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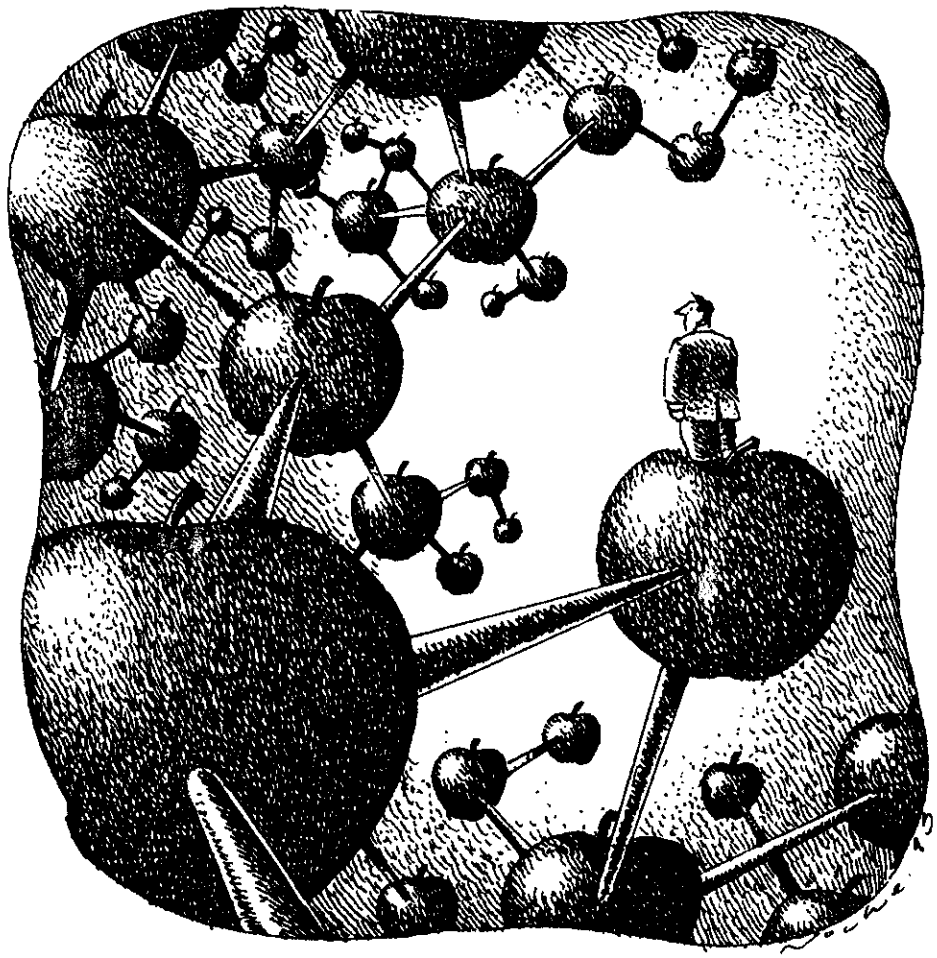
Curriculum Reform

Dilemmas and Promise

BY RONALD D. ANDERSON

From nine case studies, Mr. Anderson derives some findings that help us understand the dilemmas facing practitioners who seek to implement a new approach to education.



KARL TOZER, chair of the Westview High School science department, persuaded his colleagues to join him in developing a new and coordinated science program that integrated biology, chemistry, physics, and earth science into a single course extending over three years.[1] He was responding to a new state curriculum framework for science and attempting to take advantage of the opportunity for support from the National Science Foundation.

Carol Jennings chaired a high school mathematics department in a very decentralized state. There was no state curriculum framework to set new directions for mathematics education. However, her department was inspired to eliminate such traditional course divisions as algebra and geometry by *Curriculum and Evaluation Standards for School Mathematics*, a document issued by the National Council of Teachers of Mathematics (NCTM).[2]

Both Tozer and Jennings had embarked on ventures that were larger than they initially appeared to be and that had ramifications for all aspects of teaching and learning in their classes. Their cases are two of nine — three apiece in science, mathematics, and cross-disciplinary programs — that we set out to study in middle schools and high schools across the country. We chose our study sites through a national search designed to locate schools that had successfully engaged in curriculum reform. Although we were searching for exemplary cases, it was clear early on that the schools we would study would be schools "in the process" of reform.

