

REVIEW OF RESEARCH

GLOBAL PERSPECTIVES ON EDUCATIONAL ACHIEVEMENT: AN OVERVIEW OF FOUR MAJOR STUDIES

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In his recently published book, *Catholic Schools: Mission, Markets and Morality*, Gerald Grace (2002) demonstrated the importance of analyzing Catholic education in multiple national contexts. As the actual and virtual world becomes smaller, such international comparative studies gain a new importance. This article offers highlights of four current major international comparative studies. Though the studies are not about Catholic schools per se, they offer interesting insights about the intellectual growth of students in every school sector. This article consists of both edited excerpts from websites as well as my commentary. Two major questions surface about each study: "What is it?" (sponsors, scope, methodology,) and "What do we learn from it?" For all of the studies, aspects important to readers of this journal are highlighted: the influence of family background on educational achievement, the influence of the school on educational achievement, gender differences, and differences across national boundaries. Information particular to each study includes knowledge of civics and civic engagement, reading ability, math ability, and science ability.

In keeping with the goal of the Review of Research section, this article brings to the attention of Catholic educators an overview they will find thought-provoking. To learn about these studies in more depth, for CivEd see <http://nces.ed.gov/pubs2001/cived>; for PISA see <http://www.pisa.oecd.org>; for TIMSS and PIRLS go to the website of the International Study Center at the Lynch School of Education at Boston College, <http://isc.bc.edu>.

CIVED

The Civic Education Study is a project of the International Association for the Evaluation of Educational Achievement (IEA), a consortium of research institutes and agencies in more than 50 countries. The study was car-

ried out in two phases. In the first phase, researchers conducted qualitative case studies that examined the contexts and meaning of civic education, revealing a core set of expectations across democratic societies around what 14-year-olds should know about democratic institutions. In the second phase (1999), nationally representative samples of 14-year-old students from 28 countries ($n=90,000$), along with thousands of their teachers and principals, were tested on their civic knowledge and skills as well as surveyed on their attitudes, concepts, and willingness to participate in civic activities. CivEd has a complex structure, designed to ensure interaction among the participating countries and consistency in the development and implementation of the instruments. At the international level, the International Steering Committee oversees the entire project, and the International Coordinating Center, located at Humboldt University in Berlin, is responsible for coordinating the implementation of the survey across participating countries. The IEA Data Processing Center is responsible for processing all of the countries' data after they are collected. In the United States the National Research Coordinator (NRC) oversees the study. The American Institutes for Research collected data for the pilot phase of the study and is responsible for data analysis and reporting for the main assessment. Westat, an employee-owned research corporation headquartered in Maryland, handled the field operations for the main assessment. The fieldwork and organization within the participating countries is financed by national, state, private, or public funders; money from IEA member countries provides a baseline support for the international study. In the United States, the National Center for Education Statistics (NCES) and the W. T. Grant Foundation are financing in-depth data analyses and publications. Support for Phase 1 was received from the Pew Charitable Trusts of Philadelphia and for the transition from Phase 1 to Phase 2 from the Carnegie Corporation of New York. The University of Maryland at College Park has provided support since 1993.

CivEd measures ninth-grade students' civic knowledge, skills, and attitudes across three domains: democracy, national identity and international relations, and social cohesion and diversity. CivEd consisted of three instruments: a student questionnaire, a school questionnaire, and a teacher questionnaire. Five types of items were developed for the student questionnaire: Civic content items (Type 1) assessed knowledge of key civic principles and pivotal ideas (e.g., key features of democracies) measured by multiple-choice items. Civic skills items (Type 2) assessed skills in using civic-related knowledge through multiple-choice items (e.g., understanding a brief political article or a political cartoon). Survey items measured students' concepts of democracy, citizenship, and government (Type 3); attitudes toward civic issues (Type 4); and expected political participation (Type 5). Additional survey questions assessed students' perceptions of the climate of the classroom and other background variables. The school questionnaire, completed by the

principal, contained questions designed to gather information on the school's general environment, such as size, length of school year, and characteristics of the student body. The school questionnaire also asked questions designed to provide a picture of how civic education is delivered through the curriculum and school-sponsored activities, as well as the number of staff involved in teaching civic-related subjects. Additionally, a teacher questionnaire was administered. However, because the organization of civic education and the role of civic education teachers in U.S. schools differ from those of many other countries in the study, results from the teacher questionnaire were not analyzed in the U.S. report.

