STATE OF ILLINOIS

A PROFILE OF MATHEMATICS AND SCIENCE EDUCATION BASED ON THE 1999 TIMSS-R BENCHMARK

MICHIGAN STATE UNIVERSITY
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A PROFILE OF MATHEMATICS AND SCIENCE EDUCATION IN THE STATE OF ILLINOIS

This report places the mathematics and science program, grades one through eight, of the state of Illinois into a national and international context. A variety of data is examined in order to look at mathematics and science education from several perspectives. A total of 38 countries and 27 U.S. entities – states, counties, districts, and consortia – contributed to various aspects of the 1999 study. Grade eight student assessments provide overall and content-specific results information relative to other TIMSS countries, and selected U.S. entities (henceforth also referred to as benchmark participants or jurisdictions). Curriculum information from Illinois is compiled and compared with international curricula. Grade eight mathematics and science teacher preparation data are provided. Taken together these data provide information about strengths and areas for improvement that can be used to facilitate education reform.

Overall Achievement

Display 1 compares the performance of Illinois students to students in 23 countries and 26 other U.S. benchmark participants. These participants are listed in Attachment A. The 23 countries included are those that participated in the 1995 TIMSS and the 1999 TIMSS-R, and that met sampling guidelines for both studies. The countries that consistently performed among the top countries in both TIMSS assessments are also identified in Attachment A. Although Illinois' mathematics score of 509 (standard error 6.7) appears to be less than the international mean (521), it is not statistically significantly different[*] from it. Five countries and three U.S. benchmark participants scored statistically significantly higher[*] than students in Illinois on the mathematics assessment. Illinois' science score of 521 (standard error 6.5) is at the international mean (521). Four countries and four U.S. entities participating in the TIMSS assessments scored statistically significantly higher[*] than the students in Illinois on the science assessment.

State of Illinois Content Standards

The next several displays (Displays 2 – 5 and 7 – 8) portray information about mathematics and science curricula. Displays 2 and 3 compare the number of topics intended to be covered in the mathematics and science curricula, respectively, for each of grades one through eight. Displays 4, 5, 7, and 8 identify the main topics intended to be covered at each of the grade levels. Displays 4 and 7 provide results of the mathematics and science curriculum studies, respectively, of the top achieving TIMSS countries, as identified in the 1995 TIMSS. Displays 5 and 8 portray mathematics and science topics, respectively, intended to be covered according to Illinois' standards, in effect at the time of the TIMSS-R study (spring 1999). A solid circle in Displays 5 and 8 for any topic indicates a grade during which the state intends to cover the topic. The shaded area in the same displays portrays the topics intended for coverage in more than half of the top achieving TIMSS countries, as identified in the 1995 TIMSS.

[*] Statistically significant differences are based on multiple comparisons that hold to 5% the probability of erroneously declaring the mean score of one jurisdiction to be different from the mean score of any one of the others.

The TIMSS report, *A Splintered Vision*, published in 1997, documents the fragmented and incoherent character of the U.S. mathematics and science education system. Fragmentation occurs within a curriculum when a topic is introduced in one year, intended for one or more years, and then excluded from the curriculum. The topic is added again in later years. This cycle may be repeated. The TIMSS report proposes moving towards a more focused and coherent curriculum. A focused curriculum is one in which the number of topics covered during any academic year is commensurate with the grade level, increasing gradually with each higher grade level. A coherent curriculum is one in which topics are introduced in a logical sequence. Different topics 'fit' as part of an integrated, systematic whole, both within a grade level and from year to year. In a coherent curriculum simple concepts are first introduced within simple topics. Topics are developed fully by gradually moving to more complex concepts. Once a topic has been fully developed, it is excluded from the curriculum and other more complex topics are added.

U.S. national, state and local curricula typically cover far more topics in most grades than do curricula of the top achieving TIMSS countries. This is evident in Displays 2 and 3, and further depicted in Displays 5 and 8. Illinois standards for both subjects illustrate a case where more is less. Given that instruction time for mathematics and science is limited, and very similar among all TIMSS countries, the greater the number of intended topics, the less time there is to devote to each topic. The end result is that year after year students are likely to receive only cursory instruction in any given content area, never examining an area in the depth required to understand it fully. We recommend that a shift away from fragmentation to a more coherent, focused set of standards is a very positive step toward improving mathematics and science education.

Caveat: The mathematics and science standards for Illinois do not include grade specific objectives. The standards for kindergarten through grade eight are clustered into three main groups: K – 3; 4 – 5; and 6 – 8. This clustering is evident in Displays 5 and 8. Note that the intended topics are identical for all years within each of the clusters 1 – 3; 4 – 5; and 6 – 8. Though we have data that indicate teachers attempt to cover all topics identified for their grade cluster, it is doubtful that teachers are able to *adequately* cover within an academic year all of the topics intended in their cluster. However, the standards do not include a suggested sequence or prioritization for introducing content areas within a cluster. If a plan is not developed among teachers at the local level, then each teacher is left with the daunting task of developing a sequence that he surmises best fits with the topics covered by teachers in preceding and succeeding years. This selection process is haphazard at best.

Mathematics

- Display 2: The number of mathematics topics that Illinois intends to cover is above the 75th percentile among TIMSS countries in grades one, two, four, and six. It is above the 50th percentile among TIMSS countries in grades three, five, seven, and eight.

- Display 2: At all grade levels, Illinois intends to cover more topics than the number of topics intended by the top achieving TIMSS countries' composite. Illinois intends fewer topics than the U.S. in grades two through eight.

- Display 5: While the top achieving countries focus on whole numbers and measurement units during grades one and two, Illinois intends to cover a wide variety of additional topics related to: algebra; data representation and analysis; 2-D and 3-D geometry; and measurement (estimation and errors).

- Display 5: Excluding selected topics (Whole Number: Meaning, Operations, and Properties; Common and Decimal Fractions; and Percentages) during grades six through eight would allow time for development of concepts related to integers, rational numbers, exponents, roots, radicals, and proportionality.

Science

- Display 3: The number of topics intended by Illinois remains relatively flat, between 30 and 35 during all eight grades. This is in marked contrast to the top achieving TIMSS countries' composite, where a gradual increase in the topics intended for coverage occurs, with fewer than five topics intended in grades one and two, up to 48 topics intended by grade eight.

- Displays 3: The number of topics that Illinois intends to cover during grades one through three is above the 75th percentile among TIMSS countries. The number of topics is within the 25th to 75th percentile during grades four through seven, and below the 25th percentile among TIMSS countries in grade eight.

- Display 8: It is difficult to discern a focus in the Illinois science standards. Some shifting of content emphasis occurs in the intended topics in moving from one cluster to another (from grades 1 – 3, to 4 – 5, to 6 – 8).

- Display 8: Coverage of some topics is fragmented. Many other topics are included across all grade levels.

State of Illinois Achievement Results

The achievement results portrayed in Displays 10 and10A, and 11 and 11A, for mathematics and science, respectively, are from the assessment that was administered during spring 1999 as part of the TIMSS-R data-gathering process. The assessment is similar to the 1995 assessment, with about 50 percent of the items the same as those administered during the 1995 TIMSS. These displays provide information about how grade eight students scored in 20 mathematics and 16 science specific content areas. In Displays 10 and 11, participant mean percent correct scores for each content area are subdivided into three bands: those scoring statistically significantly higher[*] than Illinois (shaded in yellow); those scoring not statistically significantly different[*] from Illinois (no shading); and those scoring statistically significantly lower[*] than Illinois (shaded in green).

Displays 10A and 11A are box and whisker plots; they depict pictorially the content specific data from Displays 10 and 11, respectively. The boxes extend from the 25th to the 75th percentile among

[*] Statistically significant differences are based on multiple comparisons that hold to 5% the probability of erroneously declaring the mean score of one jurisdiction to be different from the mean score of any one of the others.

TIMSS-R participant mean scores. The whiskers extend from the lowest to the highest value. The line represents the median. Illinois student results are designated by a star. The plot with the red box illustrates the distribution of scores for U.S. benchmark participant data. The plot with the gray box represents the distribution for the TIMSS-R countries.

These results are offered more to provide diagnostic information for curriculum reform than to provide information on relative national and international standings. The specific mathematics and science content areas are more closely related to the curriculum and the scores present a profile of relative strengths and areas for improvement that can be used in curriculum revision. The assessment was the same as that administered during the 1995 TIMSS; only results for grade eight students were collected and will be discussed for this report. The TIMSS assessments were designed to provide system level performance indicators. Therefore, no student responded to all items and student level scores for these content areas are not available.

Mathematics – Curriculum Related Indicators

- Displays 10 and 10A: Illinois students achieved the highest score in the content area Rounding (80.1% correct). Rounding is the only content area in which U.S. participants tended to score higher than other participating TIMSS countries. The next highest score is in the content area Data Representation and Analysis (71.4% correct).

- Display 10: The scores earned by Illinois students are not statistically significantly different* from the U.S. mean scores in all 20 content areas.

- Display 10A: Illinois students scored at or above the U.S. 50th percentile in six of 20 content areas.

- Display 10A: Illinois students scored in the upper half of the international distribution of scores in 12 of 20 content areas.

- Displays 10 and 10A: The lowest scores earned by Illinois students are in the content areas: Proportionality Concepts (18.2% correct); Polygons and Circles (32.6% correct); and Perimeter, Area, and Volume (36.2% correct).

- Display 10A: In reviewing the distribution of scores, it appears that both national and international students found that assessment items related to Proportionality Concepts were the most difficult. The Illinois mean score is in the lower half of the international distribution of scores.

* Statistically significant differences are based on multiple comparisons that hold to 5% the probability of erroneously declaring the mean score of one jurisdiction to be different from the mean score of any one of the others.

Science – Curriculum Related Indicators

- Displays 11 and 11A: The highest scores achieved by Illinois students are in the content areas: Life Processes and Functions (74.3% correct); Human Biology and Health (73.5% correct); and Life Cycles and Genetics (71.6%).

- Display Display 11: The scores earned by Illinois students are not statistically significantly different* from the U.S. mean scores in all 16 content areas.

- Display 11A: Illinois students scored at or above the 50th percentile among U.S. benchmark participants in three of 16 content areas.

- Display 11A: Illinois students scored at or above the 50th percentile internationally in 11 of 16 content areas.

- Displays 11 and 11A: Illinois students earned the lowest scores in the content areas: Physical Changes (41.1% correct) and Properties and Classification of Matter (48.8% correct).

- Displays 11 and 11A: In reviewing the U.S. and international distribution of scores, particularly the 25th to 75th percentile box plots, it appears that students found the physical science and scientific processes items to be more difficult than the earth, life, and environmental science items.

Teacher Preparedness

In our publication, *Why Schools Matter*, published in 2001, we establish a relationship between curricular opportunity and learning. Curricular opportunity is a combination of content specified in standards, content emphasized in textbooks, and content that teachers cover in the classroom. These indicators are measures of students' opportunity to learn (OTL). So far in this report we have examined closely the first of these indicators. The specific materials and methods used by teachers are often considered another aspect of the curriculum, and are critical for good instruction.

In order to obtain some measure of a teacher's confidence level at providing good instruction, or teacher preparedness, teachers were asked: "How well prepared academically do you feel you are to teach …?" for a list of specific content areas. We present their responses, in terms of student count, in Displays 12, 12A and 12B, and Displays 13, 13A and 13B, for mathematics and science, respectively.

Displays 12 and 13 include a summary in tabular form of the teacher/student data for the U.S. benchmark participants (national, state, and local). Columns 1, 2, and 3 provide information about degree type, sample size, and the percentage of students taught by teachers in the sample, respectively. Sample size data in Column 2 are depicted using one of three labels. 'NT' designates cases where a teacher questionnaire was not completed. A blank identifies small sample sizes, of less than or equal to five teachers. An asterisk, '*', identifies cases where more than five teachers completed a questionnaire. Column 4 provides for each degree type the percentage of total students taught by teachers who indicated they are "very well prepared" to teach all identified topics.

Column 5 is a numeric and pictorial representation of the percentage of students taught by teachers (as percent of specific degree type) who are "very well prepared" to teach all topics. Column 5 is the percent value obtained by dividing Column 4 by Column 3.

Displays 12A and 13A are box and whisker plots. They depict pictorially the data from Columns 3 and 4 of the previous displays. The plot with the red box illustrates data for percent of students taught by teachers of different degree types. The plot with the gray box represents percent of students having teachers (by degree type) who indicated they are very well prepared to teach all identified topics. The whiskers extend from the lowest to the highest value. The boxes extend from the 25th percentile to the 75th percentile among U.S. entities. The plus sign and the line represent the mean and the median, respectively, among all U.S. benchmark participants. Illinois' student/teacher results are marked individually with a star.

Displays 12B and 13B include tabular data that depict for each of the identified topics the percentage of students taught by teachers, by degree type, who indicated they are "very well prepared" to teach the topic. Twelve and ten topics are identified for mathematics and science, respectively.

Mathematics

From Display 12, for Illinois, approximately 82 percent of grade eight mathematics students are taught by teachers with a degree in mathematics. Over two percent of students are taught by teachers with a science degree. Teachers who have a degree in some subject other than mathematics or science teach the remainder, 16 percent. Almost 61 percent of Illinois students have teachers who indicated they are very well prepared academically to teach all 12 mathematics topics. Further characterizing this 60 percent, 55.5, 1.2, and 3.9% of Illinois students are taught by teachers with degrees in mathematics, science or some other subject, respectively, who indicated they are very well prepared to teach all identified topics.

Science

In Display 13, about 61 percent of science students are taught by teachers with a science degree. The degree may be in multiple science (11.5%), biology (33.7%), physics (2.6%), or science education (13.3%). Five percent of science students are taught by teachers with a degree in mathematics. Almost 34 percent of students are taught by teachers with a degree in a subject other than science or mathematics. Less than five percent of Illinois students are taught science by teachers who indicated they are very well prepared to teach all ten topics.

Caveat: The ten science topics in the questionnaire come from the three major branches of science – earth, life, physical – as well as environmental science and scientific processes. The questionnaire results for all participants indicate that a teacher with a degree in biology, chemistry, or physics is well prepared to teach topics within his own discipline, but not always other topics. Preparedness results for science teachers are lower than for mathematics teachers. This may be because of the breadth of science knowledge that exists, not so much because of shortcomings that exist in science teacher education.

Summary

An education system is a combination of several parts. Improvements in education come about as a result of changes in several areas. Multi-faceted, like a gem, it is only by constant attention that all faces become highly polished. This report provides a look at content standards, achievement results, and teacher preparedness. Though content standards were examined for grades one through eight, the remainder of the data represents only grade eight. Recommendations for mathematics and science are presented below.

Mathematics

- Develop and implement standards that are grade specific. We realize that this process has most likely begun as a result of the No Child Left Behind Act. We applaud any efforts that have been made to accomplish this objective.

- Add depth to the intended curriculum during the early grades by devoting more time to fewer content areas. Devote time to whole numbers, measurement, and estimating in the early grades. Replace, by sixth grade, the whole number, measurement units, and fractions topics with content that will prepare students for rigorous high school mathematics courses in algebra, geometry, and trigonometry.

- Review curricular materials across all grades to ensure there is progression from simple concepts to more advanced concepts. Strive to ensure that content areas are presented in sufficient depth to allow students to apply concepts to more advanced mathematics in the higher grade levels.

- Re-examine curricular and support materials for content areas related to 2-D geometry, proportionality (both concepts and slope), integers, rational numbers, exponents, roots and radicals – all topics that provide a foundation for high school mathematics courses.

- Review teacher preparedness data to select the most appropriate content areas for in-service training opportunities.

Science

- As in the case for mathematics, develop standards that are grade specific. We realize that this process has most likely begun as a result of the No Child Left Behind Act. We applaud any effort that has been implemented toward this objective.

- Add focus and depth to the intended curriculum by devoting more time to fewer content areas, especially during the early grades. Re-examine the curricular and support materials to ensure that the depth of content coverage is adequate for the intended grade level.

