Why Restructuring Alone Won't Improve Teaching

The new research has an implicit message: We must model all actions on practices that promote conceptual understanding. These practices will require changes that are far from marginal.

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The way we organize schools heavily influences how we teach, what we teach, and how we expect students to learn. Changing the organization of schools, then, should result in changes in teaching and learning. These two assertions seem logically connected, yet the more I examine them in light of past attempts to reform American education and present school restructuring efforts, the more convinced I am that the two assertions are *not* logically linked. It may be true that teaching and learning are influenced in important ways by the organization of schooling. It is probably not true, however, that changing the structure of schools will lead reliably to changes in teaching and learning.

Effective Teaching and Effective Schools Research

In the past 15 years, the changing research on teaching has influenced the way we think about policy and organization in education. Effective teaching research[1] was based on the compellingly simple idea that teaching could be reduced to a few relatively straightforward behaviors that are reliably related to student achievement. These behaviors are "generic," in the sense that they can be applied across different subjects and different groups of students. These effective teaching behaviors were inferred by observing differences among teachers who were judged to be more and less effective in inducing certain types of learning in students, controlling for student background. Hence, effective teaching behaviors were thought to be robust across variations in content and student background.

The same general approach characterized effective schools research:[2] Find schools that seem to be performing effectively, controlling for student composition, examine these schools, and infer the attributes that distinguish them from their less effective counterparts. These attributes then become the basis for prescriptions for making existing schools more effective. Effective schools research, however, has never dealt directly with the relationship between the attributes of effective schools and the practice of effective teaching. The attributes identified by the research — a safe and orderly environment, strong principal leadership, agreed-upon goals, an explicit discipline policy — are what might be called "school policy" factors controllable largely through administrative actions at the school site. None of these factors deals directly with what teachers teach, to whom, and how — the stuff of research on teaching.

It is no accident, of course, that the behaviors that both the effective teaching and effective schools research prescribed were relatively compatible with existing teaching practice and the existing structure of schools. When you begin by studying the effects of marginal variations in behavior among existing teachers and schools, and you are constrained by existing conventions, the prescriptions you produce will be very close to existing practice. Indeed, the marginal nature of effective teaching and effective schools research explains their popularity with practitioners: The changes they prescribe are relatively easy to understand and relatively unthreatening because they involve relatively small changes in existing practice.

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Current Research

Current research on teaching takes its point of departure from basic research on learning.[3] Learning has a broader, more ambitious meaning in current research on teaching than in the effective teaching literature. In the effective teaching research, learning meant student performance on readily available standardized achievement tests. In current research, learning means the development of understanding, or the ability to perform complex cognitive tasks that require the active management of different types of knowledge around concrete problems. Understanding requires more than the simple recall of facts; for example, it might require drawing inferences from facts, applying existing knowledge to unfamiliar problems, and constructing explanations for why one approaches a problem in a particular way. This sort of learning is not adequately measured by readily available achievement tests; hence, the research is more likely to rely on measures of student learning that are tailored to the specific subject matter and the cognitive tasks under investigation.

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Furthermore, current research on teaching treats students as active agents in their own learning; it requires a detailed knowledge of what students bring to the tasks that teachers set for them. Students bring quite complex, sometimes incorrect, prior knowledge to their learning of any subject. Understanding any complex subject requires not simply teaching new knowledge, but also diagnosing, capitalizing on, and, when necessary, changing students' existing conceptions.

Effective teaching is likely to vary considerably by subject. Unlike the effective teaching research, which attempted to identify generic teaching skills, current research focuses on relationships between teaching and learning in specific subjects. Mathematical understanding, for example, involves counting, factoring, and arithmetic operations. Reading and writing involve decoding, syntax, narrative, logic. While it is possible to draw analogies among the types of skills required across content areas, current research on teaching focuses mainly on the specific requirements for understanding within content areas.

The Gap Between Practice and Organization

Because current research on teaching doesn't, for the most part, grow out of studies of existing teaching practice, it has no necessary relationship to existing school organization. This gap between teaching practice and school organization constitutes the greatest challenge facing educational researchers.

How might we go about closing this gap? One way is simply to examine what happens in schools where teachers are making some concerted effort to change their teaching practice along the lines that current teaching research suggests. Another way is to infer from current research on teaching the kind of changes in school organization that would be necessary.