We selected schools with program outcomes that indicated success on the part of their students. However, the process of making sweeping changes is long and requires fundamental alterations in school culture and in the beliefs and values of school personnel. The task of reform is ongoing and long-term; in fact, one wonders if any school will ever be able to say it has

RONALD D. ANDERSON is a professor of education at the University of Colorado, Boulder. *He wishes to acknowledge his fellow researchers on this project: Beverly Anderson Parsons, Lew Romagnano, Mary Ann Varanka-Martin, Kathleen Davis, Maurene Flory, Elizabeth Meador, Stephanie Quate, Erin Rosen, and Joan Whitworth. He also wishes to thank Margaret Eisenhart, who served as a case-study consultant to the project.*

Illustration by Mario Noche

completed the task.

We conducted these case studies to acquire an understanding of both the substance of the reforms and the means by which they were put in place. We wanted to understand just what the reforms were in practice, the barriers encountered in initiating them, the dilemmas experienced by teachers in making changes, and the means by which the changes were finally brought about. To do so, a researcher spent a minimum of 20 days in a given school observing classes; interviewing students, teachers, and other professionals; attending teacher meetings; viewing student work products; and collecting documents and artifacts.[3]

Key Messages

Although the programs we studied were prompted by a number of different reform movements, their conceptual foundations had much in common. Credit for the underlying rationale and for some of the specific reform plans was generally attributed to such subject-specific endeavors as the NCTM's *Standards*; the Scope, Sequence, and Coordination Project (SS&C) of the National Science Teachers Association — a precursor of the soon-to-be-released *National Science Education Standards* — or more general reform projects, such as the Coalition of Essential Schools.[4] The perspectives and recommendations of such reform efforts typically share a concern for 1) integrating themes in the subject matter, 2) teaching for understanding by focusing in some depth on major concepts rather than covering lots of detail, 3) making connections between subject matter and its applications, and 4) reaching all students — not just the elite — with rigorous content and attention to critical thinking.

Immersion in the case studies of these varied but similar reforms leaves one strong impression: the reforms being initiated in these schools are of major proportions, are very complex, and are connected to all aspects of teaching and learning. Such new orientations to the curriculum call for a different kind of teaching, demand new roles of students, and require different types of student work. The teacher is less a lecturer and source of information and more a facilitator or coach.

Students are less likely to be passively absorbing information and more likely to be using information to solve problems, create new understandings, or prepare written compositions. Students are less likely to be taking objective tests and more likely to be answering open-ended questions, preparing a portfolio, or engaging in some form of performance assessment. Student work is less likely to be tied to a textbook and more likely to involve "hands-on" work, group work, and dialogue with others about content. While this orientation is what one would expect from reading the publications of the various reform groups, our case studies show that schools that have adopted the reforms are doing something quite different from traditional schooling and that the totality of the change in practice is of major proportions.

Significant change is very time-consuming, yet teachers have little flexibility with regard to time.

A second striking impression from the case studies — one not so apparent from the advocacy statements of various reform movements — is that putting the reforms into practice is a difficult and demanding task. It is hard work, and it takes a lot of time over an extended period — a period of years, not months. Teachers engaged in reform are personally invested in the process and devote large amounts of time and effort to it. The schools we studied were selected because they were successful in implementing reforms. In every case, teachers were putting forth great efforts to achieve success. Although all participants were not equally enthusiastic, the fact that teachers were making these efforts over an extended period of time shows the conviction common to most of them that reform was worth the effort.