- Prioritize content areas for development within one discipline (earth, physical or life science) at a time.

- All the content areas suggested for further examination fall into the physical sciences. Review the curricular and supporting materials in the areas in greatest need of improvement based on assessment results. These are: Properties and Classification of Matter; and Physical Changes.

- Consider providing in-service training or instruction packages to teachers so that more teachers can feel confident about teaching content across all ten topics.

- Alternatively, or in concert with the latter bullet, consider arranging class schedules for science courses within an academic year so that teachers can devote the bulk of their time to instructing in their area of expertise.

Attachment A

TIMSS Assessment – Participant Countries*, States, U.S. Local Entities

Countries

Australia
Belgium (Flemish speaking) +
Bulgaria
Canada
Cyprus
Czech Republic
England
Hong Kong, SAR +
Hungary ++
Iran, Islamic Republic
Italy
Japan +++
Korea, Republic of +++
Latvia
Lithuania
Netherlands ++
New Zealand
Romania
Russian Federation
Singapore +++
Slovak Republic
Slovenia
United States

\+ = top achieving in mathematics (1995 and 1999)
++ = top achieving in science (1995 and 1999)
+++ = top achieving in mathematics and science (1995 and 1999)

States

Connecticut
Idaho
Illinois
Indiana
Maryland
Massachusetts
Michigan
Missouri
North Carolina
Oregon
Pennsylvania
South Carolina
Texas

Local Entities

Academy School District, CO
Chicago Public Schools, IL
Delaware Science Coalition, DE
First in the World Consortium, IL
Fremont/Lincoln/West Side, NE
Guilford County Schools, NC
Jersey City Public Schools, NJ
Miami-Dade County PS, FL
Michigan Invitational, MI
Montgomery County, MD
Naperville School District, IL
Project SMART Consortium, OH
Rochester City Schools, NY
SW Pennsylvania Reg'l, PA

* The 23 countries included in this list are those that participated in the 1995 TIMSS and the 1999 TIMSS-R, and that met the sampling guidelines for both studies.

References

Schmidt, W.H., McKnight, C.C., Houang, R.T., Wang, H.C., Wiley, D.E., Cogan, L.S. & Wolfe, R.G. (2001). Why Schools Matter: A Cross-National Comparison of Curriculum and Learning. San Francisco: Jossey-Bass.

Schmidt, W.H., McKnight, C.C. & Raizen, S.A. (1997). A Splintered Vision: An Investigation of U.S. Science and Mathematics Education. Dordrecht: Kluwer Academic Publishers.

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Display 1: Comparison of Eighth Grade Mathematics and Science Achievement: 1999 TIMSS-R Results for the State of Illinois

1999 TIMSS-R Mathematics Achievement

Scores Significantly Higher Than the State of Illinois	Average	se
Singapore	604	6.3
Korea, Rep. of	587	2.0
Hong Kong, SAR	582	4.3
Japan	579	1.7
Naperville Sch. Dist. #203, IL	569	2.8
First in the World Consort., IL	560	5.8
Belgium (Flemish)	558	3.3
Montgomery County, MD	537	3.5

Scores Not Significantly Different From the State of Illinois	Average	se
Netherlands	540	7.1
Slovak Republic	534	4.0
Hungary	532	3.7
Michigan Invitational Group, MI	532	5.8
Canada	531	2.5
Slovenia	530	2.8
Academy School Dist. #20, CO	528	1.8
Russian Federation	526	5.9
Australia	525	4.8
Project SMART Consortium, OH	521	7.5
Czech Republic	520	4.2
Michigan	517	7.5
SW Math/Sci. Collaborative, PA	517	7.5
Texas	516	9.1
Indiana	515	7.2
Guilford County, NC	514	7.7
Oregon	514	6.0
Massachusetts	513	5.9
Connecticut	512	9.1
Bulgaria	511	5.8
Illinois	**509**	**6.7**
Pennsylvania	507	6.3
Latvia (LSS)	505	3.4
South Carolina	502	7.4
United States	502	4.0
England	496	4.1
Idaho	495	7.4
Maryland	495	6.2
North Carolina	495	7.0
New Zealand	491	5.2
Missouri	490	5.3
Fremont/Lincoln/WestSide PS, NE	488	8.2
Delaware Science Coalition, DE	479	8.9
Jersey City Public Schools, NJ	475	8.6

Scores Significantly Lower Than the State of Illinois	Average	se
Lithuania	482	4.3
Italy	479	3.8
Cyprus	476	1.8
Romania	472	5.8
Chicago Public Schools, IL	462	6.1
Rochester City Sch. Dist., NY	444	6.5
Iran, Islamic Rep.	422	3.4
Miami-Dade County PS, FL	421	9.4

International Average of 23* Countries	521	0.9

*Only the 23 countries that participated in TIMSS (1995) and TIMSS-R (1999) at eighth-grade level and met sampling guidelines are included here.

1999 TIMSS-R Science Achievement

Scores Significantly Higher Than the State of Illinois	Average	se
Naperville Sch. Dist. #203, IL	584	4.1
Singapore	568	8.0
First in the World Consort., IL	565	5.3
Michigan Invitational Group, MI	563	6.2
Academy School Dist. #20, CO	559	2.1
Hungary	552	3.7
Japan	550	2.2
Korea, Rep. of	549	2.6

Scores Not Significantly Different From the State of Illinois	Average	se
Netherlands	545	6.9
Michigan	544	8.6
SW Math/Sci. Collaborative, PA	543	7.4
Australia	540	4.4
Czech Republic	539	4.2
Project SMART Consortium, OH	539	8.4
England	538	4.8
Oregon	536	6.1
Belgium (Flemish)	535	3.1
Slovak Republic	535	3.3
Guilford County, NC	534	7.1
Indiana	534	7.0
Canada	533	2.1
Massachusetts	533	7.4
Slovenia	533	3.2
Montgomery County, MD	531	4.3
Hong Kong, SAR	530	3.7
Connecticut	529	10.4
Pennsylvania	529	6.5
Russian Federation	529	6.4
Idaho	526	6.6
Missouri	523	6.5
Illinois	**521**	**6.5**
Bulgaria	518	5.4
United States	515	4.6
Fremont/Lincoln/WestSide PS, NE	511	5.8
South Carolina	511	6.7
New Zealand	510	4.9
Texas	509	10.4
North Carolina	508	6.5
Maryland	506	7.7
Latvia (LSS)	503	4.8
Delaware Science Coalition, DE	500	8.4

Scores Significantly Lower Than the State of Illinois	Average	se
Italy	493	3.9
Lithuania	488	4.1
Romania	472	5.8
Cyprus	460	2.4
Rochester City Sch. Dist., NY	452	7.4
Chicago Public Schools, IL	449	9.5
Iran, Islamic Rep.	448	3.8
Jersey City Public Schools, NJ	440	9.8
Miami-Dade County PS, FL	426	10.9

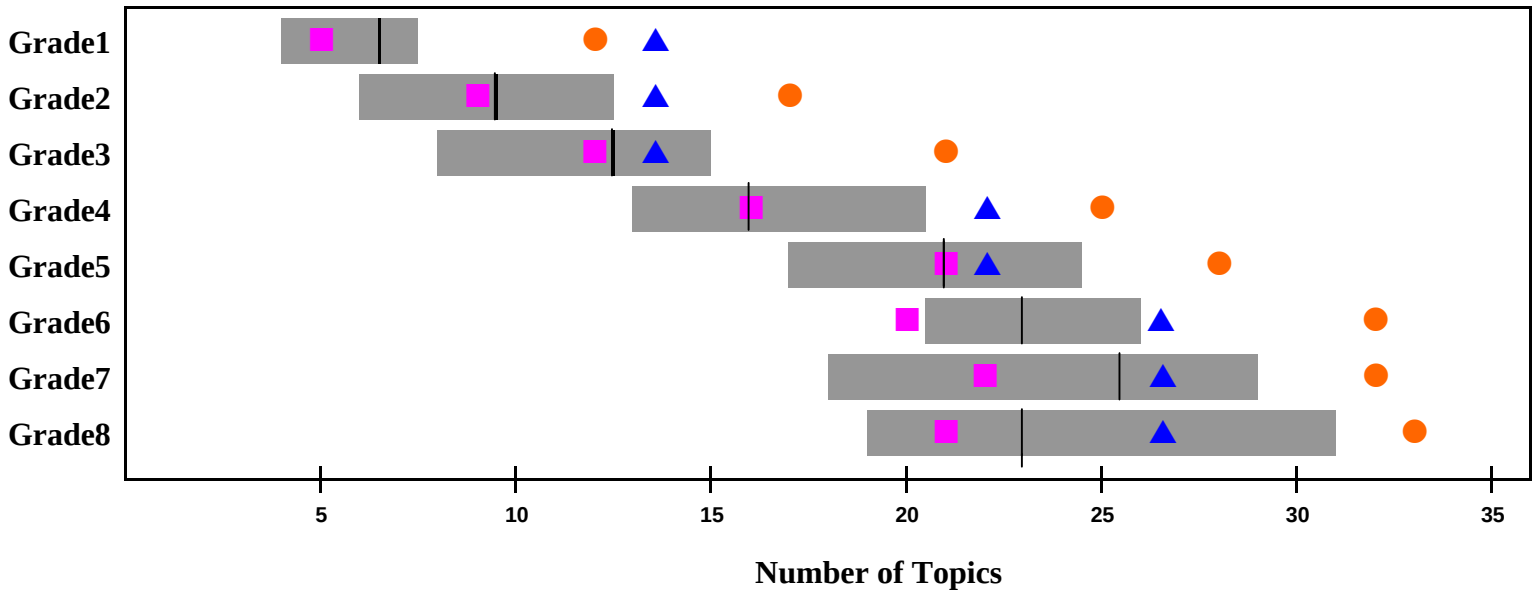
International Average of 23* Countries	521	0.9

SOURCE: TIMSS International Center(2001). Mathematics Benchmarking Report: TIMSS 1999-Eighth Grade and Science Benchmarking Report: TIMSS 1999-Eighth Grade .

Display 2: Number of mathematics topics intended.

The bars extend from the 25th percentile to the 75th percentile among TIMSS countries. The black line indicates the median number of topics intended at each grade. The U.S., the State of Illinois, and the composite for the Top Achieving TIMSS Countries are marked individually.

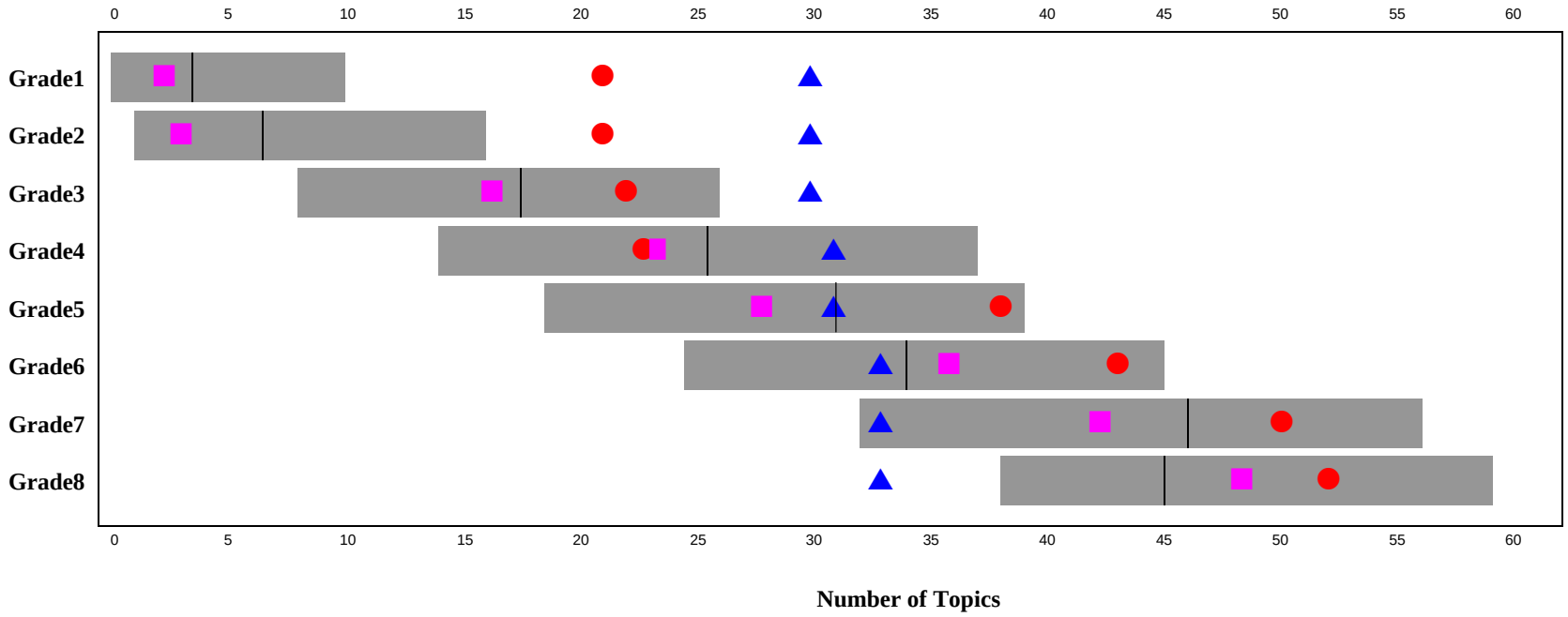
● = U.S.
▲ = State of Illinois
■ = Top Achieving Countries' Composite



Display 3: Number of science topics intended.

The bars extend from the 25th percentile to the 75th percentile among TIMSS countries. The black line indicates the median number of topics intended at each grade. The U.S., the State of Illinois, and the composite for the Top Achieving TIMSS Countries are marked individually.

