

What Works in a Nation Still at Risk

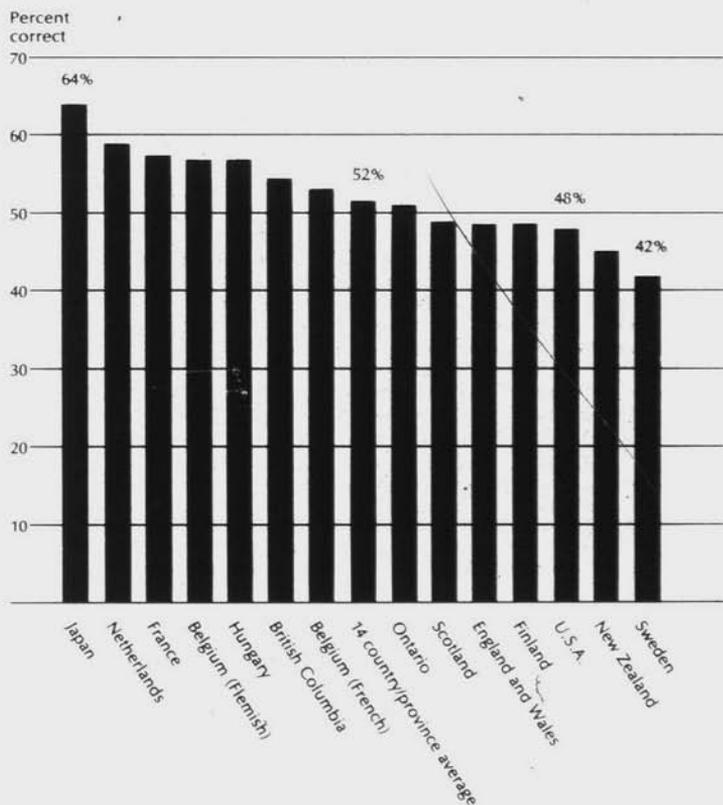
To raise achievement of American students to levels attained by students in other developed nations, administrators and policymakers can refer to the research knowledge summarized in *What Works*.

We are in the midst of a gigantic education reform movement in the U.S.—perhaps the most sweeping in this century. Throughout the country, legislators and school boards are enacting vast changes in school policies and practices. Many of the changes, of course, are attributable to the reform reports, particularly *A Nation at Risk*, the 1983 report to then U.S. Secretary of Education Terrell Bell by the National Commission on Excellence in Education.

To parents, many educators, and the general public, the most worrisome finding of many reform reports has been the mediocre average test scores of American students. They apparently did poorly in mathematics, science, and foreign languages in comparison with students in other developed countries. Without knowledge and understanding, how could they compete in an era of international enterprise and an age of information and increasingly sophisticated technology (*A Nation at Risk* 1983, Walberg 1983)?

To be sure, the comparisons in *A Nation at Risk* were far from satisfactory (Tyler 1981, Husen 1983, Walberg 1983). In the first place, some of the most important comparisons were nearly two decades old. At the later grade levels, moreover, generally more American than other students were still in school; perhaps it was misleading to compare our mass system with European selective systems of secondary education. In addition, many foreign countries generally have centralized ministries of education, national curriculums concentrating on

Table 1.
Average Mathematics Score for Students in the 8th Grade: 1981-82



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academic subjects, and longer school years.

Since collection of the data cited in *A Nation at Risk*, however, Europe has moved to national systems of comprehensive schools and retained increasingly larger fractions of teenagers through graduation from secondary schools. The Japanese graduate approximately 95 percent of their students from high school in contrast to about 76 percent in the U.S. And, if the concerted, diligent, and enduring study of serious academic subjects—native and foreign literature and languages, geography, civics, history, mathematics, and science—benefits Europeans and Japanese, it may also benefit American students.

Recent U.S. Performance

In view of such changes and possibilities, the chief results for developed countries from latest international comparisons are revealing. Tables 1 and 2, reprinted from *What Works*, show the test results of developed countries and Canadian provinces that participated in the most recent survey of the International Association for the Evaluation of Educational Achievement. These newly-released results are even more worrisome than those

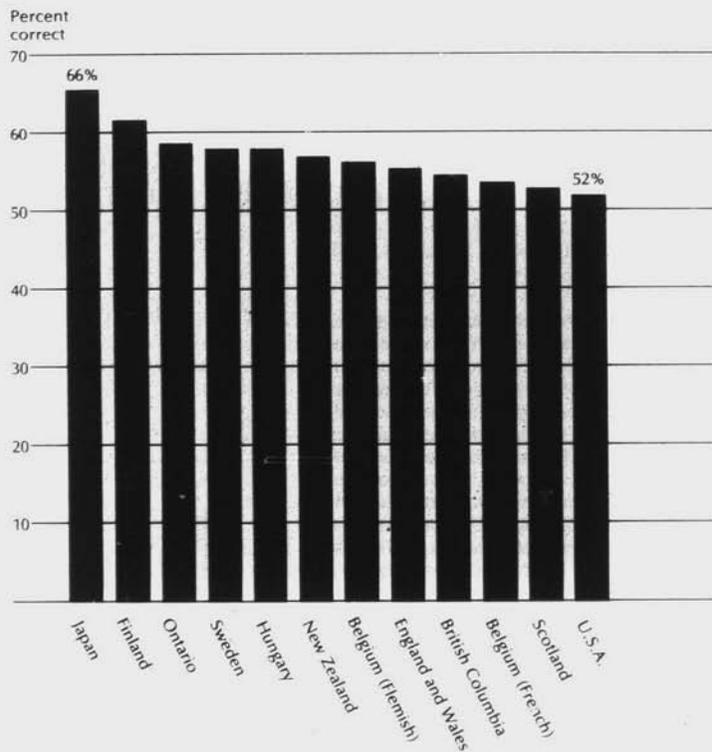
reported in *A Nation at Risk*.