While the rewards of seeing students excited about learning have kept many teachers immersed in reform efforts at these sites, not all committed teachers are fully aware of the fundamental nature and extensiveness of the changes required by their reform projects. In other words, it is possible that — under the right circumstances — teachers could end up engaged in reforms that go considerably beyond what they envisioned when they first began.

This movement toward a new conception of education — including a destination that may not be clear to its participants at the beginning — is a long and difficult process fraught with dilemmas. Our case studies contribute to a better understanding of these dilemmas, of the tensions that teachers experience, and of the barriers that must be overcome if teachers are to internalize a new approach to education. Some discussion of the dilemmas is necessary before I examine the reasons that we see promise in these education reform endeavors.

Dilemmas

The dilemmas are many (space permits addressing only a few), and the interactions of these dilemmas contribute to the complexity of a picture that is necessarily incomplete as portrayed here. The dilemmas have to do with the very beliefs and values that teachers bring to the classroom. The tension between the ideal and what teachers can actually achieve is real, and change is never easy. The shift in teacher role from source of knowledge to facilitator of learning is a big shift that creates many problems.

Coverage of content versus depth of understanding. While reformers may advocate covering less content and while research may show that leaving some things out won't hurt standardized test scores, it is nonetheless hard for a teacher to believe that students will not be hurt by omitting coverage of any topic that they will encounter again at a higher level of schooling. The notion of preparing for the next level of schooling — what Robert Stake and Jack Easley in 1978 called the "preparation ethic"[5] — is so deeply ingrained in the culture of schools that to omit any topic they know will be encountered later makes teachers feel inadequate. But teaching for understanding means that some topics must be left uncovered.

Teachers may be convinced that a constructivist conception of learning is an appropriate goal, but that does not mean that

they know how to teach accordingly or that there is anyone around to help them by providing the "how-to-do-its" needed to put the new orientation into practice. Whether it is a lack of knowledge within the profession at large or a lack of access to necessary help, the dilemma for a teacher is the same: "How do I go beyond simply adding more laboratory activities or group work or writing assignments — or beyond teaching fewer topics in more depth — to doing this teaching in a manner that really develops understanding? And, by the way, I need specific help on how to address ecosystem concepts now, because it begins today in my sixth-period class — you know, the large one with more than its share of kids who seem to have little interest in learning."

Not all parents and students want these changes. The students in our case studies were generally pleased with the reforms — as evidenced by increased enrollments in elective classes — but some students and parents resisted the changes. The higher the socioeconomic level and the greater the college aspirations of students in a particular community, the greater was the resistance to the reforms.

The "preparation ethic" rears its head again. Parents believe that covering all topics is essential if their child is headed for an Ivy League school. And the student who has been successful in the old system, with its focus on conscientiously completing problem sets and memorizing new technical vocabulary, can become quite uncomfortable if getting a good grade now seems to depend on thinking critically about the content, making connections between various aspects of the content, or applying what is learned to novel situations. The resistance from parents in some cases was serious enough to compromise the reforms.

Part of the dilemma for the reform-minded teacher is that he or she generally works in a very conservative institution. The culture of schooling is not characterized by challenges to the prevailing patterns of the communities of which they are a part. Principals and teachers keep their jobs by keeping their communities happy.

There is never enough time. Making significant change is extremely time-consuming, yet teachers have little flexibility with regard to time. The focus on coverage makes time an issue within each class. Teachers also need time to plan together, time to learn new approaches to teaching, and time to revise the curriculum. And because the process of change takes years before new practices are solidly established, the time problem never seems to go away.

Promise

In the successful cases we studied, the dilemmas were many, and the effort expended to achieve success was great. But there are a number of reasons for optimism.

National and state guidelines, frameworks, and standards. These items *do* have an impact. We saw much evidence of their importance and influence. However, by themselves, they will not do the job. Real reform is much more complex than simply establishing a vision or setting a standard. To talk about reform using a label, such as "standards-driven," obscures the total dynamics of the situation.