● = U.S.
▲ = State of Illinois
■ =Top Achieving Countries' Composite



Display 4: Mathematics Topics Intended at Each Grade by Top Achieving Countries

	Grade							
Topic	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Whole Number: Meaning	j	j	j	f	f			
Whole Number: Operations	j	j	j	j	f			
Measurement Units	**d**	j	j	j	j	j	f	
Common Fractions			**d**	j	j	f		
Equations & Formulas			**d**	f	f	f	j	j
Data Representation & Analysis			**d**	**d**	f	f		**d**
2-D Geometry: Basics			**d**	f	f	f	j	j
2-D Geometry: Polygons & Circles				f	f	f	j	j
Measurement: Perimeter, Area & Volume				f	f	f	f	**d**
Rounding & Significant Figures				f	f			
Estimating Computations				f	f	f		
Whole Numbers: Properties of Operations				**d**	f			
Estimating Quantity & Size				**d**	**d**			
Decimal Fractions				f	j	f		
Relation of Common & Decimal Fractions				f	j	f		
Properties of Common & Decimal Fractions					f	f		
Percentages					f	f		
Proportionality Concepts					f	f	f	**d**
Proportionality Problems					f	f	j	j
2-D Geometry: Coordinate Geometry					**d**	**d**	f	f
Geometry: Transformations						f	f	f
Negative Numbers, Integers, & Their Properties						**d**	f	
Number Theory							f	**d**
Exponents, Roots & Radicals							f	f
Exponents & Orders of Magnitude							**d**	**d**
Measurement: Estimation & Errors							**d**	
Constructions using Straightedge & Compass							j	**d**
3-D Geometry							f	j
Geometry: Congruence & Similarity								j
Rational Numbers & Their Properties								**d**
Patterns, Relations & Functions								**d**
Proportionality: Slope & Trigonometry								**d**

Intended by 4 out of the 6 top Achieving Countries **d**

Intended by *all but one* of the A+ countries (5 out of 6). f

Intended by *all* of the A+ countries. j

Display 5: Mathematics Topics Intended at Each Grade in the State of Illinois Content Standards prior to 2001

	Grade							
Topic	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Whole Number: Meaning	j	j	j			j	j	j
Whole Number: Operations	j	j	j	j	j	j	j	j
Measurement Units	j	j	j	j	j	j	j	j
Common Fractions				j	j	j	j	j
Equations & Formulas	j	j	j	j	j	j	j	j
Data Representation & Analysis	j	j	j	j	j	j	j	j
2-D Geometry: Basics				j	j			
2-D Geometry: Polygons & Circles	j	j	j	j	j	j	j	j
Measurement: Perimeter, Area & Volume						j	j	j
Rounding & Significant Figures								
Estimating Computations								
Whole Numbers: Properties of Operations	j	j	j	j	j	j	j	j
Estimating Quantity & Size								
Decimal Fractions				j	j	j	j	j
Relation of Common & Decimal Fractions						j	j	j
Properties of Common & Decimal Fractions				j	j	j	j	j
Percentages						j	j	j
Proportionality Concepts				j	j			
Proportionality Problems				j	j	j	j	j
2-D Geometry: Coordinate Geometry								
Geometry: Transformations	j	j	j	j	j	j	j	j
Negative Numbers, Integers, & Their Properties				j	j	j	j	j
Number Theory						j	j	j
Exponents, Roots & Radicals						j	j	j
Exponents & Orders of Magnitude								
Measurement: Estimation & Errors	j	j	j	j	j	j	j	j
Constructions using Straightedge & Compass								
3-D Geometry	j	j	j	j	j	j	j	j
Geometry: Congruence & Similarity				j	j	j	j	j
Rational Numbers & Their Properties				j	j	j	j	j
Patterns, Relations & Functions	j	j	j	j	j	j	j	j
Proportionality: Slope & Trigonometry						j	j	j

Top Achieving Countries Topic Profile

Topic Intended j

Display 7: ScienceTopics Intended at Each Grade by Top Achieving Countries

Topic	GRADE							
	G1	G2	G3	G4	G5	G6	G7	G8
Organs, tissues			j	j	j	j	j	j
Physical properties of matter			j	j	j	j	j	j
Plants, fungi			j	j	j	j	j	f
Animal types			j	j	j	j	f	j
Classification of matter			f	f	f	f	j	j
Rocks, soil			f	f	f	f	j	j
Light			f				j	j
Electricity				f		f	j	j
Life cycles				j	j	j	j	j
Physical changes of matter				j	j	j	j	j
Heat & temperature				j	j	j	j	j
Bodies of water				f	f	f	j	j
Interdependence of life					f	j	f	f
Habitats & niches					f	f	f	f
Biomes & ecosystems					f	j	f	f
Reproduction					f			f
Time, space, motion					j	j	j	j
Types of forces					f	f	j	j
Weather & climate					f	f	j	j
Planets in the solar system					f	f	f	f
Magnetism						j	j	j
Earth's Composition						f	j	j
Organism energy handling						f	f	j
Land, water, sea resource conservation						f	f	j
Earth in the solar system						f	f	f
Atoms, ions, molecules							j	j
Chemical properties of matter							j	j
Chemical changes of matter							j	j
Physical cycles							f	j
Land forms							f	j
Material & energy resource conservation							f	j
Explanations of physical changes							f	f
Pollution							f	j
Atmosphere							f	f
Sound & vibration							f	f
Cells							f	f
Human nutrition							f	f
Building & breaking								j
Energy types, sources, conversions								j
Dynamics of motion								f
Organism sensing & responding								f

Intended by 3 out of 4 of the A+ countries. f

Intended by *all* of the A+ countries. j

Display 8: ScienceTopics Intended at Each Grade in the State of Illinois Content Standards prior to 2001

Topic	GRADE							
	G1	G2	G3	G4	G5	G6	G7	G8
Organs, tissues	j	j	j					
Physical properties of matter	j	j	j			j	j	j
Plants, fungi	j	j	j					
Animal types	j	j	j					
Classification of matter						j	j	j
Rocks, soil	j	j	j			j	j	j
Light				j	j			
Electricity				j	j			
Life cycles				j	j			
Physical changes of matter				j	j			
Heat & temperature				j	j			
Bodies of water	j	j	j			j	j	j
Interdependence of life	j	j	j	j	j	j	j	j
Habitats & niches	j	j	j	j	j	j	j	j
Biomes & ecosystems	j	j	j	j	j	j	j	j
Reproduction				j	j	j	j	j
Time, space, motion	j	j	j	j	j			
Types of forces	j	j	j	j	j	j	j	j
Weather & climate	j	j	j	j	j	j	j	j
Planets in the solar system				j	j	j	j	j
Magnetism				j	j			
Earth's Composition	j	j	j			j	j	j
Organism energy handling								
Land, water, sea resource conservation						j	j	j
Earth in the solar system	j	j	j	j	j	j	j	j
Atoms, ions, molecules						j	j	j
Chemical properties of matter						j	j	j
Chemical changes of matter								
Physical cycles				j	j	j	j	j
Land forms	j	j	j			j	j	j
Material & energy resource conservation	j	j	j	j	j	j	j	j
Explanations of physical changes				j	j			
Pollution								
Atmosphere	j	j	j			j	j	j
Sound & vibration				j	j			
Cells	j	j	j			j	j	j
Human nutrition								
Building & breaking	j	j	j	j	j	j	j	j
Energy types, sources, conversions	j	j	j	j	j	j	j	j
Dynamics of motion	j	j	j			j	j	j
Organism sensing & responding								

Top Achieving Countries Topic Profile

Topic Intended j

Display 10: Math Scores for Specific Content Areas Compared to the State of Illinois (average % correct in each area).

Whole Numbers		Common Fractions		Decimal Fractions & Percents		Relations of Fractions	
Hong Kong	72.6	Singapore	83.1	Singapore	78.6	Singapore	83.1
Singapore	71.3	Hong Kong	77.5	Hong Kong	76.2	Naperville, IL	78.0
Chinese Taipei	69.4	Chinese Taipei	75.0	Korea	74.8	Hong Kong	76.9
Japan	67.3	Korea	74.1	Naperville, IL	74.4	Korea	76.0
Korea	66.9	Japan	73.1	Chinese Taipei	74.1	FiW Consort., IL	75.4
Belgium (Fl)	66.0	Naperville, IL	69.3	Japan	73.9	Chinese Taipei	75.0
Naperville, IL	64.3	Belgium (Fl)	68.6	Slovak Republic	72.6	Japan	72.7
Malaysia	61.0	FiW Consort., IL	67.2	Hungary	71.7	Belgium (Fl)	69.5
Slovak Republic	60.7	Malaysia	62.9	FiW Consort., IL	69.8	Montgomery Cnty, MD	67.0
Academy SD, CO	60.3	Netherlands	61.8	Russian Federation	69.6	MI Inv. Group, MI	66.0
Texas	59.5	Academy SD, CO	61.3	Belgium (Fl)	68.5	Texas	65.8
FiW Consort., IL	59.4	Montgomery Cnty, MD	61.0	Malaysia	67.7	Canada	65.7
Hungary	59.2	Hungary	60.8	Montgomery Cnty, MD	66.9	Academy SD, CO	65.6
SW M/S Coll., PA	58.9	Slovenia	60.4	Texas	66.8	Michigan	65.6
Montgomery Cnty, MD	58.6	Canada	58.4	Czech Republic	66.7	Oregon	64.8
Canada	58.1	MI Inv. Group, MI	58.2	Netherlands	66.5	SW M/S Coll., PA	63.3
Slovenia	58.0	Finland	58.1	Slovenia	65.7	Netherlands	63.2
Russian Federation	57.9	Slovak Republic	57.5	Indiana	65.4	SMART Constm., OH	63.0
Indiana	57.7	SMART Constm., OH	56.6	Canada	65.0	Indiana	62.8
Oregon	57.4	Russian Federation	56.2	Academy SD, CO	64.9	Australia	62.4
Australia	57.2	Texas	55.8	Finland	63.8	Pennsylvania	62.0
Finland	57.2	Indiana	55.5	SW M/S Coll., PA	63.2	Slovenia	61.3
Guilford Cnty, NC	56.8	SW M/S Coll., PA	55.4	Michigan	62.7	Illinois	61.2
MI Inv. Group, MI	56.2	Bulgaria	55.3	SMART Constm., OH	62.6	Idaho	60.8
Czech Republic	55.9	Australia	55.1	Illinois	62.5	United States	60.0
Illinois	55.8	Michigan	55.0	South Carolina	62.5	Malaysia	59.3
SMART Constm., OH	55.8	Oregon	54.9	Pennsylvania	61.7	Russian Federation	59.2
South Carolina	54.2	Pennsylvania	54.3	MI Inv. Group, MI	61.3	South Carolina	58.8
Lithuania	53.8	Illinois	54.0	Lithuania	61.1	Hungary	58.2
Pennsylvania	53.8	Guilford Cnty, NC	52.6	Oregon	61.1	Finland	57.8
Netherlands	53.3	Czech Republic	52.5	Latvia (LSS)	60.6	Slovak Republic	57.8
United States	53.3	United States	52.2	United States	60.5	Guilford Cnty, NC	57.4
Michigan	53.2	Latvia (LSS)	52.0	Idaho	60.2	Bulgaria	57.2
Latvia (LSS)	52.2	Cyprus	51.8	Australia	59.6	Missouri	55.5
Bulgaria	51.8	South Carolina	51.6	Bulgaria	58.0	Czech Republic	53.6
Jersey City PS, NJ	51.8	Idaho	51.0	Guilford Cnty, NC	57.7	DE Sci. Coal., DE	53.2
Romania	51.0	Italy	49.2	Moldova	56.9	New Zealand	52.1
Idaho	50.6	Missouri	47.9	Missouri	56.7	Israel	51.9
Missouri	50.1	Israel	47.7	DE Sci. Coal., DE	54.3	Latvia (LSS)	51.9
Moldova	49.3	New Zealand	47.3	Chicago PS, IL	53.6	Chicago PS, IL	51.9
Italy	49.2	England	47.3	Italy	53.3	Moldova	51.8
DE Sci. Coal., DE	48.6	DE Sci. Coal., DE	46.2	New Zealand	52.1	England	51.6
Chicago PS, IL	48.5	Romania	46.1	Romania	52.1	Cyprus	51.3
Turkey	47.5	Moldova	45.1	England	52.1	Thailand	51.1
Tunisia	47.3	Lithuania	45.0	Jersey City PS, NJ	50.6	Lithuania	50.3
Israel	46.9	Thailand	44.4	Thailand	50.2	Romania	49.6
New Zealand	46.4	Jersey City	44.4	Rochester City, NY	48.3	Jersey City PS, NJ	49.4
Macedonia	46.3	Chicago PS, IL	42.8	Israel	47.3	Italy	48.9
Cyprus	45.6	Rochester City SD, NY	38.6	Miami-Dade, FL	46.9	Tunisia	46.6
Miami-Dade, FL	44.6	Turkey	38.5	Macedonia	46.2	Iran	44.5
Iran	44.2	Iran	38.2	Cyprus	45.8	Jordon	44.0
Rochester City, NY	44.1	Macedonia	37.4	Tunisia	44.3	Rochester City, NY	43.0
England	43.2	Jordon	37.2	Turkey	42.7	Miami-Dade, FL	42.9
Jordon	42.8	Tunisia	37.0	Jordon	42.3	Philippines	42.0
Thailand	42.6	Miami-Dade, FL	34.7	Chile	40.9	Macedonia	40.9
Chile	39.8	Indonesia	34.5	Indonesia	40.1	Turkey	39.4
Indonesia	36.9	Chile	29.3	Iran	38.3	Indonesia	37.3
Philippines	34.4	Philippines	25.4	Philippines	34.8	Chile	34.3
Morocco	31.7	Morocco	19.4	Morocco	34.0	Morocco	32.9
South Africa	30.2	South Africa	18.1	South Africa	25.4	South Africa	25.8

Scores Significantly Higher
Scores Not Significantly Different
Scores Significantly Lower

Display 10: Math Scores for Specific Content Areas Compared to the State of Illinois (average % correct in each area).

Estimating Quantity & Size		Rounding		Estimating Computations		Measurement Units	
Singapore	76.5	Naperville, IL	91.1	Singapore	82.6	Singapore	77.4
Naperville, IL	71.0	Czech Republic	85.9	Chinese Taipei	72.2	Japan	76.1
Japan	70.8	Slovak Republic	85.8	Korea	72.1	Belgium (Fl)	74.7
Belgium (Fl)	69.8	FiW Consort., IL	85.1	Japan	71.9	Korea	71.7
FiW Consort., IL	68.6	Academy SD, CO	83.8	Naperville, IL	69.8	Hong Kong	71.6
Netherlands	68.3	Hungary	82.8	FiW Consort., IL	68.0	Naperville, IL	71.6
Hong Kong	65.7	Canada	82.7	Hong Kong	66.2	Chinese Taipei	71.0
Chinese Taipei	65.4	Singapore	82.6	Belgium (Fl)	66.0	Slovak Republic	70.2
Academy SD, CO	65.3	SMART Constm., OH	82.4	Academy SD, CO	63.0	Hungary	69.5
MI Inv. Group, MI	64.0	Korea	82.1	Hungary	62.8	Netherlands	69.2
England	63.9	Indiana	81.7	Slovak Republic	62.5	Finland	68.1
Canada	63.8	Montgomery Cnty, MD	81.6	Australia	61.5	Slovenia	67.5
Hungary	63.7	MI Inv. Group, MI	81.6	Montgomery Cnty, MD	61.4	Czech Republic	67.0
Finland	63.6	SW M/S Coll., PA	81.1	Malaysia	61.2	Australia	66.5
Australia	63.5	Finland	80.8	Czech Republic	60.4	FiW Consort., IL	66.4
Slovenia	63.4	Illinois	80.1	Slovenia	59.8	Canada	64.7
Malaysia	63.1	Michigan	79.7	Canada	59.5	Russian Federation	62.9
Korea	61.9	Pennsylvania	79.6	MI Inv. Group, MI	59.5	Montgomery Cnty, MD	62.3
Montgomery Cnty, MD	61.3	Belgium (Fl)	78.9	Finland	58.9	Malaysia	62.1
SMART Constm., OH	61.1	Texas	78.8	Netherlands	58.1	MI Inv. Group, MI	61.8
Slovak Republic	61.0	Oregon	78.7	Michigan	58.1	Academy SD, CO	61.2
SW M/S Coll., PA	61.0	Netherlands	77.9	SW M/S Coll., PA	57.4	England	61.0
Russian Federation	60.8	Missouri	77.5	SMART Constm., OH	57.0	SMART Constm., OH	59.9
Indiana	60.8	Australia	77.1	Texas	56.9	Bulgaria	59.6
Oregon	59.9	United States	77.0	Guilford Cnty, NC	56.8	Latvia (LSS)	59.3
New Zealand	59.3	Idaho	76.8	Oregon	56.7	New Zealand	59.1
Bulgaria	59.2	Russian Federation	76.7	Indiana	56.6	Lithuania	58.1
Latvia (LSS)	59.1	Guilford Cnty, NC	76.3	Russian Federation	56.4	SW M/S Coll., PA	57.7
Michigan	59.0	Japan	75.2	Illinois	56.3	Oregon	57.6
Czech Republic	58.8	South Carolina	74.3	Bulgaria	55.8	Michigan	57.4
Pennsylvania	58.7	Chinese Taipei	74.0	South Carolina	54.3	Indiana	56.9
Guilford Cnty, NC	58.2	Lithuania	73.9	Pennsylvania	54.1	Italy	56.6
Texas	57.9	Hong Kong	73.6	United States	53.3	Pennsylvania	56.1
Idaho	57.5	DE Sci. Coal., DE	73.3	Idaho	52.6	Illinois	55.8
Illinois	57.5	Chicago PS, IL	72.1	England	51.9	Texas	54.8
United States	56.1	Slovenia	71.4	New Zealand	50.5	Idaho	54.7
Missouri	56.1	England	71.4	Lithuania	49.6	Guilford Cnty, NC	54.6
South Carolina	55.0	New Zealand	70.8	DE Sci. Coal., DE	49.2	Romania	54.5
Italy	54.3	Thailand	69.5	Cyprus	49.0	Cyprus	54.4
Lithuania	52.8	Jersey City PS, NJ	69.5	Missouri	49.0	South Carolina	54.0
DE Sci. Coal., DE	51.8	Malaysia	69.2	Latvia (LSS)	48.8	United States	53.8
Tunisia	51.6	Bulgaria	65.1	Jersey City PS, NJ	48.1	Missouri	52.4
Moldova	50.7	Latvia (LSS)	63.7	Chicago PS, IL	47.7	Israel	51.5
Jersey City PS, NJ	50.2	Rochester City, NY	62.4	Moldova	46.4	Moldova	50.5
Israel	49.4	Miami-Dade, FL	60.7	Romania	46.0	DE Sci. Coal., DE	50.4
Thailand	49.1	Israel	58.2	Israel	43.6	Tunisia	49.8
Cyprus	48.3	Cyprus	57.9	Italy	43.3	Macedonia	48.4
Chicago PS, IL	47.1	Moldova	57.3	Thailand	43.1	Thailand	47.5
Rochester City, NY	47.0	Italy	57.1	Macedonia	41.7	Jersey City PS, NJ	45.6
Romania	46.5	Macedonia	51.8	Rochester City, NY	40.1	Chicago PS, IL	45.1
Jordon	41.3	Romania	51.6	Turkey	39.5	Chile	42.7
Miami-Dade, FL	41.2	Jordon	49.6	Miami-Dade, FL	38.7	Jordon	42.3
Macedonia	41.1	Turkey	46.5	Jordon	35.8	Miami-Dade, FL	39.9
Turkey	39.3	Indonesia	45.2	Tunisia	34.9	Rochester City, NY	39.2
Indonesia	37.8	Chile	41.7	Indonesia	34.1	Iran	38.7
Chile	36.3	Philippines	37.9	Iran	34.1	Turkey	38.2
Iran	34.1	Tunisia	36.7	Chile	29.9	Indonesia	32.8
Philippines	29.6	Iran	36.2	Philippines	26.7	Philippines	29.1
Morocco	29.2	South Africa	29.2	South Africa	20.1	Morocco	29.0
South Africa	23.8	Morocco	28.0	Morocco	15.8	South Africa	27.0