CIVICS ACHIEVEMENT

Results indicate that ninth-grade U.S. students performed well when compared with students in the other 27 participating countries. U.S. ninth-graders scored significantly above the international average on the total civic knowledge scale. Furthermore, in no other country did students significantly outperform U.S. students. The average scores on the civic content subscale did not differ significantly from the international mean. Students in six countries performed better than U.S. students on this subscale. U.S. students performed significantly higher than the international mean on the civic skills subscale and also performed significantly higher than students in every other country participating in CivEd.

GENDER ISSUES

Female ninth-graders were more likely to report that they trust government-related institutions than were their male counterparts. Female students scored higher, on average, than male students on the skills subscale, but there were no differences between males' and females' average scores on the content subscale or on the total civic knowledge scale. Ninth-grade U.S. female students were more likely than their male peers to report social movement-related activities, such as promoting human rights and protecting the environment, as important. Fifty-three percent of male U.S. ninth-graders agreed that we should stop outsiders from influencing the traditions and cultures of the United States, compared with about 35% of females. Nine out of 10 students supported women's political rights and agreed that women should run for public office and have the same rights as men. A greater proportion of female ninth-graders supported women's rights than did males. U.S. students reported average scores higher than the international mean on both the support for women's rights scale and the positive attitude toward immigrants' rights scale. Male ninth-grade students were more likely to report discussing international political issues with people their own age than were their female counterparts. Finally, female ninth-grade students were more likely than their male counterparts to expect to be politically active as adults.

SCHOOL INFLUENCE

Seventy percent of U.S. schools with a ninth grade reported a civic-related subject requirement. In 55% of the schools, principals reported that ninth-grade students are required to take five to six periods a week in civic-related subjects such as social studies, history, or civics. Sixty-five percent of students reported studying social studies in school almost every day. However, 12% of students reported never or hardly ever studying social studies in school. The majority of U.S. ninth-graders typically spent less than 1 hour a week on social studies homework. Students who studied social studies in school almost every day had higher scores on all three civic achievement scales than students who studied social studies once or twice a week or even less frequently. Students in low-poverty schools (with a low percentage of children eligible for the free or reduced-price lunch program) outperformed students in high-poverty schools. Students in U.S. schools were more likely to study domestic civic issues than international civic issues. U.S. students were more likely to report reading a textbook or filling out worksheets when studying social studies than engaging in activities such as receiving visits from leaders or writing letters to give their opinion. Eighty-five percent of students reported being encouraged by teachers to make up their own minds about issues, and about two-thirds reported being encouraged by teachers to discuss political or social issues about which people have different opinions.

INFLUENCE OF FAMILY BACKGROUND ON STUDENTS IN THE U.S.

White and multiracial students scored higher, on average, than Black and Hispanic students on the content and skills subscales and on the total civic knowledge scale. In addition, Asian students scored higher than Black students on all three civic achievement scales, and higher than Hispanic students on the content subscale. Hispanic, Asian, and multiracial ninth-graders reported having more positive attitudes toward rights for immigrants than did their White peers. Asian and Black U.S. ninth-graders were significantly more likely than their White peers to report that the government should be responsible for economy-related issues. Performance on the CivEd assessment was positively related to the number of books that students reported having in their home as well as to the receipt of a daily newspaper. Students' civic achievement was also positively related to their parents' educational attainment. Students born in the United States demonstrated a higher civic knowledge, on average, than foreign-born students. Students who had higher expectations for their own continued education also did better on the CivEd assessment. Students who reported that they were not absent from school at all during the month prior to the CivEd assessment scored higher, on average,

on the civic assessment than students who reported being absent 3 or more days during the month prior to the assessment. Students who participated in meetings or activities sponsored by any type of organization, even if they participated only a few times a month, had higher civic knowledge than students who did not participate at all. Although participation in extracurricular activities sponsored by a school or community organization was positively related to civic achievement, the frequency of participation was not. On average, students who engaged in nonschool activities directly related to academics scored better on the CivEd assessment than their peers who did not. Students in households containing 100 or fewer books were less likely to report expecting to participate in political life as adults than students in households containing more than 200 books. Results indicated no differences in expected political participation by race or country of birth.

