

Curriculum-Based External Exit Exam Systems

by John Bishop

Outside the United States, curriculum-based external exit exam systems are the rule, not the exception. Do such exam systems improve the teaching and learning of core subjects? What impact have such systems had on school policies, teaching, and student learning overall?

What is a Curriculum-Based External Exit Examination System?

A curriculum-based external exit examination system is defined by the following six traits:

- It produces signals of student accomplishment that have real consequences for the student;
- It defines achievement relative to an *external* standard, not relative to other students in the classroom or school;
- It is organized by discipline and keyed to the content of specific course sequences;
- It signals multiple levels of achievement in the subject;
- It covers almost all secondary school students. The school system as a whole must be made to accept responsibility for how students perform on the exams, although it is not essential that a single exam is taken by all; and
- It assesses a major portion of what students studying a subject are expected to know or be able to do.

Commercially prepared achievement tests such as the CAT and the ITED are not curriculum-based external exit exams because students have no stake in doing well on these tests. Where stakes are attached to student performance, it is teachers and school administrators who experience the consequences, not individual students.

The minimum competency exams that many American states require students to pass before graduating from secondary school are not curriculum-based external exit exams because they focus on basic skills taught in primary school and lower secondary school. For the great majority of students who pass on the first try, the tests no longer stimulate study. Minimum competency exams can be a useful part of a curriculum-based external exit exam system, but more demanding curriculum-based exams signaling higher levels of performance are essential.

The SAT-I reasoning tests are not curriculum-based external exit exams because they are not organized around school subjects and they fail to assess most of the material—history, science, economics, civics, literature, foreign languages, and the ability to write an essay—that high school students are expected to learn. The stakes are low for the subject specific SAT-II achievement tests and few students take them. Schools do not assume responsibility for preparing students for SAT-II tests.

The Advanced Placement examinations are the single exception to the generalization that the United States lacks national curriculum-based external exit examinations. Although growing rapidly, Advanced Placement is still a very small program, not a universal system.

Do Curriculum-Based External Exit Examination Systems Increase Achievement?

The hypothesis that curriculum-based external exit examinations improve achievement has been tested by comparing nations, states, and provinces that do and do not have such systems. Four different data sets were examined: science and mathematics achievement in the 40-nation Third International Math and Science Study (TIMSS); science and math

scores on the International Assessment of Educational Progress (IAEP) for 16 nations and nine Canadian provinces; and SAT test scores for New York State versus the rest of the United States.

The **Third International Mathematics and Science Study** provides 1994-95 data for seventh and eighth grade students from 40 countries. Twenty-two national school systems were classified as having curriculum-based external exit exams for both mathematics and science: Austria, Bulgaria, Columbia, Czech Republic, Denmark, England, Hong Kong, Hungary, Iran, Ireland, Israel, Japan, Korea, Lithuania, the Netherlands, New Zealand, Russia, Scotland, Singapore, Slovak Republic, Slovenia, and Thailand. The countries that do not have exit exams in either math or science were Belgium, Cyprus, Greece, Philippines, Portugal, Spain, and Sweden. A multivariate analysis controlling for the nations' wealth and location in East Asia found that 13-year-olds in nations with curriculum-based external exit exam systems had significantly higher achievement—1.3 U.S. grade level equivalents in science and .9 U.S. grade level equivalents in mathematics. A similar analysis of the 1991 IEA Reading study found that the reading literacy of 14-year-olds in nations with curriculum-based external exit exam systems were about one grade level equivalent ahead of students in nations without them.

Countries with exit exam systems also tended to require that prospective teachers complete more years of schooling or pass difficult subject matter tests. In addition, teacher wages were higher in countries with curriculum-based external exit exams.

Fifteen nations were available for analysis of the **1991 International Assessment of Educational Progress**: Emilia Romagna/Northern Italy, England, France, Hungary, Ireland, Israel, Korea, Portugal, Scotland, Slovenia, Soviet Union, Spain, Switzerland, Taiwan, and the United States. The effect of curriculum-based external exams for mathematics was highly significant and quite large; they had a smaller non-significant effect on science achievement.

New York was the only state in the United States with a curriculum-based external exit exam system in the early 1990s. The curriculum-based **New York State Regents Examinations** are taken throughout a student's high school career. The Regents exams are currently low- to medium-stakes tests, not high-stakes tests. Exam grades count for less than one-eighth of the final grade in Regents courses and influence only the type of diploma a student receives. A passing score on Regents exams is not necessary for admission to community colleges or out-of-state colleges.

In 1996, 88 percent of the average New York high school enrollment took the Mathematics Course 1 exam, 70 percent took the global studies exam, and 64 to 65 percent took the biology and English exams. The proportion of test-takers who did *not* attain the 65 percent necessary for the course to count toward a Regents Diploma were as follows: 26.4 percent in Mathematics Course 1; 24 percent in global studies; 30 percent in biology; and 18.3 percent in English. Students who did not take Regents exams were typically enrolled in courses less challenging than Regents courses.