Teacher collaboration. Nothing we saw in our case studies showed more influence for productive change than collaboration among teachers. Some of this collaboration occurred as part of formal inservice education situations created for teachers, but the most influential collaboration we saw was in the everyday workplace. When given the opportunity to develop materials together, to plan together, to share teaching ideas with one another, and to help one another make new connections with content, teachers did reform their teaching. New student outcomes were valued, beliefs about teaching and learning were changed, and new teaching skills were acquired.

Local teacher leaders. Principals and other administrators play an important role in reform. Indeed, in the case of schoolwide reform, their role is huge and absolutely essential. In the case of departmental reform (e.g., in science or mathematics), however, the role of the principal may be relatively minor. But in the schools we studied, local teacher leaders within departments played major roles. Most often they had the formal role of department chair, and they exhibited many of the characteristics of effective leaders. In addition, these teacher leaders had detailed knowledge of teaching the particular subject, a vision of reformed education, and the drive to work for reform for the sake of their own teaching. These leaders were generally the key to creating collaborative working relationships among their colleagues.

Recommendations for Reformers

Think systemically. There is no one key to reform. Do not limit systemic thinking to the political arena; reform is not just a matter of getting all levels of the establishment from the federal to the local level to coordinate efforts. It is a matter of attending to the culture of schools, the personal needs and dilemmas of professionals, the concerns of parents, and the role and work of students. All such matters must be addressed concurrently with full attention paid to their interactions.

Focus on matters of student learning. The role of students in the classroom and the nature of the work they do there are fundamental to reform. These factors need direct and concerted attention. One observation we made across most of the schools we studied is that students were not fully enlisted into analyzing what their role should be and what work they should do.

Make teacher collaboration the foundation of your work. Altering institutional structures and providing administrative support, instructional materials, and inservice education should work in support of and build upon the important work that teachers do together each day. Furthermore, reform efforts should focus on the teachers' learning — in terms of values, beliefs, and competencies — for these are at the heart of reform.

Provide the support that teachers need. This support is not limited to the essential and obvious matters of materials and expert assistance in how to change teaching and learning. For example, changing the schedule in a senior high school to accommodate the desire of a group of teachers to have a common planning period may be worth all the concomitant problems in meeting students' scheduling needs. Whatever support is at issue, the need for it should be determined largely by the teachers themselves — working together in a manner that gives them the opportunity to identify what their actual needs are.

Recommendations for Teachers

Collegiality. Make every effort to establish collaborative working relationships with colleagues. Make these collaborations an integral part of your working day. As you work together on the everyday matters of teaching, you will have an opportunity to deal with ways to facilitate stu-

dent learning, and you will find opportunities to resolve many of the dilemmas that all reformers face.

Focus on the role of students and on the work you expect of them. In your efforts to improve education, focus on changing the role of students, on the nature of the work they do, and on the means by which their learning is assessed. This is the bottom line — for your work and for the entire enterprise of education reform.

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1. The names of individuals and schools are fictitious.

2. Commission on Standards for School Mathematics, *Curriculum and Evaluation Standards for School Mathematics* (Reston, Va.: National Council of Teachers of Mathematics, 1989).

3. The conceptual foundation for our research is reviewed in an earlier project publication. See Ronald D. Anderson et al., *Issues of Curriculum Reform in Science, Mathematics, and Higher-Order Thinking Across the Disciplines* (Washington, D.C.: U.S. Department of Education, 1994).

4. See *SS&C Currents: Scope, Sequence, and Coordination of Secondary School Science, Vol. II* (Arlington, Va.: National Science Teachers Association, 1992); National Research Council, *National Science Education Standards*, draft (Washington, D.C.: National Academy of Sciences Press, 1994); and Theodore R. Sizer, *Horace's School: Redesigning the American High School* (New York: Houghton Mifflin, 1991).

5. Robert Stake, and Jack A. Easley, *Case Studies in Science Education* (Urbana-Champaign, Ill.: Center for Instructional Research and Curriculum Evaluation and Committee on Culture and Cognition, University of Illinois, 1978).