CONCEPTS OF DEMOCRACY, CITIZENSHIP, AND GOVERNMENT IN THE U.S.

About 90% of ninth-grade U.S. students reported that it is good for democracy when everyone has the right to express opinions freely. Approximately 80% of U.S. students reported that voting in every election and showing respect for government leaders were important factors in being good citizens. Eighty-nine percent of ninth-grade U.S. students thought that it was important for a good citizen to participate in activities to help people in the community. U.S. students reported average scores higher than the international mean on the importance of the conventional citizenship scale and the importance of the social movement-related scale, but lower than the international mean on the economy-related government responsibilities scale. Eighty-four percent of ninth-graders said that the government should be responsible for keeping prices under control. Fifty-nine percent of U.S. ninth-graders said that it was the responsibility of the government to provide an adequate standard of living for the unemployed. Between 87 and 92% of U.S. ninth-graders said that the government should be responsible for ensuring equal political opportunities for men and women, providing free basic education and health care for all, guaranteeing peace and order within the country, and providing an adequate standard of living for old people. A majority of ninth-grade students reported that they trust local and national government institutions in the United States. In contrast, only 35% of students reported trusting political parties. Ninety-two percent of U.S. ninth-graders reported that we should always be alert and stop threats from other countries to the political independence of the United States.

CURRENT AND EXPECTED ACTIVITIES RELATED TO POLITICS IN THE U.S.

Ninth-grade U.S. students reported discussing political issues with teachers and parents, but discussions of U.S. politics were more likely to occur than discussions of international politics. Students who reported using newspapers as a source of political information were more likely to read about domestic politics than to read about international politics. Television was the primary source that ninth-grade U.S. students relied on to obtain information about politics. Female and male students as well as U.S.-born and foreign-born students all reported television as their primary source of political news and radio as their least likely source, and with similar levels of frequency. U.S. students' average score on the expected participation in political activities scale was higher than the international average.

WHAT DID WE LEARN FROM CIVED ABOUT STUDENTS AROUND THE WORLD?

Students in most of the participating countries have a basic understanding of fundamental democratic processes, values, and institutions. For example, 75% of student respondents in the international sample were able to identify the reason for having more than one political party, while 69% correctly answered a question on the importance of being able to join a variety of organizations. Most students also were able to answer most questions dealing with fundamental laws and political rights, and most recognized the importance of basic democratic processes such as free elections. Their understanding of some democratic values and institutions, however, was not strongly demonstrated. For example, only 57% of the students could identify the main message of a political cartoon about a country's wish to de-emphasize problematic aspects of its history. A similar proportion could infer the possible political consequences of a large publishing company buying and controlling many newspaper-publishing companies. Students, however, demonstrated moderate skill in interpreting political materials. For example, 65% of the respondents were able to identify the position of a party that had issued an election leaflet, but a substantial 35% could not do so. Eighty percent of respondents across countries indicated that they expect to vote as adults. This finding, however, seems paradoxical in light of actual voter turnout rates. Some other types of civic participation, such as collecting money for charities, were also relatively popular.

Across national boundaries curricular priorities within schools seem to play an important role in shaping expected civic behavior. When students perceive that their schools teach the importance of voting, the proportion who say they are likely to vote is higher. The more students know about fundamental democratic processes and institutions, the more likely they are to

expect to vote when they become adults. Although students are willing to vote, they seemed skeptical about other traditional forms of political engagement. Four out of five students in all countries responded that they do not plan on engaging in conventional political activities such as joining a political party, running for office, or writing a letter to a newspaper about a social or political concern. They were willing, however, to engage in other forms of civic engagement, such as collecting money for a social cause or participating in a nonviolent protest march. They thought it is important for adult citizens to participate in groups benefiting the community and preserving the environment. Students are supportive of the political rights of women and immigrants. Almost 90% of the students agreed with items about women having the same rights as men and being entitled to equal pay. In addition, 90% of the students agreed that immigrants should have the right to equal educational opportunities.