Scores Significantly Higher
Scores Not Significantly Different
Scores Significantly Lower

Display 10: Math Scores for Specific Content Areas Compared to the State of Illinois (average % correct in each area).

Perimeter, Area, & Volume		Measurement Estimations & Errors		2-D Geometry		Polygons & Circles	
Singapore	75.4	Czech Republic	83.0	Korea	73.6	Japan	75.5
Hong Kong	72.4	Belgium (Fl)	82.8	Japan	73.5	Korea	68.0
Japan	67.3	Finland	81.6	Hong Kong	72.0	Singapore	67.5
Chinese Taipei	66.6	Hungary	81.5	Singapore	71.2	Chinese Taipei	67.1
Korea	65.7	Netherlands	80.1	Chinese Taipei	70.0	Belgium (Fl)	66.0
Belgium (Fl)	55.1	Russian Federation	77.5	Naperville, IL	64.1	Hong Kong	60.3
Slovak Republic	52.8	Korea	76.7	Belgium (Fl)	61.5	Russian Federation	56.4
FiW Consort., IL	52.4	Naperville, IL	76.7	FiW Consort., IL	61.0	Bulgaria	55.3
Malaysia	52.2	Slovak Republic	74.7	Slovak Republic	60.5	Tunisia	54.3
Naperville, IL	52.2	FiW Consort., IL	74.5	Russian Federation	59.4	Naperville, IL	53.8
Slovenia	51.2	Hong Kong	71.8	Netherlands	57.9	Slovak Republic	53.2
Netherlands	49.4	Singapore	70.8	Hungary	57.4	Hungary	50.6
Italy	48.6	Latvia (LSS)	69.9	Finland	56.8	Slovenia	50.6
Australia	48.1	Australia	69.0	Australia	55.9	Romania	49.3
Bulgaria	47.8	Slovenia	68.2	Canada	55.8	Australia	48.5
Hungary	47.7	MI Inv. Group, MI	63.9	Slovenia	54.8	Malaysia	47.4
Canada	47.5	Chinese Taipei	63.8	Malaysia	54.6	Montgomery Cnty, MD	46.4
Russian Federation	47.3	Academy SD, CO	62.3	Bulgaria	53.5	Latvia (LSS)	45.1
Czech Republic	46.4	England	61.9	Montgomery Cnty, MD	53.2	England	44.4
Montgomery Cnty, MD	46.3	Canada	61.7	MI Inv. Group, MI	52.7	Finland	43.8
Latvia (LSS)	42.5	Montgomery Cnty, MD	60.9	Latvia (LSS)	52.1	Italy	42.8
Romania	42.4	New Zealand	60.3	Czech Republic	51.2	Moldova	42.7
Oregon	42.3	Oregon	60.2	SW M/S Coll., PA	51.0	Canada	42.5
Academy SD, CO	41.9	Michigan	59.8	Academy SD, CO	50.7	Cyprus	42.2
Cyprus	41.8	SMART Constm., OH	59.7	Michigan	50.6	FiW Consort., IL	41.2
Finland	40.9	SW M/S Coll., PA	58.5	New Zealand	50.1	Lithuania	41.0
MI Inv. Group, MI	40.3	Italy	57.7	SMART Constm., OH	49.5	Thailand	40.5
Moldova	39.3	Indiana	56.9	Oregon	49.0	Czech Republic	39.7
England	38.7	Pennsylvania	56.0	England	48.6	Jordon	38.8
Texas	38.0	Illinois	55.6	South Carolina	48.6	Macedonia	38.3
Michigan	37.1	Guilford Cnty, NC	53.4	Guilford Cnty, NC	48.4	Israel	37.9
New Zealand	37.0	Idaho	53.3	Lithuania	47.8	New Zealand	37.7
SMART Constm., OH	36.9	Texas	52.9	Illinois	47.4	Netherlands	37.4
Tunisia	36.5	Bulgaria	52.7	Moldova	46.9	Iran	36.6
SW M/S Coll., PA	36.3	United States	52.3	Texas	46.6	Guilford Cnty, NC	35.7
Illinois	36.2	Romania	51.8	Romania	46.2	SMART Constm., OH	35.1
Guilford Cnty, NC	36.0	Missouri	51.6	Italy	45.3	SW M/S Coll., PA	34.9
Lithuania	35.4	South Carolina	50.3	Thailand	45.3	Michigan	33.7
Indiana	34.6	Israel	49.8	Pennsylvania	45.3	Academy SD, CO	33.3
Pennsylvania	34.6	Japan	49.7	United States	45.0	MI Inv. Group, MI	33.3
United States	34.5	Moldova	48.9	Indiana	44.1	Pennsylvania	32.7
Idaho	33.6	Malaysia	48.1	Idaho	43.0	Illinois	32.6
South Carolina	33.3	Macedonia	48.0	Macedonia	42.6	Turkey	32.2
Macedonia	32.9	DE Sci. Coal., DE	46.7	DE Sci. Coal., DE	42.2	Oregon	32.1
Israel	31.7	Jersey City PS, NJ	42.7	Cyprus	41.9	South Carolina	31.9
Thailand	31.1	Thailand	41.2	Israel	41.8	Texas	30.3
DE Sci. Coal., DE	28.7	Chicago PS, IL	37.2	Tunisia	41.7	United States	29.5
Missouri	28.0	Jordon	37.0	Jersey City PS, NJ	41.0	Chile	29.1
Turkey	27.4	Lithuania	36.8	Missouri	40.7	Missouri	28.4
Jordon	27.0	Turkey	35.9	Chicago PS, IL	39.8	DE Sci. Coal., DE	28.2
Iran	26.5	Indonesia	33.6	Iran	39.4	Indiana	27.5
Jersey City PS, NJ	25.5	Chile	33.5	Indonesia	37.5	Idaho	26.9
Chicago PS, IL	24.3	Rochester City, NY	32.3	Jordon	36.5	Jersey City PS, NJ	26.8
Indonesia	23.4	Cyprus	29.5	Miami-Dade, FL	34.2	Morocco	26.0
Rochester City, NY	21.6	Miami-Dade, FL	28.8	Rochester City, NY	33.9	Indonesia	25.2
Miami-Dade, FL	20.3	Tunisia	23.4	Turkey	33.1	Rochester City, NY	23.8
Chile	18.4	Philippines	21.5	Chile	31.4	Miami-Dade, FL	23.2
Morocco	17.9	South Africa	19.9	Morocco	27.0	Chicago PS, IL	21.4
Philippines	11.6	Iran	18.3	Philippines	23.9	Philippines	20.1
South Africa	10.1	Morocco	16.3	South Africa	19.9	South Africa	17.8

Scores Significantly Higher
Scores Not Significantly Different
Scores Significantly Lower

Display 10: Math Scores for Specific Content Areas Compared to the State of Illinois (average % correct in each area).

3-D Geometry & Transformations		Congruence & Similarity		Proportionality Concepts		Proportionality Problems	
Japan	78.4	Korea	79.5	Singapore	57.4	Singapore	78.9
Hong Kong	75.2	Japan	78.8	Hong Kong	54.6	Chinese Taipei	71.9
Korea	74.8	Singapore	74.7	Chinese Taipei	52.9	Hong Kong	70.3
Chinese Taipei	73.9	Chinese Taipei	71.6	Japan	51.1	Korea	69.2
Singapore	71.8	Hong Kong	70.4	Korea	48.3	Japan	67.9
Naperville, IL	65.5	Naperville, IL	64.0	Bulgaria	40.4	Naperville, IL	64.8
FiW Consort., IL	65.3	Belgium (Fl)	63.8	Russian Federation	37.9	Belgium (Fl)	63.0
Netherlands	65.0	Russian Federation	63.1	Hungary	33.4	Malaysia	62.2
Belgium (Fl)	64.4	Bulgaria	62.8	FiW Consort., IL	33.4	Netherlands	62.0
Canada	62.3	Slovak Republic	61.0	Slovenia	31.5	FiW Consort., IL	61.8
Slovak Republic	61.4	Latvia (LSS)	58.8	Naperville, IL	30.9	Hungary	58.0
Academy SD, CO	60.8	Czech Republic	57.2	Belgium (Fl)	30.8	Slovak Republic	57.8
Czech Republic	60.5	FiW Consort., IL	56.8	Slovak Republic	30.2	Montgomery Cnty, MD	57.3
Hungary	60.5	Romania	54.7	Latvia (LSS)	29.8	Canada	56.9
MI Inv. Group, MI	60.5	Lithuania	54.4	Malaysia	29.5	Slovenia	56.5
Australia	60.3	Canada	54.3	Montgomery Cnty, MD	28.0	Russian Federation	56.4
Slovenia	59.3	Netherlands	54.3	Czech Republic	27.2	Texas	55.8
Montgomery Cnty, MD	58.3	Montgomery Cnty, MD	54.2	SW M/S Coll., PA	27.2	Academy SD, CO	55.2
Bulgaria	58.2	Academy SD, CO	54.1	Romania	27.1	Czech Republic	55.0
Oregon	56.9	Slovenia	53.5	Australia	26.4	SMART Constm., OH	54.4
New Zealand	56.1	Cyprus	53.0	Canada	26.0	SW M/S Coll., PA	54.4
Malaysia	55.9	Australia	52.2	Moldova	25.9	Australia	54.3
Finland	55.6	Thailand	51.8	Finland	25.3	MI Inv. Group, MI	54.1
Russian Federation	55.4	Moldova	51.7	Netherlands	25.2	Guilford Cnty, NC	53.4
England	55.1	Texas	51.4	Italy	24.7	Indiana	53.1
Latvia (LSS)	54.7	Hungary	51.2	Guilford Cnty, NC	24.6	Michigan	52.8
Michigan	54.7	Malaysia	51.0	SMART Constm., OH	24.0	Bulgaria	52.7
Guilford Cnty, NC	53.2	Guilford Cnty, NC	50.9	Oregon	23.5	Pennsylvania	52.1
Texas	52.8	Tunisia	50.7	Lithuania	23.4	Oregon	52.0
Indiana	52.5	Illinois	50.1	Indiana	22.4	Finland	51.8
SMART Constm., OH	52.4	Finland	49.8	Pennsylvania	22.2	Illinois	51.3
SW M/S Coll., PA	52.4	Oregon	48.9	Academy SD, CO	22.1	South Carolina	51.1
Illinois	50.9	Italy	48.7	Texas	21.4	Latvia (LSS)	50.9
United States	49.7	MI Inv. Group, MI	47.9	Michigan	21.1	United States	50.6
Italy	49.6	SW M/S Coll., PA	47.4	Israel	21.0	Idaho	49.0
South Carolina	49.5	Michigan	47.2	United States	20.8	New Zealand	48.7
Lithuania	49.1	SMART Constm., OH	46.6	England	20.7	Thailand	48.5
Pennsylvania	49.1	Macedonia	46.2	MI Inv. Group, MI	20.2	Lithuania	47.9
Idaho	48.8	South Carolina	46.2	South Carolina	19.8	Italy	47.7
Moldova	47.3	United States	45.7	Macedonia	19.6	England	47.6
Missouri	46.5	Israel	45.0	DE Sci. Coal., DE	19.6	Romania	47.5
DE Sci. Coal., DE	46.1	Jordon	44.9	New Zealand	19.1	Missouri	47.5
Israel	45.6	Indiana	44.8	Idaho	18.4	Cyprus	47.3
Romania	44.4	Pennsylvania	44.6	Illinois	18.2	Moldova	46.6
Jersey City PS, NJ	44.3	England	43.9	Cyprus	17.1	DE Sci. Coal., DE	46.1
Cyprus	43.1	Iran	43.8	Thailand	17.0	Jersey City PS, NJ	45.7
Macedonia	41.0	Idaho	43.3	Jersey City PS, NJ	16.1	Tunisia	43.1
Thailand	40.8	Jersey City PS, NJ	43.0	Missouri	14.8	Israel	42.6
Chicago PS, IL	37.7	New Zealand	42.9	Tunisia	12.9	Chicago PS, IL	42.5
Indonesia	35.8	DE Sci. Coal., DE	42.2	Rochester City, NY	12.6	Macedonia	41.4
Miami-Dade, FL	34.3	Chicago PS, IL	42.1	Turkey	10.4	Iran	40.3
Rochester City, NY	33.5	Missouri	41.8	Chicago PS, IL	9.7	Turkey	39.8
Tunisia	33.3	Indonesia	38.9	Jordon	8.7	Rochester City, NY	39.5
Jordon	32.0	Turkey	38.4	Indonesia	8.3	Indonesia	39.4
Turkey	30.4	Rochester City, NY	37.6	Iran	8.2	Jordon	39.4
Iran	30.3	Morocco	37.0	Miami-Dade, FL	8.2	Miami-Dade, FL	39.2
Chile	30.1	Miami-Dade, FL	36.8	Chile	6.4	Chile	32.7
Philippines	21.8	Chile	33.2	Morocco	5.7	Philippines	29.2
Morocco	19.7	Philippines	29.3	South Africa	1.7	Morocco	26.3
South Africa	14.3	South Africa	24.4	Philippines	1.6	South Africa	25.3