In 8th grade, in which dropouts and selectivity are minimal, U.S. students scored third from the bottom among 14 developed countries and provinces. With its long school year of 240 days in contrast to about 180 days in the U.S., Japan scored distinctly above the second-ranked Netherlands.

Although the U.S. is second to none in Nobel laureates (Walberg 1983), we can take little comfort in the mathematics scores of our secondary

Table 2

Score in Algebra and Calculus
for Top 5 Percent of 12th Graders: 1981-82



SOURCE: U.S. Department of Education, National Center for Education Statistics (1985). *Second International Mathematics Study*.

school elite. Table 2 shows that the average score of the top 5 percent of U.S. 12th graders ranks them dead last among comparable students in the 12 developed countries and Canadian provinces.

No study is completely definitive—not even the international studies with their massive national samples and careful measurement. Nonetheless, they are the latest and best—in fact the only—recent scientific surveys available.

Fig. 1. Findings from *What Works*

Home

1. *Curriculum of the home.* Parents are their children's first and most influential teachers. What parents do to help their children learn is more important to academic success than how well-off the family is.
2. *Reading to children.* The best way for parents to help their children become better readers is to read to them—even when they are very young. Children benefit most from reading aloud when they discuss stories, learn to identify letters and words, and talk about the meaning of words.
3. *Independent reading.* Children improve their reading ability by reading a lot. Reading achievement is directly related to the amount of reading children do in school and outside.
4. *Counting.* A good way to teach children simple arithmetic is to build on their informal knowledge. This is why learning to count everyday objects is an effective basis for early arithmetic lessons.
5. *Early writing.* Children who are encouraged to draw and scribble "stories" at an early age will later learn to compose more easily, more effectively, and with greater confidence than children who do not have this encouragement.
6. *Speaking and listening.* A good foundation in speaking and listening helps children become better readers.
7. *Developing talent.* Many highly successful individuals have above-average but not extraordinary intelligence. Accomplishment in a particular activity is often more dependent upon hard work and self-discipline than on innate ability.
8. *Ideals.* Belief in the value of hard work, the importance of personal responsibility, and the importance of education itself contribute to greater success in school.

Classroom

9. *Getting parents involved.* Parental involvement helps children learn more effectively. Teachers who are successful at involving parents in their children's schoolwork are successful because they work at it.
10. *Phonics.* Children get a better start in reading if they are taught phonics. Learning phonics helps them to understand the relationship between letters and sounds and to "break the code" that links the words they hear with the words they see in print.
11. *Reading comprehension.* Children get more out of a reading assignment when the teacher precedes the lesson with background information and follows it with discussion.
12. *Science experiments.* Children learn science best when they are able to do experiments, so they can witness "science in action."
13. *Storytelling.* Telling young children stories can motivate them to read. Storytelling also introduces them to cultural values and literary traditions before they can read, write, and talk about stories by themselves.
14. *Teaching writing.* The most effective way to teach writing is to teach it as a process of brainstorming, composing, revising, and editing.
15. *Learning mathematics.* Children in early grades learn mathematics more effectively when they use physical objects in their lessons.
16. *Estimating.* Although students need to learn how to find exact answers to arithmetic problems, good math students also learn the helpful skill of estimating answers. This skill can be taught.
17. *Teacher expectations.* Teachers who set and communicate high expectations to all their students obtain greater academic performance from those students than teachers who set low expectations.
18. *Student ability and effort.* Children's understanding of the relationship between being smart and hard work changes as they grow older.
19. *Managing classroom time.* How much time students are actively engaged in learning contributes strongly to their achievement. The amount of time available for learning is determined by the instructional and management skills of the teacher and the priorities set by the school administration.
20. *Direct instruction.* When teachers explain exactly what students are expected to learn, and demonstrate the steps needed to accomplish a particular academic task, students learn more.

21. *Tutoring.* Students tutoring other students can lead to improved academic achievement for both student and tutor, and to positive attitudes toward coursework.

22. *Memorization.* Memorizing can help students absorb and retain the factual information on which understanding and critical thought are based.

23. *Questioning.* Student achievement rises when teachers ask questions that require students to apply, analyze, synthesize, and evaluate information in addition to simply recalling facts.