New York students were more disadvantaged, more of a heavily minority, and more likely to be foreign-born than students in most other states. Consequently, family background had to be taken into account when comparing student achievement levels. Considering the high incidence of at-risk children in the state, New York students did remarkably well. The proportion of students taking algebra, calculus, chemistry, and physics was generally above national averages. A larger proportion (9.4 percent) of New York's eleventh and twelfth grade students took and passed Advanced Placement exams in English, science, math, or history than in any other state except Utah. New York students performed significantly better (46 points better) on the SAT than students of the same race and social background living in other states.

Well-designed external examinations should induce improvements in instructional practice. Sherman Tinkelman, the New York State Assistant Commissioner for Examinations and Scholarships, described one such instance in 1966:

For years our foreign language specialists went up and down the state beating the drums for curriculum reform in modern language teaching, for change in emphasis from formal grammar to conversation skills and reading skills. There was not very great impact until we introduced, after notice and with numerous sample exercises, oral comprehension and reading comprehension into our Regents examinations. Promptly thereafter, most schools adopted the new curricular objectives. (Tinkelman, 1966)

The **Canadian Provinces** of Alberta, British Columbia, Newfoundland, Quebec, and Francophone New Brunswick had curriculum-based provincial examinations in English, French, mathematics, biology, chemistry, and physics for high school seniors during 1990-91, the year the IAEP data was collected. These exams accounted for 50 percent of the year's final grade in Alberta, Newfoundland, and Quebec, and for 40 percent of a student's final grade in British Co-

lumbia. Canadian provincial exams are medium-stakes, not high-stakes tests. The exams influence grades but passing the examination is not essential for graduation. Employers appear uninterested in exam scores; job application forms do not ask applicants to report student exam scores or grades.

Curriculum-based provincial exit exams taken by twelfth grade students had some influence on achievement and the behavior of Canadian 13-year-old students, their parents, teachers, and school administrators. Schools in exit exam provinces scheduled more hours of math and science instruction, assigned more homework, had better science labs, were significantly more likely to use specialist teachers for math and science, and were more likely to hire math and science teachers who studied the subject in college. Eighth grade teachers in exit exam provinces gave tests and quizzes more frequently. Hours in the school year, class size, and teacher preparation time were not significantly affected.

Conclusions

Review of the evidence suggests that claims that curriculum-based external exit examination systems significantly increase student achievement are probably correct. Students from countries with medium- and high-stakes systems outperformed students from other countries of a comparable level of economic development. In addition, qualifications for entry into secondary school teaching were higher in nations with a curriculum-based external exit exam system.

Apparently, even low-stakes curriculum-based external exit exam systems such as the New York States Regents exams had an effect. When student demography was held constant, New York State students performed significantly better than students from other states on the SAT test and the National Assessment of Educational Progress. Thirteen-year-old students from Canadian provinces with curriculum-based external exit exam systems knew more science and mathematics than students from other provinces. Canadian schools in provinces with external exit exams were more likely to employ specialist teachers of mathematics and science, to hire math and science teachers who studied the subject in college, to have high-quality science laboratories, to schedule more hours of math and science instruction, to assign more homework in math and science and other subjects, and to have students perform or watch experiments in science class. Canadian external exams have not lowered the quality of instruction; they appear to have enhanced it.

More on the Subject

This **CPRE Policy Bulletin** is based on the 32-page **CPRE Research Report**, *Do Curriculum-Based External Exit Exam Systems Enhance Student Achievement?* by John Bishop. Copies of the report are available at \$12.00 each. Write to: CPRE Publications, Graduate School of Education, University of Pennsylvania, 3440 Market Street, Suite 560, Philadelphia, PA 19104-3325. Make checks payable to Trustees of the University of Pennsylvania. Prices include book-rate postage and handling. Sorry, we cannot accept returns, credit card orders, or purchase orders. Sales tax is not applicable.

Acknowledgments

CPRE Policy Bulletins are published by the Consortium for Policy Research in Education. This publication was supported by a grant (No. OERI-R308A60003) to the Consortium for Policy Research in Education (CPRE) from the National Institute on Educational Governance, Finance, Policymaking and Management, Office of Educational Research and Improvement, U.S. Department of Education. Additional support was provided by the Center for Advanced Human Resources Studies. *The views expressed in this publication are those of its author and are not necessarily shared by the U.S. Department of Education, the Center for Advanced Human Resource Studies, Cornell University, CPRE, or its institutional members.*

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Tinkelman, Sherman N. (1966). Regents examinations in New York State after 100 years. Albany, NY: The University of State of New York, The State Education Department.