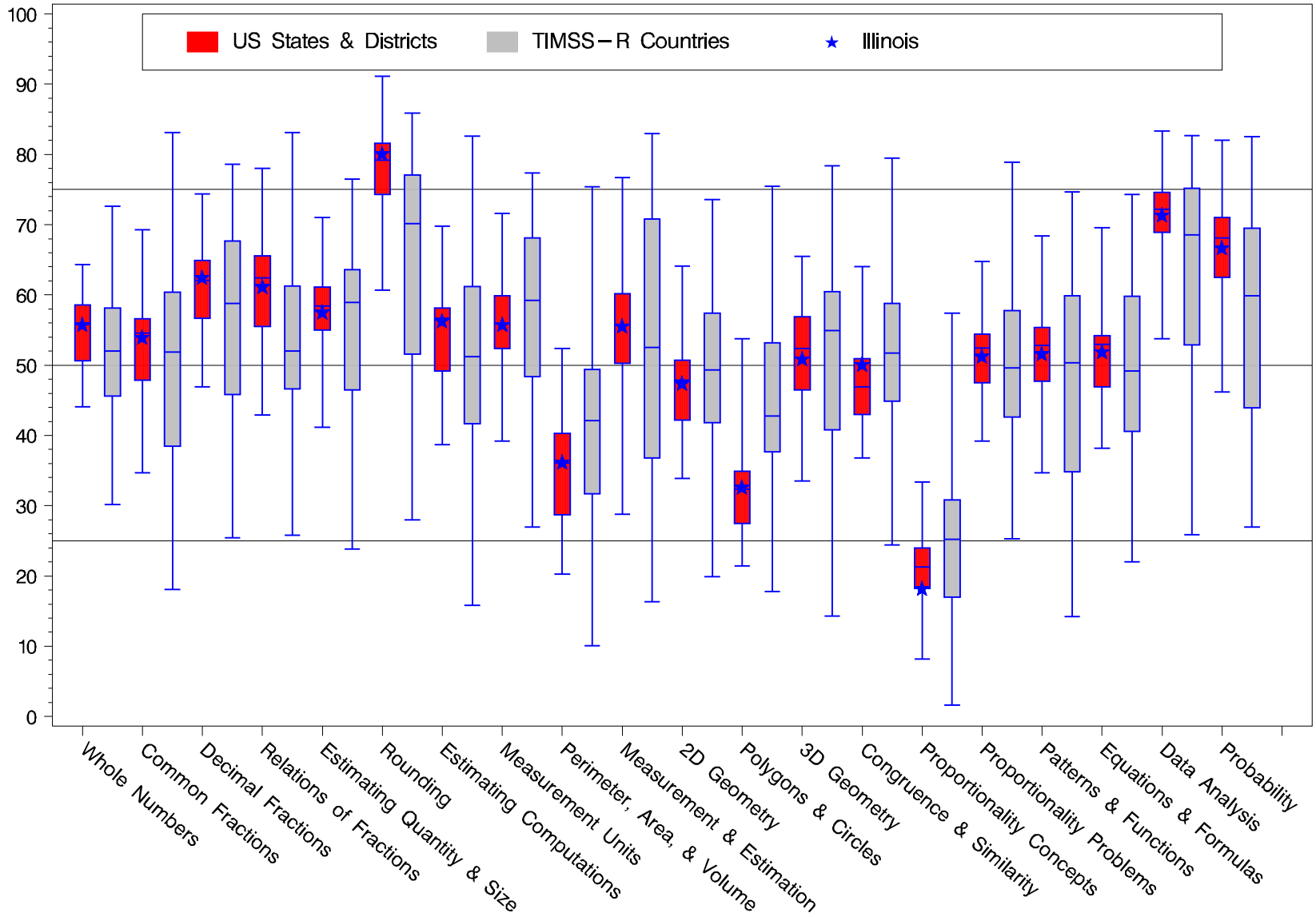
Scores Significantly Higher
Scores Not Significantly Different
Scores Significantly Lower

Display 10: Math Scores for Specific Content Areas Compared to the State of Illinois (average % correct in each area).

Patterns, Relations, & Functions		Equations & Formulas		Data Representation & Analysis		Uncertainty & Probability	
Korea	74.7	Singapore	74.3	Naperville, IL	83.3	Korea	82.5
Japan	74.2	Chinese Taipei	72.8	Japan	82.7	Naperville, IL	82.0
Hong Kong	73.0	Hong Kong	72.4	Korea	81.5	Chinese Taipei	81.7
Chinese Taipei	72.3	Korea	72.3	FiW Consort., IL	80.8	Belgium (Fl)	79.4
Singapore	71.5	Naperville, IL	69.6	Singapore	79.9	FiW Consort., IL	77.9
FiW Consort., IL	68.4	Japan	68.8	Belgium (Fl)	79.0	Hong Kong	76.7
Naperville, IL	63.9	FiW Consort., IL	67.1	Netherlands	78.6	Netherlands	76.0
Hungary	62.7	Hungary	65.4	Hong Kong	78.5	Japan	75.5
Belgium (Fl)	61.4	Russian Federation	64.7	MI Inv. Group, MI	78.1	Singapore	75.0
Montgomery Cnty, MD	60.9	Belgium (Fl)	62.3	Chinese Taipei	78.0	Montgomery Cnty, MD	74.7
Academy SD, CO	60.8	Academy SD, CO	61.8	Finland	77.8	MI Inv. Group, MI	74.2
Australia	60.5	Slovak Republic	61.2	Montgomery Cnty, MD	77.6	Canada	72.3
Netherlands	60.0	Montgomery Cnty, MD	60.7	Academy SD, CO	76.2	SMART Constm., OH	71.5
Slovak Republic	59.9	Slovenia	59.8	Australia	75.4	Academy SD, CO	71.0
Canada	59.2	Bulgaria	57.8	Canada	75.2	SW M/S Coll., PA	70.8
MI Inv. Group, MI	59.2	MI Inv. Group, MI	56.3	Indiana	74.6	Oregon	70.4
Slovenia	57.9	Czech Republic	56.2	Slovenia	74.2	Texas	70.4
Czech Republic	57.6	Latvia (LSS)	54.4	SMART Constm., OH	74.2	Australia	69.9
Russian Federation	56.6	Guilford Cnty, NC	54.2	Michigan	74.1	Guilford Cnty, NC	69.8
Bulgaria	56.3	SW M/S Coll., PA	54.2	Slovak Republic	73.5	Finland	69.5
Oregon	55.4	Michigan	53.9	Hungary	73.4	Indiana	68.4
Guilford Cnty, NC	54.5	Indiana	53.5	Oregon	73.2	Hungary	68.0
SW M/S Coll., PA	54.5	Canada	53.3	England	72.7	Michigan	67.9
SMART Constm., OH	54.0	Texas	53.3	SW M/S Coll., PA	72.7	Pennsylvania	67.5
Indiana	53.5	Oregon	53.1	Guilford Cnty, NC	72.2	Illinois	66.7
Michigan	53.4	Romania	52.9	Texas	72.2	Slovenia	66.2
England	52.9	SMART Constm., OH	52.9	Pennsylvania	72.0	United States	65.3
New Zealand	52.6	Pennsylvania	52.6	Czech Republic	71.4	England	65.2
Texas	52.3	South Carolina	52.5	Illinois	71.4	Idaho	64.8
South Carolina	51.7	Australia	52.4	Missouri	70.2	South Carolina	64.1
Illinois	51.6	Illinois	51.9	New Zealand	69.5	Slovak Republic	63.5
Malaysia	51.3	Netherlands	51.3	Idaho	69.5	Missouri	62.5
Pennsylvania	51.1	United States	51.0	United States	69.4	New Zealand	62.3
Finland	50.8	Israel	49.2	Lithuania	69.2	DE Sci. Coal., DE	62.3
United States	49.9	Malaysia	49.1	South Carolina	68.9	Czech Republic	62.1
Latvia (LSS)	49.1	Lithuania	49.0	Russian Federation	68.6	Italy	62.1
Jersey City PS, NJ	48.2	Idaho	48.2	Latvia (LSS)	68.5	Cyprus	60.8
Italy	48.0	Cyprus	47.6	DE Sci. Coal., DE	65.7	Bulgaria	59.0
DE Sci. Coal., DE	47.7	Moldova	46.9	Thailand	65.6	Jersey City PS, NJ	58.6
Idaho	47.6	DE Sci. Coal., DE	46.9	Italy	65.3	Malaysia	58.2
Lithuania	46.6	Macedonia	46.4	Malaysia	64.7	Russian Federation	58.2
Moldova	46.4	Italy	46.3	Bulgaria	63.9	Latvia (LSS)	56.9
Israel	46.3	Missouri	46.0	Jersey City PS, NJ	63.0	Israel	54.8
Missouri	45.4	Jersey City PS, NJ	45.9	Chicago PS, IL	60.3	Chicago PS, IL	53.9
Romania	44.1	New Zealand	43.3	Israel	60.1	Lithuania	51.8
Macedonia	43.4	Finland	43.2	Cyprus	58.7	Rochester City, NY	50.6
Cyprus	41.0	England	43.0	Rochester City, NY	56.5	Turkey	49.5
Chicago PS, IL	37.9	Chicago PS, IL	40.8	Tunisia	55.1	Romania	48.1
Rochester City, NY	35.7	Thailand	40.6	Romania	54.2	Miami-Dade, FL	46.2
Indonesia	34.8	Rochester City, NY	40.3	Miami-Dade, FL	53.8	Thailand	45.5
Miami-Dade, FL	34.7	Tunisia	39.4	Moldova	52.9	Jordon	43.9
Thailand	34.0	Jordon	39.2	Jordon	51.0	Macedonia	43.9
Jordon	33.7	Turkey	38.8	Chile	50.8	Iran	40.7
Tunisia	33.7	Miami-Dade, FL	38.2	Macedonia	49.9	Chile	40.0
Turkey	32.8	Iran	35.0	Turkey	48.7	Indonesia	39.7
Iran	29.7	Indonesia	33.8	Iran	47.8	Moldova	39.6
Chile	26.2	Chile	27.1	Indonesia	45.2	Tunisia	36.7
Philippines	20.9	Philippines	24.3	Philippines	37.7	Philippines	33.7
Morocco	18.2	Morocco	22.6	Morocco	33.8	South Africa	29.2
South Africa	14.2	South Africa	22.0	South Africa	25.9	Morocco	27.0

Scores Significantly Higher
Scores Not Significantly Different
Scores Significantly Lower

Display 10A: Distribution of Average Percent Correct for Specific Mathematics Content Areas



Display 11: Science Scores for Specific Content Areas Compared to the State of Illinois (average % correct in each area).

Earth Features		Earth Processes		Earth in the Universe		Diversity & Structure of Living Things	
Hungary	69.1	Hong Kong	70.0	Naperville, IL	78.5	Naperville, IL	71.7
Korea	67.4	England	69.9	MI Inv. Group, MI	77.6	Academy SD, CO	70.6
Slovak Republic	65.6	Chinese Taipei	69.0	Japan	76.6	FiW Consort., IL	70.2
Slovenia	65.4	Hungary	68.5	Academy SD, CO	76.6	MI Inv. Group, MI	68.2
Russian Federation	65.2	MI Inv. Group, MI	68.5	FiW Consort., IL	76.2	Oregon	65.2
Chinese Taipei	65.1	Japan	67.6	Hong Kong	75.9	SW M/S Coll., PA	65.2
Naperville, IL	64.6	Naperville, IL	67.5	England	73.3	SMART Constm., OH	64.5
MI Inv. Group, MI	62.3	Singapore	67.3	Chinese Taipei	72.8	Michigan	63.7
Czech Republic	62.1	Canada	66.7	SMART Constm., OH	72.7	Japan	63.6
Academy SD, CO	62.0	Australia	65.9	Oregon	72.6	Pennsylvania	63.2
Bulgaria	61.7	Slovenia	65.9	Montgomery Cnty, MD	72.5	Idaho	63.0
FiW Consort., IL	60.4	FiW Consort., IL	64.6	SW M/S Coll., PA	71.8	Chinese Taipei	62.9
Japan	59.6	Netherlands	64.3	Australia	71.6	Czech Republic	62.9
SW M/S Coll., PA	59.3	Korea	64.2	Finland	70.6	Indiana	62.9
Belgium (Fl)	59.2	Finland	64.0	Canada	70.3	Korea	62.3
SMART Constm., OH	59.0	Academy SD, CO	63.6	Indiana	70.3	Netherlands	62.3
England	58.9	SMART Constm., OH	63.6	Michigan	69.9	Singapore	61.8
Oregon	58.7	New Zealand	63.5	Idaho	69.7	Guilford Cnty, NC	61.6
Canada	58.5	Belgium (Fl)	63.5	Missouri	69.4	Montgomery Cnty, MD	61.2
Australia	58.2	Guilford Cnty, NC	62.9	Hungary	69.0	Illinois	61.0
Michigan	58.0	Oregon	62.8	Netherlands	69.0	Hungary	60.7
Latvia (LSS)	57.7	Michigan	62.6	Slovak Republic	69.0	England	60.5
Indiana	57.2	Czech Republic	61.8	Singapore	68.5	Bulgaria	60.3
Netherlands	57.1	SW M/S Coll., PA	61.4	Pennsylvania	67.5	United States	59.9
Singapore	57.0	Slovak Republic	61.3	New Zealand	67.2	Australia	59.8
Italy	56.9	Pennsylvania	61.1	Slovenia	67.2	Missouri	59.8
Montgomery Cnty, MD	56.5	Indiana	60.7	South Carolina	67.2	Canada	59.4
Pennsylvania	56.5	Bulgaria	60.2	Korea	66.8	South Carolina	59.4
Lithuania	56.4	Russian Federation	60.2	United States	66.2	Slovak Republic	58.8
Finland	56.0	Idaho	59.1	Bulgaria	66.1	Slovenia	58.5
Missouri	55.7	Missouri	59.1	Illinois	66.0	Belgium (Fl)	58.4
Guilford Cnty, NC	55.6	South Carolina	59.0	Russian Federation	65.7	Russian Federation	58.0
Hong Kong	55.3	Italy	58.9	Guilford Cnty, NC	65.4	Finland	57.8
South Carolina	55.1	United States	58.3	Italy	65.3	Hong Kong	57.6
Idaho	54.4	Malaysia	58.2	Texas	65.1	Texas	57.6
Macedonia	54.3	Illinois	58.2	Czech Republic	64.9	DE Sci. Coal., DE	57.5
Illinois	53.9	Montgomery Cnty, MD	57.9	Belgium (Fl)	64.3	New Zealand	54.9
Texas	53.9	Jordon	57.0	DE Sci. Coal., DE	64.2	Italy	54.1
United States	53.7	DE Sci. Coal., DE	56.8	Malaysia	60.4	Latvia (LSS)	53.3
Romania	52.5	Texas	56.4	Moldova	58.5	Malaysia	52.2
Moldova	52.1	Thailand	52.7	Latvia (LSS)	57.4	Thailand	51.9
DE Sci. Coal., DE	52.1	Cyprus	52.4	Thailand	57.0	Romania	51.3
Malaysia	51.8	Israel	52.4	Lithuania	56.4	Lithuania	51.1
New Zealand	51.6	Latvia (LSS)	51.7	Cyprus	55.9	Moldova	50.6
Iran	48.9	Turkey	50.6	Jordon	55.1	Macedonia	50.5
Israel	48.6	Macedonia	50.2	Israel	54.7	Rochester City, NY	50.3
Thailand	47.5	Lithuania	48.5	Chicago PS, IL	54.7	Cyprus	49.6
Cyprus	44.3	Chicago PS, IL	48.0	Iran	54.1	Chicago PS, IL	48.5
Tunisia	43.4	Chile	46.9	Miami-Dade, FL	53.6	Jersey City PS, NJ	48.4
Miami-Dade, FL	42.9	Miami-Dade, FL	46.0	Romania	52.3	Jordon	48.0
Rochester City, NY	42.9	Romania	45.9	Indonesia	51.4	Israel	47.9
Chicago PS, IL	42.2	Moldova	45.8	Macedonia	50.9	Turkey	47.6
Jersey City PS, NJ	40.8	Jersey City PS, NJ	45.6	Jersey City PS, NJ	50.8	Miami-Dade, FL	45.3
Indonesia	40.6	Rochester City, NY	44.9	Turkey	49.9	Iran	43.2
Jordon	40.5	Iran	44.8	Rochester City, NY	46.7	Indonesia	43.1
Chile	37.8	Tunisia	43.9	Chile	46.1	Chile	39.3
Turkey	37.7	Indonesia	43.0	Tunisia	43.7	Tunisia	35.8
Philippines	35.0	Philippines	37.2	Morocco	39.2	Philippines	34.4
Morocco	28.4	Morocco	28.9	Philippines	39.1	South Africa	28.1
South Africa	27.6	South Africa	26.6	South Africa	26.1	Morocco	27.1

Scores Significantly Higher
Scores Not Significantly Different
Scores Significantly Lower

Display 11: Science Scores for Specific Content Areas Compared to the State of Illinois (average % correct in each area).