24. *Study skills.* The ways in which children study influence how much they learn. Teachers can often help children develop better study skills.

25. *Quantity of homework.* Student achievement rises significantly when teachers regularly assign homework and students conscientiously do it.

26. *Quality of homework.* Well-designed homework assignments relate directly to classwork and extend students' learning beyond the classroom. Homework is most useful when teachers carefully prepare the assignment, thoroughly explain it, and give prompt comments and criticism when the work is completed.

27. *Assessment.* Frequent and systematic monitoring of students' progress helps students, parents, teachers, administrators, and policymakers identify strengths and weaknesses in learning and instruction.

Schools

28. *Effective schools.* The most important characteristics of effective schools are strong instructional leadership, a safe and orderly climate, schoolwide emphasis on basic skills, high teacher expectations for student achievement, and continuous assessment of pupil progress.

29. *School climate.* Schools that encourage academic achievement focus on the importance of scholastic success and on maintaining order and discipline.

30. *Discipline.* Schools contribute to their students' academic achievement by establishing, communicating, and enforcing fair and consistent discipline policies.

31. *Unexcused absences.* Unexpected absences decrease when parents are promptly informed that their children are not attending school.

32. *Effective principals.* Successful principals establish policies that create an orderly environment and support effective instruction.

33. *Collegiality.* Students benefit academically when their teachers share ideas, cooperate in activities, and assist one another's intellectual growth.

34. *Teacher supervision.* Teachers welcome professional suggestions about improving their work, but they rarely receive them.

35. *Cultural literacy.* Students read more fluently and with greater understanding if they have background knowledge of the past and present. Such knowledge and understanding is called cultural literacy.

36. *History.* Skimpy requirements and declining enrollments in history classes are contributing to a decline in students' knowledge of the past.

37. *Foreign language.* The best way to learn a foreign language in school is to start early and to study it intensively over many years.

38. *Rigorous courses.* The stronger the emphasis on academic courses, the more advanced the subject matter, and the more rigorous the textbooks, the more high school students learn. Subjects that are learned mainly in school rather than at home, such as science and math, are most influenced by the number and kind of courses taken.

39. *Acceleration.* Advancing gifted students at a faster pace results in their achieving more than similarly gifted students who are taught at a normal rate.

40. *Extracurricular activities.* High school students who complement their academic studies with extracurricular activities gain experience that contributes to their success in college.

41. *Preparation for work.* Business leaders report that students with solid basic skills and positive work attitudes are more likely to find and keep jobs than students with vocational skills alone.

Research: The Basis for What Works

Nearly any human endeavor can be done poorly or well. Wisdom, some of it ancient wisdom, and modern factual research and experimentation on what works well in different fields, can contribute immensely to raising performance levels.

Education research, although it also often confirms plausible wisdom, has sufficiently matured in the last decade or two to put education policy and practice on firmer scientific footings. It now seems possible, given the will power of educators and the larger society, to make education much more productive than it has been in the past (Walberg 1984).

That's why the publication of *What Works* by the U.S. Department of Education is timely. It addresses the educational concerns of the American people in plain words, and it shows how findings from educational research address these concerns. Moreover, it reflects the intent of the 1867 legislation creating the U.S. Office of Education (now the U.S. Department

of Education) that the federal government should provide information to the people of the United States so as to "promote the cause of education throughout the country." It does this, as Secretary Bennett has observed, by providing accurate and reliable research information on the education of children to persons who can use and apply it—parents and taxpayers, teachers and legislators, and school board members.

Table 3 shows the 41 research findings discussed in *What Works*. Each finding is stated and discussed on a single page of this 65-page booklet. The findings were carefully screened by outside scholars Joseph Adelson, Lois Coit, Bernard R. Gifford, Robert Glaser, Robert Hogan, Michael Kirst, Rita Kramer, Leanna Landsmann, Jean Marzollo, Diane Ravitch, and myself. About 100 findings, submitted by U.S. Department of Education staff and outsiders, were omitted because the underlying research was insufficiently conclusive, or the results were too small to make much difference in learning and education policy. Should

subsequent research prove more definitive and the effects prove larger, they might be reasonably included in another compilation.

Research alone, however, even the most conclusive, is insufficient. Having Nobel laureates or high science scores is no guarantee of national economic growth, general citizen welfare, and world-class goods and services. The key is putting ideas into practice. For that, high accomplishments of elementary and secondary schools seem to be critical (Walberg 1983).

Much constructive education reform has been enacted since the National Commission warned us of educational mediocrity in 1983, and test scores seem to be rising after a long decline. There is, however, much more to be done if our students are to have a world-class education. Since we lack a magic elixir, we are going to have to continue bearing down. Educators and parents will have to work harder, longer, and more productively. Students will also have to hold up their side of the three-legged stool. What is called for is an old-fashioned virtue now being revived—grit. □

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Herbert J. Walberg is research professor of education, Box 4348, University of Illinois at Chicago, Chicago, IL 60680.

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