PISA

The Program for International Student Assessment (PISA) is a multinational project coordinated by the Organization for Economic Cooperation and Development (OECD), an international organization of 30 industrialized, market-economy countries. The National Center for Education Statistics (NCES) at the U.S. Department of Education is providing the funding to complete the study in the United States, and Westat is responsible for U.S. data collection and analysis.

PISA was developed by the OECD to assess the reading, mathematics, and science literacy of 15-year-olds in participating countries. Thirty-two countries participated in 2002 and over 40 countries will participate in 2003. PISA assesses how well prepared students are for life beyond the classroom by focusing on the application of knowledge and skills in everyday situations. PISA's focus on 15-year-old students allows countries to measure outcomes of learning that reflect both societal and education system influences and to measure students' preparedness for adult life as they near the end of compulsory schooling. More specifically, PISA defines reading literacy as understanding, using, and reflecting on written texts in order to achieve one's goals, to develop one's knowledge and potential, and to participate in society. Mathematics literacy is the capacity to identify, to understand, and to engage in mathematics and make well-founded judgments based on that knowledge. Science literacy is the capacity to use scientific knowledge, to identify questions and to draw evidence-based conclusions in order to understand and to help make decisions about the natural world and the changes made to it through human activity.

PISA is a paper-and-pencil 2-hour exam whose items include a combination of multiple-choice and open-ended questions. It will be implemented on

a 3-year cycle that began in 2000. Each PISA assessment cycle focuses on one subject in particular, although all three subjects are assessed every 3 years. In the first cycle, PISA 2000, reading literacy is the major focus, occupying roughly two-thirds of assessment time. In 2003, PISA will focus on mathematics literacy, and in 2006, on science literacy.

READING ABILITY

On the combined reading literacy scale for PISA 2000, U.S. 15-year-olds perform about as well on average as 15-year-olds in most of the 27 participating OECD countries. Students in Canada, Finland, and New Zealand outperform U.S. students. U.S. students perform at the same level as students in 19 other participating OECD countries and Liechtenstein. U.S. students perform better on average than students from the OECD nations of Greece, Luxembourg, Mexico, and Portugal. The top 10% of OECD students score 623 or higher on the combined reading literacy scale. In the United States, 13% of students achieve this score or better, a percentage not significantly different from the OECD top 10% benchmark. Three countries (Canada, Finland, and New Zealand) have a higher percentage of students score in the top 10%, while 14 countries have a lower percentage. In the United States, 12% of 15-year-olds read at level 5, the highest proficiency level, a percentage higher than the OECD average. Level 1 encompasses 12% of students, and 6% of U.S. 15-year-olds are below level 1. That is, about 12% of U.S. 15-year-olds are at level 5 for retrieving information, interpreting texts, reflecting on texts, and the combined reading literacy scale; about 21% are at level 4 for these three subscales and the combined reading literacy scale, and so on.

MATH AND SCIENCE ABILITY

In both mathematics and science literacy, the U.S. average does not differ from the OECD average. Eight countries outperform the United States in mathematics literacy, and seven have higher average scores for science literacy. The United States has higher average scores than seven countries for mathematics literacy and seven for science literacy. The top 10% of students in OECD countries score 625 or higher on mathematics literacy. In the United States, 9% of students achieve this score or better, a percentage not different from the OECD top 10% benchmark. In eight countries, a greater proportion of students score in the top 10%, while six countries have a smaller proportion. For science literacy, the top 10% of all students score 627 or higher. In the United States, 10% of students achieve this score or better. Four countries have a higher percentage of students who score in the top 10%, while seven countries have a lower percentage.

GENDER ISSUES

On the combined reading literacy scale, female 15-year-olds outperform male 15-year-olds in every country. On the PISA 2000 mathematics literacy assessment, performance of males and females in the United States is similar, as it is in 16 other countries; 14 countries show higher performance for males than females for mathematics literacy. For most countries (26 out of 31 countries), including the United States, males and females perform similarly on the science literacy assessment.