Life Processes & Functions		Life Cycles & Genetics		Interactions of Living Things		Human Biology & Health	
Latvia (LSS)	81.8	FiW Consort., IL	82.5	FiW Consort., IL	74.1	Naperville, IL	82.2
Naperville, IL	81.1	Academy SD, CO	81.0	MI Inv. Group, MI	72.0	Academy SD, CO	80.8
Slovenia	81.0	Naperville, IL	79.7	Singapore	69.5	MI Inv. Group, MI	80.5
Russian Federation	80.4	MI Inv. Group, MI	77.7	Naperville, IL	68.3	Chinese Taipei	80.2
Czech Republic	79.5	SW M/S Coll., PA	76.5	Chinese Taipei	65.3	FiW Consort., IL	79.4
Academy SD, CO	79.5	Czech Republic	76.3	Oregon	64.5	Hungary	79.2
Korea	79.4	Indiana	75.7	Academy SD, CO	63.9	Czech Republic	77.5
FiW Consort., IL	79.4	Michigan	75.1	Australia	63.6	SW M/S Coll., PA	77.2
Singapore	79.1	SMART Constm., OH	74.9	Pennsylvania	63.4	Slovak Republic	76.7
Japan	78.9	Oregon	74.9	Korea	63.3	Guilford Cnty, NC	76.3
Hungary	78.0	Idaho	74.4	Canada	62.8	Oregon	76.1
MI Inv. Group, MI	77.7	Pennsylvania	73.8	SMART Constm., OH	61.9	Singapore	76.0
SW M/S Coll., PA	77.5	Hungary	73.5	Japan	61.0	Michigan	75.6
Bulgaria	77.3	Montgomery Cnty, MD	73.5	England	60.4	Netherlands	75.5
Canada	77.1	Finland	72.4	Belgium (Fl)	59.7	Bulgaria	75.3
Slovak Republic	77.0	Guilford Cnty, NC	72.4	Russian Federation	59.6	Indiana	75.2
Chinese Taipei	76.8	Chinese Taipei	72.2	Michigan	59.6	SMART Constm., OH	75.1
Lithuania	76.6	South Carolina	71.8	Slovak Republic	58.7	Montgomery Cnty, MD	75.0
Australia	76.4	Illinois	71.6	Latvia (LSS)	58.4	Pennsylvania	75.0
Finland	76.4	Slovak Republic	71.5	SW M/S Coll., PA	58.4	Hong Kong	74.9
Belgium (Fl)	76.0	Missouri	71.5	Montgomery Cnty, MD	58.3	England	74.9
Indiana	75.8	Bulgaria	70.7	Indiana	58.0	Belgium (Fl)	74.1
Oregon	75.4	United States	69.7	Illinois	57.8	Australia	74.0
England	75.1	Canada	69.5	Malaysia	57.5	Missouri	73.9
Guilford Cnty, NC	74.5	Hong Kong	68.6	Finland	57.4	Idaho	73.8
Illinois	74.3	Texas	68.3	Missouri	57.3	Slovenia	73.5
Michigan	74.3	Belgium (Fl)	68.1	Thailand	57.1	Illinois	73.5
Pennsylvania	74.2	Netherlands	67.6	Hungary	56.9	Finland	73.0
Italy	73.8	Australia	67.0	Idaho	56.8	Korea	72.6
Thailand	73.6	Singapore	67.0	Guilford Cnty, NC	56.6	United States	72.4
Idaho	73.4	DE Sci. Coal., DE	66.8	Hong Kong	56.5	Canada	72.3
Hong Kong	72.8	Slovenia	65.1	Netherlands	56.5	Russian Federation	72.1
Montgomery Cnty, MD	72.5	England	65.1	New Zealand	55.9	South Carolina	72.1
Missouri	72.4	Russian Federation	64.0	Bulgaria	55.6	Texas	72.0
New Zealand	72.2	Lithuania	63.8	United States	55.3	Japan	71.0
United States	72.0	Chicago PS, IL	62.9	Slovenia	53.9	DE Sci. Coal., DE	69.7
Moldova	71.9	Italy	61.9	South Carolina	53.9	Thailand	68.7
SMART Constm., OH	71.3	Israel	61.2	Czech Republic	53.7	New Zealand	68.0
South Carolina	70.8	Japan	61.0	Lithuania	52.4	Italy	67.7
Netherlands	69.6	Thailand	61.0	Italy	52.2	Lithuania	67.2
DE Sci. Coal., DE	69.5	Miami-Dade, FL	59.3	Texas	52.1	Latvia (LSS)	66.4
Malaysia	68.8	Latvia (LSS)	59.1	DE Sci. Coal., DE	51.8	Rochester City, NY	63.9
Texas	68.0	Romania	58.2	Romania	51.3	Malaysia	63.7
Iran	64.8	Jersey City PS, NJ	57.5	Chicago PS, IL	50.5	Chicago PS, IL	63.6
Israel	64.4	Korea	57.3	Moldova	50.1	Moldova	62.4
Tunisia	62.8	New Zealand	56.2	Cyprus	49.0	Macedonia	62.0
Chicago PS, IL	62.1	Cyprus	54.3	Israel	47.1	Israel	61.5
Jersey City PS, NJ	61.5	Chile	53.9	Rochester City, NY	46.8	Jersey City PS, NJ	60.2
Rochester City, NY	60.9	Rochester City, NY	53.1	Macedonia	45.9	Romania	59.6
Cyprus	60.5	Moldova	52.1	Tunisia	44.9	Miami-Dade, FL	59.0
Chile	60.2	Indonesia	49.9	Indonesia	44.3	Indonesia	58.1
Romania	60.2	Malaysia	49.4	Turkey	44.2	Cyprus	57.9
Macedonia	59.6	Macedonia	48.0	Miami-Dade, FL	43.5	Chile	57.6
Jordon	59.0	Philippines	45.0	Jordon	43.0	Iran	56.1
Miami-Dade, FL	57.3	Jordon	44.3	Jersey City PS, NJ	42.7	Jordon	56.1
Turkey	56.7	Iran	44.2	Chile	40.6	Turkey	52.9
Indonesia	56.5	Turkey	42.6	Iran	37.9	Tunisia	50.6
Morocco	40.4	Tunisia	39.5	Morocco	35.8	Philippines	43.9
Philippines	38.0	South Africa	33.1	Philippines	33.6	Morocco	37.1
South Africa	25.0	Morocco	32.5	South Africa	17.6	South Africa	28.9

Scores Significantly Higher
Scores Not Significantly Different
Scores Significantly Lower

Display 11: Science Scores for Specific Content Areas Compared to the State of Illinois (average % correct in each area).

Properties & Classification of Matter		Structure of Matter		Energy & Physical Processes		Physical Changes	
Korea	62.5	Slovak Republic	71.1	Singapore	67.4	Chinese Taipei	76.7
Czech Republic	61.8	Bulgaria	69.0	Naperville, IL	66.2	Korea	74.7
Japan	61.3	Academy SD, CO	68.2	Japan	64.5	Singapore	56.4
Singapore	60.9	Russian Federation	67.4	Chinese Taipei	64.3	Naperville, IL	55.1
Russian Federation	60.7	Czech Republic	66.7	Hungary	63.4	Japan	54.3
Slovak Republic	60.7	MI Inv. Group, MI	66.1	Korea	62.6	Bulgaria	53.8
Chinese Taipei	59.0	Naperville, IL	64.1	FiW Consort., IL	62.5	Michigan	53.8
Naperville, IL	58.8	FiW Consort., IL	63.6	Academy SD, CO	62.2	Finland	52.7
Slovenia	58.4	Hungary	60.8	Russian Federation	61.5	MI Inv. Group, MI	52.0
Hungary	57.9	Macedonia	60.7	Netherlands	61.3	Hungary	51.1
Academy SD, CO	57.1	Michigan	60.7	Australia	61.2	FiW Consort., IL	50.3
Bulgaria	57.0	Lithuania	58.8	England	60.9	Malaysia	49.6
MI Inv. Group, MI	56.6	Guilford Cnty, NC	58.1	MI Inv. Group, MI	60.5	Slovak Republic	49.4
FiW Consort., IL	56.3	Chinese Taipei	57.9	Belgium (Fl)	59.8	Academy SD, CO	48.8
Finland	54.9	Slovenia	57.4	Hong Kong	59.5	Russian Federation	47.9
Lithuania	54.8	Romania	57.2	Canada	59.1	SMART Constm., OH	47.1
Canada	52.4	SW M/S Coll., PA	57.2	Finland	58.7	SW M/S Coll., PA	46.8
Michigan	52.4	Idaho	56.7	Michigan	58.3	Netherlands	46.5
SW M/S Coll., PA	51.3	Singapore	56.2	Slovenia	58.2	Hong Kong	46.3
Macedonia	51.0	SMART Constm., OH	56.1	Czech Republic	58.0	Latvia (LSS)	45.0
SMART Constm., OH	50.7	Oregon	56.1	Slovak Republic	57.8	Missouri	45.0
Latvia (LSS)	50.6	Indiana	56.0	SMART Constm., OH	57.3	Oregon	44.6
Montgomery Cnty, MD	50.6	Illinois	55.8	Montgomery Cnty, MD	57.1	Belgium (Fl)	44.3
Australia	50.4	Missouri	55.7	Oregon	57.0	Macedonia	44.2
Oregon	50.3	Pennsylvania	55.3	Bulgaria	56.9	Pennsylvania	44.0
Belgium (Fl)	50.2	South Carolina	55.3	SW M/S Coll., PA	56.4	Montgomery Cnty, MD	43.5
Netherlands	49.9	Texas	54.7	New Zealand	55.8	Australia	43.1
Pennsylvania	49.5	United States	54.6	Lithuania	55.4	England	43.1
Guilford Cnty, NC	49.4	Montgomery Cnty, MD	53.9	Guilford Cnty, NC	55.2	Turkey	42.8
Illinois	48.8	Italy	52.1	Indiana	54.9	Texas	41.9
Indiana	48.7	Finland	51.4	Pennsylvania	54.9	Canada	41.5
Malaysia	48.5	Jordon	51.2	Malaysia	54.6	Lithuania	41.3
England	48.3	Israel	50.4	Illinois	54.4	Slovenia	41.3
Romania	48.2	Australia	50.2	Latvia (LSS)	54.1	United States	41.1
Hong Kong	47.9	Latvia (LSS)	50.2	Missouri	54.0	Illinois	41.1
United States	47.9	Korea	50.0	Idaho	53.9	Indiana	41.1
Idaho	47.9	Moldova	48.7	United States	53.4	Israel	41.0
Missouri	47.9	Japan	48.6	Texas	52.1	Idaho	41.0
Texas	46.9	DE Sci. Coal., DE	46.0	Israel	51.8	Moldova	39.9
South Carolina	46.4	Canada	45.1	DE Sci. Coal., DE	50.9	Guilford Cnty, NC	39.6
Cyprus	45.9	Miami-Dade, FL	44.4	Italy	50.8	Czech Republic	38.8
Italy	45.4	England	44.3	Thailand	50.6	Jordon	38.8
Jordon	45.2	Chicago PS, IL	44.0	South Carolina	50.6	Romania	38.8
New Zealand	44.8	Jersey City PS, NJ	43.5	Moldova	49.4	Italy	38.7
DE Sci. Coal., DE	44.6	Iran	43.3	Macedonia	48.5	South Carolina	38.6
Israel	44.2	Rochester City, NY	41.9	Cyprus	47.8	DE Sci. Coal., DE	36.5
Moldova	42.6	Turkey	40.8	Jordon	47.6	Iran	33.7
Thailand	38.8	New Zealand	39.7	Romania	47.5	Morocco	33.7
Miami-Dade, FL	38.2	Chile	38.1	Indonesia	45.1	New Zealand	33.6
Chicago PS, IL	37.8	Netherlands	37.8	Iran	44.9	Cyprus	31.8
Jersey City PS, NJ	37.3	Cyprus	37.2	Jersey City PS, NJ	43.6	Miami-Dade, FL	31.8
Chile	37.0	Philippines	37.1	Chicago PS, IL	43.5	South Africa	30.1
Tunisia	36.2	Hong Kong	37.0	Turkey	42.6	Thailand	29.7
Rochester City, NY	36.0	Belgium (Fl)	34.4	Miami-Dade, FL	42.4	Tunisia	29.1
Iran	35.4	Malaysia	32.3	Rochester City, NY	42.3	Philippines	27.4
Turkey	33.8	Thailand	30.8	Chile	41.0	Chicago PS, IL	26.0
Philippines	33.5	Tunisia	29.7	Tunisia	41.0	Jersey City PS, NJ	25.6
Indonesia	31.9	Indonesia	25.5	Philippines	35.1	Rochester City, NY	23.4
South Africa	26.9	South Africa	23.8	Morocco	32.4	Indonesia	23.3
Morocco	25.2	Morocco	22.8	South Africa	25.1	Chile	14.0

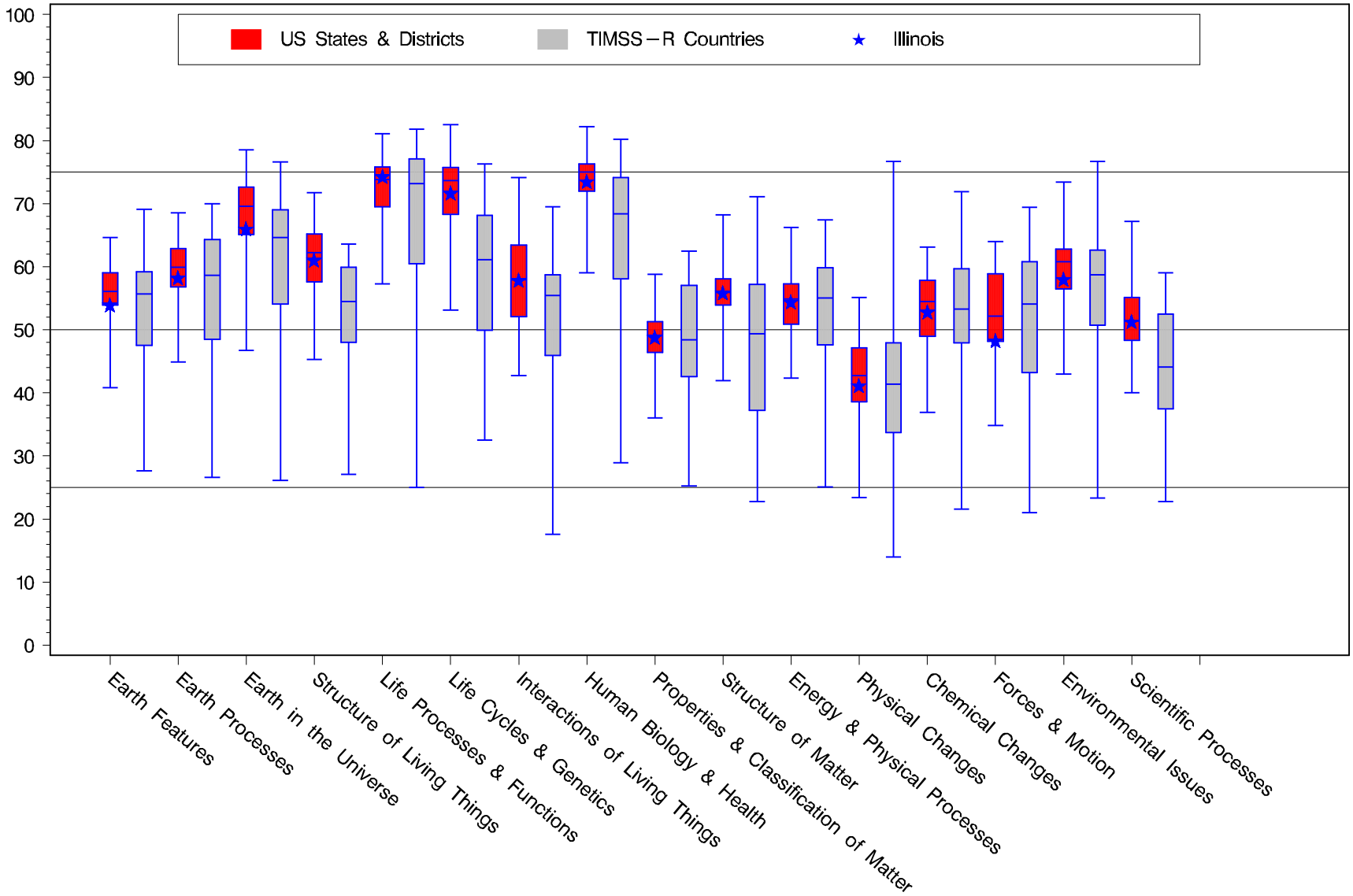
Scores Significantly Higher
Scores Not Significantly Different
Scores Significantly Lower

Display 11: Science Scores for Specific Content Areas Compared to the State of Illinois (average % correct in each area).

