

answer. Rather than ignoring the incorrect solutions and concentrating her attention on the correct solution, the teacher capitalized on the errors the children made in order to dispel two common misperceptions about fractions.

We have not observed American teachers responding to children's errors so inventively. Perhaps because of the strong influence of behavioristic teaching that conditions should be arranged so that the learner avoids errors and makes only a reinforceable response, American teachers place little emphasis on the constructive use of errors as a teaching technique. It seems likely, however, that learning about what is wrong may hasten children's understanding of why the correct procedures are appropriate.

WHY NOT HERE?

Few who have visited urban classrooms in Asia would disagree that the great majority of Chinese and Japanese teachers are highly skilled professionals. Their dedication is legendary; what is often not appreciated is how thoughtfully and adroitly they guide children through the vast amount of material that they must master during the six years of elementary school. We, of course, witnessed examples of excellent lessons in American classrooms. And there are of course individual differences among Asian teachers. But what has impressed us in our personal observations and in the data from our observational studies is how remarkably well most Asian teachers teach. It is the *widespread* excellence of Asian class lessons, the high level of performance of the *average* teacher, that is so stunning.

The techniques used by Chinese and Japanese teachers are not new to the teaching profession—nor are they foreign or exotic. In fact, they are the types of techniques often recommended by American educators. What the Japanese and Chinese examples demonstrate so compellingly is that when widely implemented, such practices can produce extraordinary outcomes.

Unfortunately, these techniques have not been broadly applied in the United States. Why? One reason, as we have discussed, is the Asian belief that the whole-group lesson, if done well, can be made to work for every child. With that assumption, Asian teachers can focus on the perfection of that lesson. However, even if American educators shared that belief, it would be difficult for them to achieve anything near the broad-based high quality that we observed in Asian classrooms. This is not the fault of American teachers. The fault lies with a system that prepares them inadequately and then exhausts them physically, emotionally, and intellectually while denying

them the collegial interaction that every profession relies upon for the growth and refinement of its knowledge base.

The first major obstacle to the widespread development and execution of excellent lessons in America is the fact that American teachers are overworked. It is inconceivable that American teachers, by themselves, would be able to organize lively, vivid, coherent lessons under a regimen that requires that they teach hour after hour every day throughout the school year. Preparing lessons that require the discovery of knowledge and the construction of understanding takes time. Teaching them effectively requires energy. Both are in very short supply for most American teachers.

Being an elementary school teacher in the United States at the end of the twentieth century is extraordinarily difficult, and the demands made by American society exhaust even the most energetic among them. "I'm dancing as fast as I can," one teacher summarized her feelings about her job, "but with all the things that I'm supposed to do, I just can't keep up."

The full realization of how little time American teachers have when they are not directly in charge of children became clear to us during a meeting in Beijing. We were discussing the teachers' workday. When we informed the Chinese teachers that American teachers are responsible for their classes all day long, with only an hour or less outside the classroom each day, they looked incredulous. How could any teacher be expected to do a good job when there is no time outside of class to prepare and correct lessons, work with individual children, consult with other teachers, and attend to all of the matters that arise in a typical day at school! Beijing teachers teach no more than three hours a day, unless the teacher is a homeroom teacher, in which case, the total is four hours. During the first three grades, the teaching assignment includes both reading and mathematics; for the upper three grades of elementary school, teachers specialize in one of these subjects. They spend the rest of their day at school carrying out all of their other responsibilities to their students and to the school. The situation is similar in Japan. According to our estimate, Japanese elementary school teachers are in charge of classes only 60 percent of the time they are at school.

The large amounts of nonteaching time at school are available to Asian teachers because of two factors. The first concerns the number of teachers typically assigned to Asian schools. Although class sizes are considerably larger in Asia, the student-to-teacher ratio within a school does not differ greatly from that in the United States. By having more students in each class and the same number of teachers in the school, all teachers can have fewer teaching hours. Time is freed up for teachers to meet and work together on a daily basis, to prepare lessons for the next day, to