INFLUENCE OF FAMILY BACKGROUND

In the United States, parents' education is strongly linked to differences in student performance in reading, mathematics, and science literacy. The relationship of socioeconomic status to literacy levels is about the same for each subject. Increases in socioeconomic status are associated with increases in scores for reading literacy, mathematics literacy, and science literacy. Most participating countries do not differ significantly from the United States in terms of the strength of the relationship between socioeconomic status and literacy in any subject. In the United States, parents' national origin is linked to performance in reading literacy and mathematics literacy only for those students with two foreign-born parents compared with students with two native-born parents. There is no difference in science literacy achievement between students with native- and foreign-born parents. Eighty-nine percent of students report that they speak the language of the assessment (English) at home most of the time. In the United States and most other countries, the reading literacy achievement of students who speak the test language at home is higher than that of students not speaking this language at home. The United States and most other countries also show advantages for test-language speakers in mathematics and science literacy. The pattern of between-group differences for racial and ethnic groups in the United States is identical across the three literacy areas. In reading, mathematics, and science, the average literacy scores for Whites and other students are higher than for Hispanic and Black students.

SCHOOL INFLUENCE

Differences between countries in reading literacy are substantial, though differences within countries are greater. PISA reveals a huge gap between the 10% of students capable of sophisticated reading tasks and the 6% incapable of simple tasks as well as the 12% capable only of simple tasks. Even where relatively few students underperform internationally, a large number may be below national benchmarks. The countries that achieve both high average performance and relatively low variation between students provide a chal-

lenge for others, particularly those that have systems allowing wide differences between schools. PISA suggests, so far tentatively, that overall variation is greater where students are channeled into different kinds of school from an early age.

TIMSS

The Third International Mathematics and Science Study is the largest and most ambitious international study of student achievement ever conducted. TIMSS is a collaborative research project sponsored by the International Association for the Evaluation of Educational Achievement (IEA) and directed by the International Study Center in the Lynch School of Education at Boston College. Researchers and educators from more than 40 research organizations in countries around the world collaborated in the design, development, and implementation of this enormous comparative achievement study. The study is supported by the U.S. National Center for Education Statistics, the National Science Foundation, and the World Bank, among other organizations. Students were tested in mathematics and science and extensive information about the teaching and learning of mathematics and science was collected from students, teachers, and principals.

TIMSS reports achievement for mathematics and science overall, and for five content areas in math (fractions and number sense; measurement; data representation, analysis, and probability; geometry; and algebra) and six content areas in science (earth science, life science, physics, chemistry, scientific inquiry and the nature of science, and environmental and resource issues). TIMSS also gathered information about curriculum, instructional practices, policies, and student background and attitudes.

The first round of data collection took place during the 1994–1995 school year. It was conducted at five grade levels in more than 40 countries (the third, fourth, seventh, and eighth grades, and the final year of secondary school). TIMSS 1999, which included 38 countries, measured the mathematics and science achievement of eighth-grade students (ages 13 and 14 years) and collected extensive information from students, teachers, and school principals about mathematics and science curricula, instruction, home contexts, and school characteristics and policies. Of the 38 participating countries, 26 also participated in the 1995 TIMSS assessment, which enabled these countries to measure trends in their children's mathematics and science achievement and in schools and home contexts for learning. A third initiative, TIMSS 1999 Benchmarking, provided an intra-national perspective; it examined eighth-grade math and science performance in 13 states and 14 districts in the United States. TIMSS 2003 will offer participants of the earlier studies an opportunity to study trends in eighth-grade mathematics and science achievement at three points over an 8-year period. TIMSS has developed new assess-

ment frameworks articulating the mathematics and science knowledge and proficiency that will be assessed at fourth and eighth grades in 2003 and in subsequent assessments.