While it is too soon to say with much certainty what the implications of new research on teaching are for school organization, a few preliminary conclusions are possible. In order to organize teaching, a school — any school — must solve at least four problems:

1. How students are to be grouped for purposes of instruction;
2. How teachers' work is to be divided vis-a-vis groups of students;
3. How content is allocated to time; and
4. How students' progress is to be assessed.[4]

Most schools have solved these problems in a relatively straightforward way. They group students roughly by age; they assign essentially one teacher to each group of students; they break the school day into roughly one-hour blocks and allocate a different subject to each block; and they routinely assess student progress based on individual performance on teacher-made and standardized tests, usually organized by subject also. This set of solutions is so ingrained in the structure of American schools that most teachers, students, administrators, and parents don't even recognize that there are alternatives.

Strong circumstantial evidence shows, however, that when teachers attempt to change their teaching in certain directions, they disrupt and challenge the regularities of schooling. For example, when teachers begin to focus on how individual students grapple conceptually with math or reading, they quickly discover that students vary considerably in their

conceptual capacity within age groups. This simple recognition raises a host of questions: Should students be grouped according to the conceptual understanding they bring, or should they be grouped heterogeneously by conceptual understanding in order to capitalize on the ability of students to teach one another? Should students be grouped differently for different subjects?

Focusing on conceptual understanding of subject matter also raises questions about established ways of assigning teachers to students. Not all teachers, especially in the elementary grades, are equally knowledgeable and comfortable with all subjects. Does deep knowledge of students' learning — their conceptual capacities, the misconceptions they bring to the content — imply a degree of specialization among teachers, particularly at the elementary level, that does not presently exist? How does one sustain continuity for students if teachers specialize? Should teachers be expected to be equally knowledgeable about a broad range of content areas?

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If the object of teaching is students' conceptual understanding, rather than "coverage" of content, then serious questions arise about the allocation of content to time. The present allocation of content to time is largely a matter of administrative convenience. If one were to use student conceptual understanding as an index for the investment of time, one might get a very different time allocation. Might some students require more sustained time to learn certain ideas than others? Might all students need more time on any given day than is available in the current schedule to focus on certain particularly difficult ideas? Might certain ideas span content areas — spatial relationships, for example, might be reinforced in mathematics and the visual arts — and therefore require some integration of these areas?

Finally, if the object of teaching is students' conceptual understanding, assessments of student learning would probably take a different form. The simple paper and pencil assessments currently used in classrooms have limited value in tapping students' understanding. But more complex assessments — exhibitions, for example, in which students explain complex ideas and respond to questions about their explanations — are much more labor-intensive for both students and teachers. How would teachers' and students' time be used differently if some substantial proportion of student assessment were designed to find out whether students understand and can articulate complex ideas?

These questions demonstrate how quickly one can move from relatively simple ideas about how to change teaching and learning to relatively complex questions about the structure of schooling. Not surprisingly, teachers who attempt to change their teaching practice in accord with more ambitious ideas of students' conceptual understanding find themselves in conflict with existing organizational routines. The sort of questions raised here can't be solved by teachers working individually in classrooms, within the existing constraints of the age-grade structure, the egg-crate organizational structure, the daily schedule, and traditional student assessment practices.

While it seemed reasonable to expect an individual teacher to learn and apply the behavioral prescriptions of effective teaching research within his or her classroom, it is patently foolish to expect individual teachers to be able to learn and apply the ideas of current research on teaching by themselves. The very ideas underlying teaching for conceptual understanding are subversive to the standard organizational structure of schools. One cannot expect teachers, by themselves, to carry the burden of changing their practice and the structure within which it occurs.

So there is a strong presumption in favor of answering the opening question, *Do changes in teaching practice require changes in school organizations?* with an emphatic yes. Changing teaching practice to accord with current conceptions of teaching for conceptual understanding would probably disrupt the present regularities of school organization, and would probably require the creation of new structures to accommodate new practices.

Will Teaching Practice Really Change?

Will changing the organization of schools lead to changes in teaching practice? I am skeptical about this proposition for at least three reasons.

