Overview

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Teaching for Thinking

Looking to the future, Roy Forbes and others from the Education Commission of the States asked officials of high-tech industries about knowledge and skills needed by graduates. Most of the employers said it is less important that students have a great deal of technical training than that they have mastered what the executives called "learning to learn" skills—the ability to search out and comprehend information, for example—and higher-order thinking and problem-solving abilities.

Ironically, the National Assessment of Educational Progress reports that rather than improving in these areas, today's students are doing less well than those of just a few years ago. For example, the number of 17-year-olds able to determine the mood of a passage dropped ten points (from 51 percent to 41 percent) between 1971 and 1980. Those successful on exercises testing understanding of mathematics declined from 62 percent in 1973 to 58 percent five years later. The percentage of the same age group judged competent to write a persuasive statement went from 21 percent in 1974 to 15 percent in 1979 (Gisi and Forbes, 1982).

This decline, according to the National Assessment staff (1981), is the result of "current emphases in testing and instruction." In most classrooms,

> . . . teachers following traditional patterns of whole-class teaching and recitation move quickly from student to student so that many students can be involved without any one student dominating. The result is a pattern of teacher-dominated questioning in which brief comments from individual students are solicited and extended discussion is deliberately curtailed. Such techniques can be very effective in conveying an approved or conventional understanding of a difficult passage, but give individual students little opportunity to learn to formulate extended and detailed interpretations (p. 2).

That statement is a challenge to instructional leaders because in the 1970s researchers established that the type of teaching it describes produced relatively high student achievement. For example, Medley (1979) concluded from his review of 14 studies (selected according to rigorous criteria from an original group of 289) that the most effective teachers are those who ". . . use more low-level questions and fewer high-level ones, whose pupils initiate fewer questions and get less feedback, who tend not to amplify or discuss what pupils say" (1979, p. 24). Rosenshine (1979) summarized his review of a number of related studies by saying "The more successful teacher is one who structures and selects the activities, whose students are academically engaged for many minutes each day, who tends to ask questions that have specific answers in a controlled-practice format . . ." (p. 47).

These findings are so well established that ". . . chances that future research might alter them in any important respect are negligible" (Medley, 1979, p. 25), but they must not be misinterpreted. An important caution is that most of the studies dealt with the teaching of basic skills to younger students with little prior background. Rosenshine wrote recently that ". . . these general procedures [his formulation of direct instruction] also work for older, skilled learners" (1982, p. 4). But, as he agrees, that does not mean they are the *best* way to teach everything; that depends on the outcomes one seeks.

Many of us believe that students will become better thinkers if teachers ask thought-provoking questions, pursue students' answers by asking for evidence or clarification, and encourage students to raise questions of their own.

In general, research has not substantiated that belief, but a review by (Redfield and Rousseau, 1981) found that students whose teachers ask higher-order questions have much higher achievement than others. While certainly not conclusive, these results are encouraging. If we value intellectual development, we should:

1. *Consider students' needs and set priorities.* If students are not mastering the basic skills or achieving other fundamental goals, they may profit from direct teaching. For other purposes, other methods are often more suitable.

2. *Decide what kinds of activities are most likely to develop thinking abilities and plan for them.* Some teachers may

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not know how to stimulate higher-order thinking. Questions about opinions and personal experience may have their place, but they probably do not contribute as much to cognitive growth as questions about the basis for an assertion or reasoning used to make an inference. Such questions do not arise naturally in most classrooms: teachers need training, practice, and encouragement to use them. Moreover, higher-order questions are most productive only as part of a teaching strategy by which students are prepared by a sequence of learning activities to respond intelligently. Direct teaching can be part of such a strategy.

3. *Ensure that all students have some opportunities to practice higher-order thinking.* Even students taught most of the time by direct methods should occasionally be challenged to solve interesting problems, plan projects, and discuss controversial issues.

Development of thinking ability is a central purpose of schooling. It must not be a casualty in the equally important campaign to ensure mastery of basic skills.□

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