COMPARING ACHIEVEMENT ACROSS NATIONAL BOUNDARIES

In TIMSS 95, Singapore and the Republic of Korea were the top-performing countries in mathematics at both the third and fourth grades. Other high-performing countries in mathematics included Japan, Hong Kong, the Netherlands, the Czech Republic, and Austria. Japan, the United States, Austria, and Australia were among the top countries in science. Nine of the 12 countries that performed above the international average in mathematics at the fourth grade also did so at the eighth grade, including Singapore, Korea, Japan, Hong Kong, the Netherlands, the Czech Republic, Austria, Slovenia, and Hungary. Of the other three, Ireland and Australia were around the international average at the eighth grade, while the United States was below it. In science, Korea, Japan, Austria, Australia, the Czech Republic, England, Singapore, and Slovenia performed above the international average at the fourth and eighth grades. Canada, Ireland, Scotland, and the United States were above average at the fourth grade, but just at the average at the eighth grade. In TIMSS 99, Chinese Taipei and Singapore had the highest average performance in math, closely followed by Hungary, Japan, and the Republic of Korea. Between 1995 and 1999, countries that showed an increase in average mathematics achievement at the eighth grade were Latvia (Latvian-speaking schools), Canada, and Cyprus. Only the Czech Republic showed a decrease. Between 1995 and 1999, countries that showed an increase in average science achievement were Latvia (Latvian-speaking schools), Lithuania, Canada, and Hungary. Bulgaria was the only country showing a decrease.

INFLUENCE OF FAMILY BACKGROUND

Having educational resources in the home was strongly related to student mathematics and science achievement in every country (e.g., computer, own study desk, 100 or more books). TIMSS-Benchmarking provides evidence that some U.S. schools are among the best in the world, but that a world-class education is not available to all children. Socioeconomic status and math and science achievement are highly correlated.

GENDER ISSUES

TIMSS 95 found that gender differences in mathematics achievement were small in most countries. However, in about half of the countries, boys had

substantially higher science achievement than girls at both the third and fourth grade levels. Those differences minimized by eighth grade. Girls and boys were equally positive about liking math and science. In the 1999 mathematics study, most gender differences were negligible, with only four countries having significant differences (Israel, the Czech Republic, the Islamic Republic of Iran, and Tunisia). Korea showed a decrease in the gender difference between 1995 and 1999. No country showed a significant increase in gender differences in mathematics performance. Science, in contrast, had significant differences in average achievement favoring boys in 16 of the 38 countries. These differences were more apparent among high-performing students. Three countries, however, had a significant reduction in the gender difference between 1995 and 1999: Hong Kong, Slovenia, and Israel. In general, boys had a more positive self-concept than girls in mathematics and science. The exception was for countries where the sciences are taught as separate subjects, where girls had more positive self-concept than boys in biology. This, however, was outweighed by a more favorable self-concept for boys in physics and to a lesser extent in earth science and chemistry.

SCHOOL INFLUENCE

Teachers in the TIMSS 99 study uniformly cited students with different academic abilities in their classes, high student-teacher ratios, equipment shortages, and disruptive students as the primary factors limiting their ability to provide high-quality instruction. Researchers found that traditional approaches tend to prevail in classrooms around the world. Across countries, teachers reported that teaching the whole class or having students work individually with their assistance were the most frequently used instructional approaches. Benchmarking data show higher math achievement when teachers emphasize reasoning or problem-solving activities. Higher science achievement was related to the emphasis placed on experiments or practical investigations. There was great variation among benchmarking participants in the percent of students in science classes with a high degree of emphasis on scientific investigation. U.S. students reported devoting an unusually large amount of class time to working on homework, particularly in math. Compared to 42% internationally, 74% of the U.S. eighth graders reported "almost always" or "pretty often" beginning homework in math class. This figure ranged from 43 to 90% across benchmarking participants. Regarding allocation of the school day, fourth graders spend more time learning mathematics than science. Mathematics classes typically meet for 3 or 4 hours a week, but in about half the countries science is taught for less than 2 hours a week. Students reported studying mathematics for about an hour outside of school each day and studying science for between half an hour to an hour. TIMSS 99 showed that the percentage of instructional time designated in the official curriculum for

mathematics instruction remains about the same from grade 4 to grade 6 but then decreases by grade 8 (17, 16, and 13%, respectively). In contrast, the instructional time specified for science increases from grade 4 to grade 8 (from 11 to 16%). U.S. eighth-graders have more hours of instructional time in math and science than students internationally. In Japan and Korea, more than half of the students were in math and science classes that never had interruptions for announcements or administrative tasks. Testing and assessment were widely used methods to support curriculum implementation. Approximately two-thirds of the countries conduct system-wide assessment at two or three grades, primarily to inform policymakers about achievement of the intended curriculum.