First, it is not clear that changing teaching practice leads reliably and

consistently to a single, well-defined set of changes in the structure of schools. It seems unlikely that seizing on a single organizational solution will result in predictable changes in teaching practice. For example, while it is clear that current age-grade grouping practices are suspect if the object of teaching is students' conceptual understanding, any one change in grouping practices will not necessarily result in changed teaching practices directed toward student understanding. While the age-grade structure acts as a constraint on more flexible grouping practices designed to capitalize on students' differences in conceptual understanding, it does not cause teachers to teach in unimaginative and narrow ways. Nor is it clear that there is any one grouping practice that will solve the myriad of problems raised by acknowledging that students vary in their conceptual understanding within age cohorts.

Second, changing structure may be a necessary condition for changing practice, but it is probably not a sufficient condition. Again, let's focus on grouping practices. For example, if changes in grouping practices are to result in changes in students' experience of learning, they have to be accompanied by other changes: changes in teachers' conceptions of what certain students can learn, changes in teachers' own conceptual understanding of the content, changes in the reward structure by which students' academic progress is assessed, and changes in the way students use their time, in school and out of school.

Furthermore, if these changes don't all focus on a single objective — increased conceptual understanding for students — then they will increase the complexity of work for teachers and students without any clear benefit for either. So simply changing structure — from age-grade grouping to multi-age grouping, for example — is unlikely to stimulate any reliable change in teaching practice unless structural change is accompanied by such things as access to new knowledge for teachers and clear rewards for students.

Third, attempts to change school structure have rarely, if ever, led to reliable changes in either teaching practice or student learning. In fact, most attempts to change the incentives that bear on teaching — merit pay, career ladders, differentiated staffing, school-based management, and the like — have lasted only for relatively short periods of time. Fiddling with organizational structure is a favorite device of educational policymakers and administrators because it communicates to the public in a symbolic way that policymakers are concerned about the performance of the system. The evidence is scanty, however, that structural change leads in any reliable way to changes in how teachers teach, what they teach, or how students learn.[5]

Closing the Gap

The research on effective teaching and effective schools held out the promise that student learning could be improved by marginal changes in teachers' behaviors and school structure. The implicit message of this research was a reassuring one: Model your actions on practices already proven to be successful in real classrooms and schools.

Current research on teaching and learning has opened up a new set of challenges for educational researchers, practitioners, and policymakers. It suggests that teaching practice and school organization should be based on a whole new conception of how students learn. The implicit message is considerably less reassuring: Model your actions on practices that promote conceptual understanding. These practices, by definition, are more likely to require changes in teaching and organization that are far from marginal.

Closing the gap between teaching practice and school structure in the future will require a new kind of thinking. Traditionally, we have acted as if a more or less standard set of structural solutions to the regularities of schooling would suffice for all students in all schools, or at least for most students, and for the rest we could develop "special" programs with somewhat different structural features. The consequence of this approach is that we have held structure more or less constant, and insisted that variations among students and teaching practices accommodate the structure. Now, research on teaching and learning suggests a very different attitude toward structure.

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This new attitude is that structure should enable teaching practices that are consistent with the objective of students' conceptual understanding. It

is unlikely that a single, clear set of structures, analogous to existing regularities of schooling, will emerge. Rather, it is more likely that structures will "float" in response to variations in students and teaching practices, while the objectives of teaching and learning will remain relatively constant around the theme of students' conceptual understanding. Solutions to the regularities of schooling will have a much more tentative, conditional character, dependent on the objective of student conceptual understanding, teacher knowledge, and student capacities. Rather than structure driving practice, teaching practice will drive structure. □

[1] See, for example, the summary of this research in J.E. Brophy and T. L. Good, "Teacher Behavior and Student Achievement," in *Handbook of Research on Teaching*, (1986), edited by M. C. Wittrock, pp. 328-375, (New York: Macmillan).

[2] For a review of this research, see S. Purkey, (March 1983) "Effective Schools: A Review," *Elementary School Journal* 83, 4: 427-452.

[3] For a review of this research, see L. Resnick, (1987), *Education and Learning to Think*, (Washington, D.C.: National Academy Press).

[4] For a more extensive version of this argument, see R. F. Elmore, (April 1991), "Teaching, Learning, and Organization: School Restructuring and the Recurring Dilemmas of Reform," paper presented at the Annual Meeting of the American Educational Research Association.

[5] For a more extensive review of this literature, see: R. F. Elmore, (May 1991), "The Paradox of Innovation in Education: Cycles of Reform and the Resilience of Teaching," paper presented to the Conference on Fundamental Questions of Innovation, the Governors Center, Duke University.

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