Chemical Changes		Forces & Motion		Environmental & Resource Issues		Scientific Processes	
Chinese Taipei	71.9	Hungary	69.4	Singapore	76.7	Naperville, IL	67.2
Hungary	66.4	Slovak Republic	68.7	Chinese Taipei	74.1	FiW Consort., IL	65.6
Singapore	65.5	Czech Republic	66.9	Naperville, IL	73.4	Japan	59.0
Naperville, IL	63.1	Japan	65.3	Academy SD, CO	69.2	MI Inv. Group, MI	59.0
MI Inv. Group, MI	62.9	Academy SD, CO	64.0	MI Inv. Group, MI	67.5	Singapore	58.8
Academy SD, CO	62.6	Russian Federation	63.6	FiW Consort., IL	67.4	Chinese Taipei	58.4
England	62.5	Finland	62.4	Australia	66.1	SW M/S Coll., PA	56.1
Korea	61.9	Singapore	62.2	Slovenia	65.3	Korea	56.0
Finland	61.7	Lithuania	60.9	Korea	65.2	Netherlands	55.7
Slovak Republic	61.4	Canada	60.8	Canada	64.8	Montgomery Cnty, MD	55.4
Hong Kong	61.2	Slovenia	60.8	Slovak Republic	64.6	Pennsylvania	55.1
Russian Federation	61.0	Idaho	60.6	Hong Kong	64.5	Michigan	54.9
FiW Consort., IL	60.3	FiW Consort., IL	60.6	Netherlands	63.0	Oregon	54.9
Japan	59.7	Michigan	60.4	Indiana	62.9	Academy SD, CO	54.7
Canada	59.2	Australia	60.2	Michigan	62.8	Hong Kong	53.6
SW M/S Coll., PA	58.7	Naperville, IL	59.5	Finland	62.6	Canada	53.3
Bulgaria	58.5	Netherlands	58.9	Oregon	62.5	Australia	52.8
Australia	58.1	MI Inv. Group, MI	58.9	SW M/S Coll., PA	62.3	Finland	52.5
SMART Constm., OH	57.8	Chinese Taipei	58.0	England	62.1	Hungary	52.5
Netherlands	57.4	Belgium (Fl)	57.9	Hungary	62.0	Indiana	52.4
Michigan	57.4	Korea	57.0	Guilford Cnty, NC	62.0	SMART Constm., OH	51.4
Oregon	55.8	SW M/S Coll., PA	56.6	Czech Republic	61.6	Illinois	51.3
Pennsylvania	55.3	Moldova	56.4	Pennsylvania	61.3	Czech Republic	51.2
Slovenia	54.8	Latvia (LSS)	55.8	Belgium (Fl)	61.1	England	50.8
Idaho	54.8	England	55.6	Bulgaria	60.9	Guilford Cnty, NC	50.7
Missouri	54.5	Oregon	55.5	SMART Constm., OH	60.8	Belgium (Fl)	50.2
Montgomery Cnty, MD	54.4	Bulgaria	54.1	Montgomery Cnty, MD	60.7	South Carolina	49.4
Guilford Cnty, NC	54.4	New Zealand	54.0	Missouri	60.6	United States	49.1
New Zealand	54.3	Thailand	53.7	Idaho	60.5	New Zealand	48.7
Belgium (Fl)	54.3	Indiana	53.7	New Zealand	60.0	Slovenia	48.4
Malaysia	54.1	SMART Constm., OH	53.2	Latvia (LSS)	59.1	Idaho	48.4
Indiana	53.8	United States	52.7	Italy	58.8	Missouri	48.4
Czech Republic	53.7	Hong Kong	52.3	Russian Federation	58.8	Texas	48.3
United States	52.9	Montgomery Cnty, MD	52.3	Japan	58.7	DE Sci. Coal., DE	46.5
Illinois	52.8	Missouri	52.1	United States	58.3	Slovak Republic	45.7
Macedonia	52.6	Guilford Cnty, NC	50.7	Illinois	58.0	Bulgaria	45.2
Iran	51.8	Malaysia	50.1	Malaysia	57.3	Latvia (LSS)	44.5
Latvia (LSS)	51.5	DE Sci. Coal., DE	49.7	Thailand	56.7	Israel	43.7
Texas	50.6	Pennsylvania	49.7	DE Sci. Coal., DE	56.5	Jersey City PS, NJ	43.7
Romania	49.6	Texas	49.7	Texas	56.5	Chicago PS, IL	43.6
Jordon	49.5	Indonesia	49.5	Cyprus	55.7	Italy	43.0
Italy	49.3	Romania	48.7	South Carolina	55.5	Lithuania	42.1
Israel	49.1	Illinois	48.2	Moldova	55.0	Russian Federation	41.8
DE Sci. Coal., DE	49.0	South Carolina	47.9	Romania	53.9	Malaysia	41.1
South Carolina	48.8	Italy	47.0	Israel	53.7	Rochester City, NY	40.4
Lithuania	48.4	Turkey	44.0	Tunisia	51.7	Thailand	40.1
Thailand	47.9	Cyprus	43.2	Indonesia	50.7	Miami-Dade, FL	40.0
Moldova	46.2	Jordon	42.0	Turkey	50.5	Turkey	38.1
Cyprus	45.6	Macedonia	40.6	Lithuania	50.2	Moldova	37.8
Turkey	42.1	Chile	40.4	Jordon	49.8	Macedonia	37.8
Rochester City, NY	42.1	Israel	40.3	Iran	47.6	Cyprus	37.5
Chicago PS, IL	40.4	Jersey City PS, NJ	38.2	Jersey City PS, NJ	47.5	Romania	34.5
Jersey City PS, NJ	38.9	Iran	38.0	Chile	47.4	Tunisia	34.5
Tunisia	38.6	Tunisia	35.9	Miami-Dade, FL	45.7	Chile	34.2
Miami-Dade, FL	36.9	Miami-Dade, FL	35.6	Macedonia	45.6	Jordon	31.5
Chile	36.3	Chicago PS, IL	35.2	Chicago PS, IL	44.8	Iran	29.9
Indonesia	34.2	Rochester City, NY	34.8	Rochester City, NY	43.0	Indonesia	28.9
Philippines	28.8	Morocco	32.3	Morocco	35.8	Philippines	27.0
Morocco	23.9	Philippines	31.0	Philippines	29.7	Morocco	26.8
South Africa	21.6	South Africa	21.0	South Africa	23.3	South Africa	22.8

Scores Significantly Higher
Scores Not Significantly Different
Scores Significantly Lower

Display 11A: Distribution of Average Percent Correct for Specific Science Content Areas

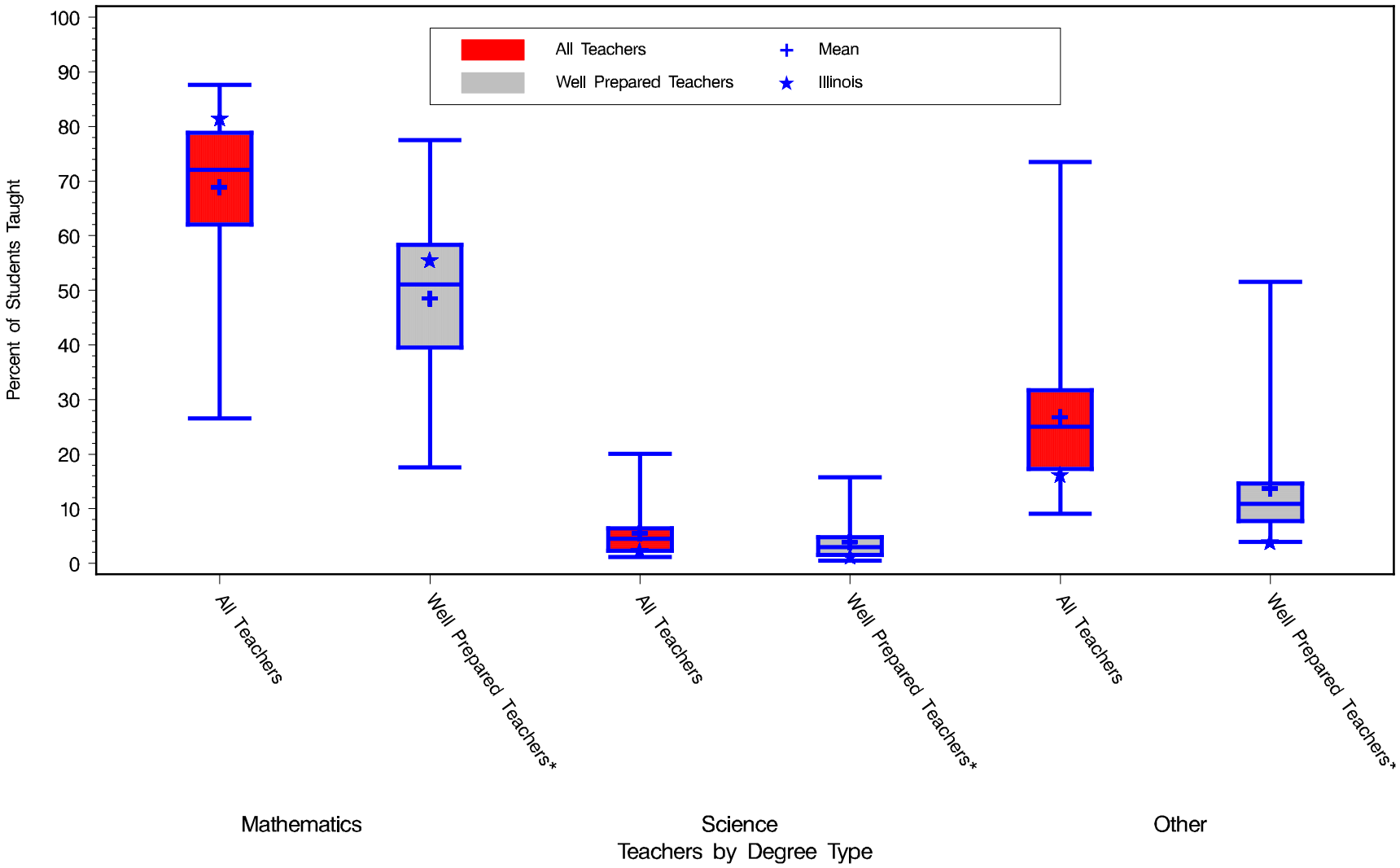


Display 12: Percent of students taught by teachers who indicated they are very well prepared to teach specific mathematics topics

TIMSS-R Study Jurisdiction	Degree type	* Sample > 5	% of Students Taught by Degree Type	See Column 4 note (below)	See Column 5 note (below)
	1	2	3	4	5
United States	Math	*	62.0	44.3	71.4
	Science	*	6.3	3.4	53.5
	Other	*	31.7	13.9	43.9
Academy SD, CO	Math	*	70.1	62.5	89.1
	Science		20.0	15.8	78.7
	Other		9.9	9.9	100.0
DE Sci. Coal., DE	Math	*	45.9	34.8	75.8
	Science		4.8	2.7	55.8
	Other	*	49.3	12.8	26.1
Miami-Dade, FL	Math	*	50.4	30.8	61.0
	Science	NT			NT
	Other	*	49.6	24.8	50.0
Idaho	Math	*	51.1	28.2	55.3
	Science		6.4	1.5	23.8
	Other	*	42.5	14.6	34.4
Illinois	Math	*	81.5	55.5	68.1
	Science		2.3	1.2	52.8
	Other	*	16.2	3.9	23.9
Naperville, IL	Math	*	73.3	55.9	76.3
	Science	NT			NT
	Other		26.7	24.9	93.1
First in World Consort., IL	Math	*	87.6	77.5	88.5
	Science		3.3	3.3	100.0
	Other		9.1	8.0	88.4
Chicago PS, IL	Math	*	68.1	45.9	67.3
	Science	NT			NT
	Other	*	31.9	10.4	32.5
Indiana	Math	*	70.9	43.2	60.9
	Science		7.3	6.3	86.5
	Other	*	21.8	8.4	38.6
Montgomery County, MD	Math	*	66.9	46.0	68.8
	Science		4.0	3.8	96.2
	Other	*	29.1	17.4	59.7
Michigan	Math	*	73.9	60.8	82.3
	Science		6.4	6.4	100.0
	Other	*	19.8	7.4	37.6
MI Invitational Group, MI	Math	*	76.4	39.5	51.7
	Science		5.5	4.7	86.9
	Other	*	18.1	7.8	43.0
Missouri	Math	*	71.1	45.3	63.7
	Science		3.5	0.0	0.0
	Other	*	25.4	13.8	54.4
Jersey City PS, NJ	Math	*	26.5	17.5	66.1
	Science	NT			NT
	Other	*	73.5	51.5	70.1
Rochester City SD, NY	Math	*	77.7	53.2	68.4
	Science		1.7	0.0	0.0
	Other		20.6	7.5	36.4
Guilford County, NC	Math	*	84.1	51.0	60.7
	Science		6.4	0.0	0.0
	Other		9.5	7.0	73.3
Project SMART Const., OH	Math	*	82.7	66.4	80.2
	Science	NT			NT
	Other	*	17.3	0.0	0.0
Oregon	Math	*	56.3	32.6	57.9
	Science	*	12.5	1.6	12.6
	Other	*	31.2	11.3	36.1
Pennsylvania	Math	*	78.8	60.0	76.1
	Science		1.5	0.4	30.7
	Other	*	19.7	11.8	59.7
SW M/S Collaborative, PA	Math	*	83.8	58.4	69.6
	Science		4.1	2.1	50.4
	Other	*	12.0	5.4	44.7
South Carolina	Math	*	73.5	55.1	75.0
	Science		1.5	0.0	0.0
	Other	*	25.0	10.6	42.4
Texas	Math	*	72.0	52.1	72.3
	Science		1.2	1.2	100.0
	Other	*	26.8	19.5	72.8

Column 4: % of total students taught by teachers (by degree type) very well prepared to teach all 12 topics
Column 5: % of students taught by teachers (as % of specific degree type) very well prepared to teach all 12 topics
NT: No questionnaires completed by teachers with this degree type

Display 12A: Distribution of Percentage of Students in Mathematics Courses Taught by Teachers with Different Degree Types and Level of Preparedness



* These teachers indicated that they are very well prepared to teach all 12 mathematics topics.