TIMSS 99 offered insights into teachers and teaching. Results indicate that eighth-grade mathematics teachers have more confidence in their teaching preparation than science teachers. Internationally, mathematics teachers reported relatively high degrees of confidence in their preparation, with 63% of students on average taught by teachers who believed they were very well prepared. In contrast, eighth-grade science teachers reported only a moderate level of confidence in their preparation. Almost 40% of students on average were taught science by teachers who reported a low level of confidence in their preparation to teach science. Across the TIMSS 99 benchmarking entities, the smallest percentage of students with teachers who felt “very well prepared” to teach mathematics was 75%—compared to the international average of 63% and the overall U.S. average of 87%. Teachers were less confident in their preparations to teach science. Just 27% in the U.S. felt “very well prepared.”

READINESS TO LEARN

TIMSS 99 found that students generally had positive attitudes toward mathematics and science, although less so in countries where science is taught as separate subjects at the eighth grade. In each country, a positive self-concept in the ability to do mathematics and science was associated with higher achievement. Eighth-grade students internationally had high expectations for further education. On average across countries, more than half the students reported that they expect to finish university. In almost every country, there was a positive association between educational expectations and achievement in mathematics and science.

PIRLS

The Progress in International Reading Literacy Study (PIRLS) assesses reading literacy of children ages 9 and 10 in 40 countries, thus providing a complement to PISA and TIMSS. In each participating country, approximately

150 schools are randomly selected for the assessment, yielding a sample of nearly 150,000 children. Working with researchers at the Lynch School of Education are the IEA Secretariat and Data Processing Center, Statistics Canada, the National Foundation for Educational Research in England and Wales, and Educational Testing Service. Funding PIRLS is a shared venture. The National Center for Education Statistics of the U.S. Department of Education provides funding for the international coordination. Participating countries fund their within-country costs and contribute to funding the costs of the international coordination.

Four processes of comprehension are assessed by PIRLS. The first is the ability to focus on and retrieve explicitly stated information and to locate and understand relevant information or ideas that are explicitly stated in text. The next is moving beyond surface meaning to make straightforward, text-based inferences. The third is interpreting and integrating ideas and information (e.g., how to draw on understanding of the world, experience, or other knowledge to find connections between ideas and information in the text). The last is the examination and evaluation of content, language, and textual elements including critical consideration of the text, reflection on and evaluation of text content, consideration and evaluation of text structure, language use, literary devices, and author's perspective and craft.

PIRLS examines two purposes for reading. The first is reading for literary experience, wherein the reader engages with the text to become involved in imagined events, settings, actions, consequences, characters, atmosphere, and feelings. The main form of literary texts used to assess reading for literary experience is narrative fiction. The second purpose concerns the acquisition and use of information. In this domain, the reader engages with aspects of the real universe to understand how the world is and has been and why things work as they do. The reader should go beyond the acquisition of information to use it in reasoning and in action. Typical informational texts include biographies; accounts of events; procedural texts; persuasive texts; and diagrams, charts, and graphs.

An important purpose of PIRLS is to research home and school factors that have an impact on children's reading achievement around the world. PIRLS is administering four questionnaires to collect information about home and school contexts for learning to read. The students' questionnaire focuses on reading instructional experiences, self-perception and attitudes toward reading, out-of-school reading habits, computer use, and home literary resources. The *Learning to Read Survey* is completed by parents or primary caregivers. It measures child-parent literacy interactions, home literacy resources, parents' reading habits and attitudes, and home-school connections. The teacher questionnaire collects data about classroom characteristics, instructional materials, activities and time, classroom resources, assessment practices, teacher education and training, and home-school connec-

tions. Finally, each principal completes a school questionnaire that examines school and student characteristics, school resources and school policies related to reading.

We will certainly learn much from PIRLS, but nothing is currently available. Data analysis began in January 2002 and is estimated to be completed by April 2003. The tentative date for release of the report is May 2003.

REFERENCE

Grace, G. (2002). *Catholic schools: Mission, markets and morality*. London: Routledge-Falmer.

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