classes suggests that engagement in activities is of no social consequence, or that engagement is to be taken as a given, perhaps beyond direction or change. With respect to the latter notion, that engagement of students in instruction can be assumed, some advocates of open education make such claims, based upon their observations of children. Children are curious, they observe, and when placed in a rich environment children will explore and create their own learning tasks, with little or no external guidance. We do not wish to argue that children will not use environments for their own growth, nor that open educational strategies are inappropriate in studies of smaller classes. We are attempting to suggest that, rather than making the black box assumption, some claim specification of instructional strategies for small classes should be made explicit. Small classes do not inevitably lead to specific instructional strategies. In making the claim more explicit, the "more classroom teachers = more learning" claim must be expanded: more classroom teachers = better instruction = more learning. In this case, "better instruction" must be defined.

It is also possible, as we have suggested, that student learning is not the criterion of success; thus, perhaps one should ask a different question, putting aside for the moment our concern for the social environment in which classes exist. Instead of asking, "Do smaller classes lead to better learning?" we might ask some of the other questions that may be seen in the accumulated research about class size. For example:

- Do small classes promote better instruction?
- Do small classes increase teachers knowledge of pupils?
- Do small classes improve teacher morale?
- Do small classes encourage parental participation?
- Do small classes facilitate better planning?
- Do small classes promote better student and attendance discipline?
- Do small classes provide more flexible and adaptive schools?
- Do small classes make better schools?

Having looked at various meaningful ways that the question of class size could be posed and the range of different answers one gets by shifting the question, it is time to consider a basic problem: Is the matter about class size a meaningful question? Certainly, this is not a single question and to deal with it as "small classes = more learning" or simply "small classes are better" is to engage in uniformed rhetoric. Sarason[2] says there is no real question. He recognizes that the discussion about class size generates heated debates and is based on deep-seated feelings, but he tries to point out that the discussion is a cultural phenomena and was never intended as a research question. He traces the notion that smaller instructional groups yield more learning, to the two related social conditions: the tutorial system employed by the wealthy and the pragmatics of instructing the masses in very large groups. Naturally enough, those employed to teach large groups were certain that

they could be more effective if they had "smaller classes." maybe something like tutorials. Over time classes did become smaller; schools did get better; and pupils did learn more. But this change represents complex changes in the society and did not result from planned changes based on empirical research involving adjustments of sizes of classes. Thus, "smaller classes= better learning" is a useful aphroism or social slogan, whose utility has been demonstrated. Its current validity or future validity, without redefinition of terms, is very much in doubt. As a research question, terms certainly must be operationally defined and the problem approached in a design that permits meaningful interpretation of the information generated by the study. Let us turn to these needs: redefinition of the research question and the matter of a research design. Further, we hope to show that these two concerns should be related for a new research venture.

First, the notion of class size implies nothing more than a resource allocation plan; that is, more workers assigned to classes. In studies of other organizations, one would not usually start with a resource allocation plan, but would rather attempt to get some definition of the nature of the technology or work pattern. In the case of schools, this would mean that one should first specify the nature of the instructional strategy and the range and variety of teaching acts anticipated or desired. The assumption that teachers are largely autonomous professionals working in self-contained classrooms is no longer entirely valid, although such organization of the teaching task may be the most prevalent among all schools. Team teaching and multi-unit schools are also evident. One would then consider the organization of interrelations among assigned personnel necessary to facilitate the technology.

The problem arises when one attempts to define what is predominately a set of interpersonal activities as instructional technology. A basic consideration is whether one considers the teaching act the same at different grade levels and within the different content areas. It is possible that since the teaching act is a reciprocal one involving a teacher and at least one pupil and since that pupil grows or matures over time, that there is a developmental aspect to the teaching act itself. In other words, the similarities observed over time may mask a subtle or less evident shift in emphasis or delineation of roles among those participating in the teaching. Common sense would support this observation. Thus, a workable definition of the instructional technology would have to be stated in relation to age level of the students.

The implication of this definition of instructional technology for the study of class size are evident. If the instructional technology of schools varies with the age levels of pupils, and if the organization of schools is based on that technology, then school organizations in which classes exist will also vary with the development or ages of pupils. The optimal or best class size then would depend upon the organizational-level. In early primary years, for example, because the instructional technology used with very young children requires frequent intensive interaction (small group work) schools would be organized into small work units with multiple workers (self-contained classes with aides). On the other hand, since young adolescents are developing independence within a peer group context, the instructional technology would be different (projects, reports, etc.) and the school organization would be different as well (coordinated teams).

It would be naive to suggest that schools across America consciously design their organization to reflect some developmental notion of instructional technology. The reverse condition, however, is conceivable; that is, one could test the idea that schools progmatically developed a "theory of practice" over time in their interchanges with pupils. What is necessary is a data bank that records the frequency of instructional activities in classes of all grade levels among many schools. **Indicators of Quality** research provides such data. The analysis will be presented in a future issue.

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1. Litwak, Eugene and Meyer, Henry J., **School, Family and Neighborhood: The Theory and Practice of School-Community Relations**. New York, Columbia University Press, 1974. See chapters 1 and 2.
2. Sarason, Seymour B. **The Culture of the School and the Problem of Change**. Boston, Allyn and Bacon, 1971. Page 56.

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