Display 12B: Percent of students taught by teachers (by degree type) who indicated they are very well prepared academically to teach specific mathematics topics

	Degree Type	* Sample > 5	Fractions, Decimals, & Percentages	Ratios & Proportions	Measurement: Units, Instruments, & Accuracy	Perimeter, Area, & Volume	Geometric Figures- Definitions & Properties	Geometric Figures-Sym, Motion, Transform, Cong, Similar	Coordinate Geometry	Algebraic Represen- tation	Evaluate & Perform Operations on Expressions	Solving Linear Equations and Inequalities	Representation and Interpretation of Data	Simple Probabilities
United States	**Math**	*	99	100	88	98	90	85	91	100	100	99	98	94
	Science	*	100	100	88	100	89	70	67	100	100	100	89	91
	Other	*	99	92	77	93	76	55	67	79	84	80	87	80
Academy SD, CO	**Math**	*	89	89	89	89	89	89	89	89	89	89	89	89
	Science		100	100	100	100	79	100	100	100	100	100	100	100
	Other		100	100	100	100	100	100	100	100	100	100	100	100
DE Sci. Coal., DE	**Math**	*	100	100	97	100	100	85	85	94	94	94	94	100
	Science		100	100	100	100	100	100	56	100	100	100	100	100
	Other	*	94	94	86	89	56	52	69	75	94	92	85	75
Miami-Dade, FL	**Math**	*	100	100	96	97	87	70	76	97	97	94	88	99
	Science	NT												
	Other	*	97	89	70	97	85	50	63	86	86	86	90	74
Idaho	**Math**	*	98	98	95	95	84	66	80	96	98	98	92	80
	Science		100	64	100	100	64	24	64	64	64	64	64	64
	Other	*	97	88	79	94	57	49	53	67	89	76	88	59
Illinois	**Math**	*	100	95	88	100	90	76	78	88	96	98	96	96
	Science		100	100	100	100	100	100	100	100	100	100	100	53
	Other	*	100	100	53	80	84	52	53	79	92	79	77	76
Naperville, IL	**Math**	*	100	100	96	100	94	81	90	94	100	100	96	96
	Science	NT												
	Other		100	100	93	93	93	93	93	93	100	100	100	100
First in World Consort., IL	**Math**	*	100	94	98	100	92	92	90	100	100	98	100	93
	Science		100	100	100	100	100	100	100	100	100	100	100	100
	Other		100	99	90	100	99	99	99	100	100	100	100	99
Chicago PS, IL	**Math**	*	99	99	85	99	79	79	87	95	95	95	95	99
	Science	NT												
	Other	*	100	100	80	92	90	63	49	76	88	67	100	92
Indiana	**Math**	*	97	100	90	95	90	72	76	96	98	98	82	78
	Science		100	100	100	100	100	87	100	100	100	100	100	87
	Other	*	100	100	73	95	83	69	58	100	100	87	97	84
Montgomery County, MD	**Math**	*	100	95	79	100	89	94	89	95	95	89	90	90
	Science		100	100	100	100	96	96	96	96	96	96	100	96
	Other	*	95	95	91	95	86	92	82	86	86	93	82	66
Michigan	**Math**	*	96	100	95	100	93	89	92	100	100	98	94	90
	Science		100	100	100	100	100	100	100	100	100	100	100	100
	Other	*	100	93	72	92	75	64	70	65	81	81	94	70
MI Invitational Group, MI	**Math**	*	100	95	80	100	91	74	93	98	98	98	88	88
	Science		100	100	100	100	100	87	100	87	87	87	100	100
	Other	*	100	100	95	95	73	47	70	92	94	91	95	94

Display 12B: Percent of students taught by teachers (by degree type) who indicated they are very well prepared academically to teach specific mathematics topics

	Degree Type	* Sample > 5	Fractions, Decimals, & Percentages	Ratios & Proportions	Measurement: Units, Instruments, & Accuracy	Perimeter, Area, & Volume	Geometric Figures-Definitions & Properties	Geometric Figures-Sym, Motion, Transform, Cong, Similar	Coordinate Geometry	Algebraic Represen- tation	Evaluate & Perform Operations on Expressions	Solving Linear Equations and Inequalities	Representation and Interpretation of Data	Simple Probabilities
Missouri	**Math**	*	97	97	88	97	93	80	83	95	94	94	97	84
	Science		100	100	100	100	100			100	100	100	100	100
	Other	*	100	99	89	100	89	79	74	89	98	98	98	87
Jersey City PS, NJ	**Math**	*	100	100	100	100	87	100	79	79	100	79	100	100
	Science	NT												
	Other	*	100	100	94	100	100	100	76	98	98	80	100	95
Rochester City SD, NY	**Math**	*	100	100	78	100	95	86	100	100	100	100	100	100
	Science		100	100	100	100	100	100		100	100	100	100	100
	Other		66	66	66	66	66	66	66	100	100	100	70	100
Guilford County, NC	**Math**	*	100	100	81	90	94	81	95	100	100	100	93	93
	Science		73	73	18	18	18	18	18	55	55		18	
	Other		100	100	73	100	73	73	73	73	100	100	73	73
Project SMART Constm., OH	**Math**	*	100	98	98	100	91	84	89	100	98	98	94	91
	Science	NT												
	Other	*	100	86	100	100	71	18	44	75	88	81	99	99
Oregon	**Math**	*	91	85	84	97	82	83	77	92	92	91	92	93
	Science	*	94	94	94	94	41	32	38	52	40	29	94	69
	Other	*	91	81	79	92	86	71	59	77	83	74	93	79
Pennsylvania	**Math**	*	100	100	93	100	96	82	93	96	99	98	97	94
	Science		100	100	79	100	79	70	40	100	100	100	79	100
	Other	*	100	74	71	74	70	64	66	72	71	70	74	66
SW M/S Collaborative, PA	**Math**	*	100	100	97	100	93	83	87	100	100	100	98	88
	Science		100	100	66	100	66	50	66	100	100	100	66	100
	Other	*	100	90	90	85	85	77	76	96	89	78	87	53
South Carolina	**Math**	*	100	96	90	100	100	81	94	100	100	98	98	89
	Science		100	100	100	100	100	0	100	100	100	100	0	100
	Other	*	100	100	90	100	95	53	71	87	94	78	100	88
Texas	**Math**	*	96	93	89	93	90	89	80	95	94	97	96	88
	Science		100	100	100	100	100	100	100	100	100	100	100	100
	Other	*	89	94	91	100	79	82	80	95	90	90	91	88

Display 13: Percent of students taught by teachers who indicated they are very well prepared academically to teach specific science topics

TIMSS-R Study Jurisdiction	Degree Type	* Sample > 5	% of Students Taught by Degree Type	See Column 4 Note (below)	See Column 5 Note (below)
	1	2	3	4	5
United States	**Math**	*	2.3	0.3	13.2
	Multiple Science	*	19.1	2.2	11.8
	Biology	*	29.6	3.2	10.7
	Chemistry	*	2.4	0.0	0.0
	Physics	*	2.2	0.8	38.2
	Science Ed	*	18.1	1.7	9.3
	Other	*	26.3	0.7	2.6
Academy SD, CO	**Math**	NT			NT
	Multiple Science	*	47.3	0.0	0.0
	Biology		30.1	0.0	0.0
	Chemistry	NT			NT
	Physics	NT			NT
	Science Ed		8.4	0.0	0.0
	Other		14.2	0.0	0.0
DE Science Coalition, DE	**Math**	NT			NT
	Multiple Science		9.7	2.9	30.0
	Biology	*	19.5	2.1	10.5
	Chemistry	NT			NT
	Physics	NT			NT
	Science Ed	*	42.4	0.0	0.0
	Other	*	28.3	0.0	0.0
Miami-Dade County PS, FL	**Math**		0.2	0.0	0.0
	Multiple Science	*	19.5	6.4	33.0
	Biology	*	21.0	0.0	0.0
	Chemistry		9.0	0.8	9.1
	Physics	NT			NT
	Science Ed	*	15.9	0.5	3.1
	Other	*	34.5	5.5	15.9
Idaho	**Math**		1.8	0.0	0.0
	Multiple Science	*	16.8	0.0	0.0
	Biology	*	28.0	0.7	2.6
	Chemistry		0.9	0.0	0.0
	Physics	NT			NT
	Science Ed	*	19.8	0.0	0.0
	Other	*	32.7	0.0	0.0
Illinois	**Math**	*	5.3	0.0	0.0
	Multiple Science	*	11.5	3.0	25.8
	Biology	*	33.7	0.2	0.5
	Chemistry		0.0	0.0	0.0
	Physics		2.6	0.0	0.0
	Science Ed	*	13.3	1.1	8.4
	Other	*	33.5	0.3	0.8
Naperville Sch. Dist. #203, IL	**Math**		5.5	0.0	0.0
	Multiple Science		35.4	6.3	17.9
	Biology		32.1	0.0	0.0
	Chemistry	NT			NT
	Physics	NT			NT
	Science Ed		19.3	0.0	0.0
	Other		7.6	0.0	0.0

TIMMS-R Study Jurisdiction	Degree Type	* Sample > 5	% of Students Taught by Degree Type	See Column 4 Note (below)	See Column 5 Note (below)
	1	2	3	4	5
First in the World Consort., IL	**Math**	NT			NT
	Multiple Science		22.1	0.0	0.0
	Biology	*	41.2	8.9	21.6
	Chemistry		2.3	0.0	0.0
	Physics		4.8	0.0	0.0
	Science Ed		14.3	0.0	0.0
	Other		15.3	0.0	0.0
Chicago Public Schools, IL	**Math**		14.7	0.0	0.0
	Multiple Science		4.7	0.0	0.0
	Biology		17.5	0.0	0.0
	Chemistry	NT			NT
	Physics		2.5	0.0	0.0
	Science Ed		8.2	0.0	0.0
	Other	*	52.4	0.0	0.0
Indiana	**Math**		0.6	0.0	0.0
	Multiple Science	*	27.4	1.8	6.5
	Biology	*	27.9	4.3	15.3
	Chemistry		1.2	0.0	0.0
	Physics		3.5	0.0	0.0
	Science Ed	*	17.6	0.0	0.0
	Other	*	21.8	0.0	0.0
Montgomery County, MD	**Math**		1.8	0.0	0.0
	Multiple Science	*	17.9	4.2	23.2
	Biology	*	22.0	9.2	41.8
	Chemistry	NT			NT
	Physics		3.7	0.0	0.0
	Science Ed	*	32.1	0.0	0.0
	Other	*	22.4	0.0	0.0
Michigan	**Math**		6.8	0.0	0.0
	Multiple Science	*	13.4	1.1	8.3
	Biology	*	29.4	3.1	10.7
	Chemistry		5.9	0.0	0.0
	Physics		5.7	0.0	0.0
	Science Ed	*	25.4	0.0	0.0
	Other	*	13.2	0.0	0.0
MI Invitational Group, MI	**Math**		4.2	0.0	0.0
	Multiple Science	*	23.9	2.2	9.4
	Biology	*	30.0	6.0	20.1
	Chemistry	NT			NT
	Physics	NT			NT
	Science Ed	*	27.6	0.0	0.0
	Other	*	14.2	0.0	0.0
Missouri	**Math**		0.7	0.0	0.0
	Multiple Science	*	26.6	8.7	32.8
	Biology	*	30.3	2.6	8.5
	Chemistry		0.2	0.0	0.0
	Physics		1.5	0.0	0.0
	Science Ed	*	27.7	0.0	0.0
	Other	*	13.0	0.0	0.0

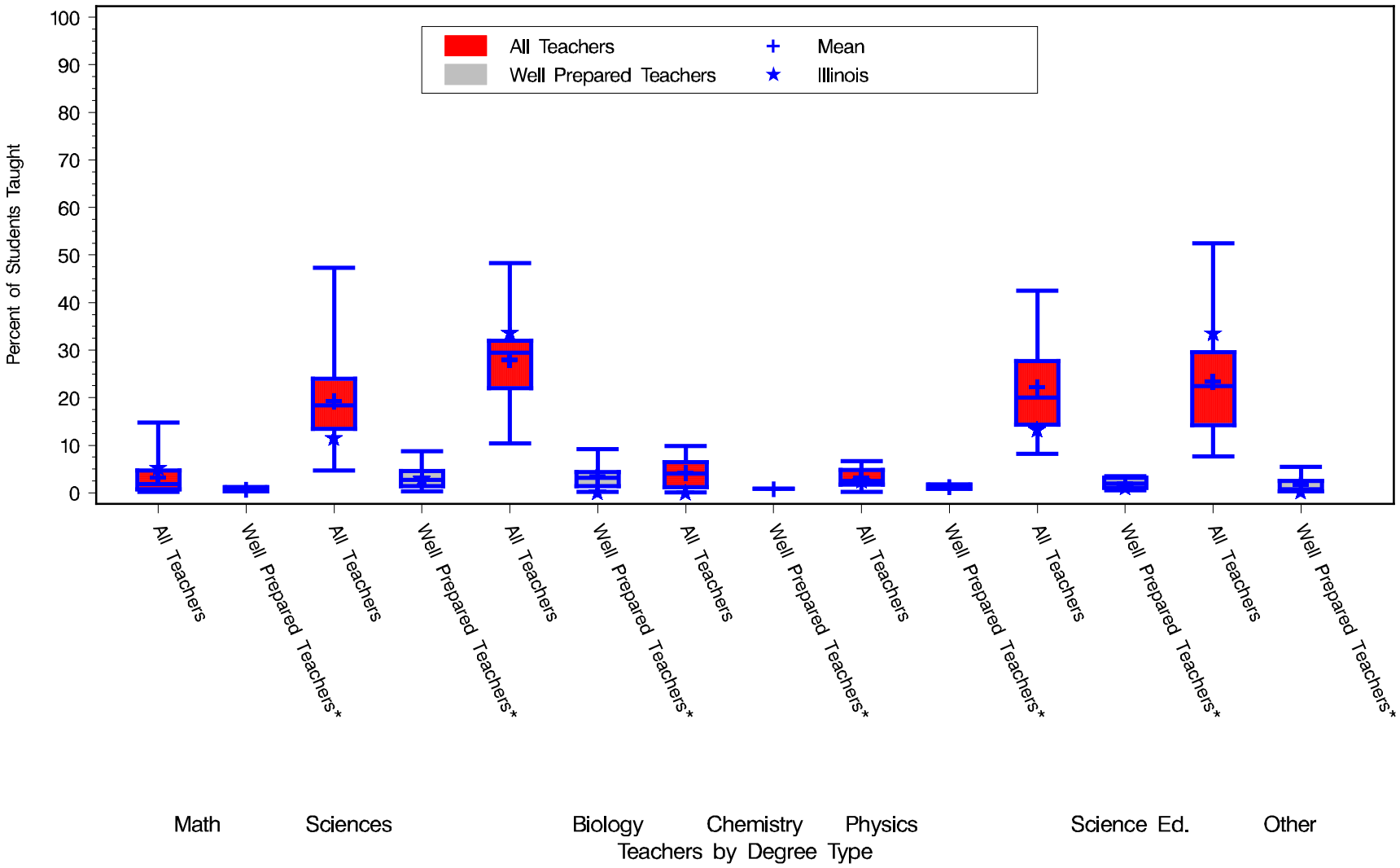
Column 4: % of total students taught by teachers (by degree type) very well prepared to teach all 10 topics
Column 5: % of students taught by teachers (as % of specific degree type) very well prepared to teach all 10 topics
NT: No questionnaires completed by teachers with this degree type

Display 13: Percent of students taught by teachers who indicated they are very well prepared academically to teach specific science topics

TIMSS-R Study Jurisdiction	Degree Type	* Sample > 5	% of Students Taught by Degree Type	See Column 4 Note (below)	See Column 5 Note (below)	TIMMS-R Study Jurisdiction	Degree Type	* Sample > 5	% of Students Taught by Degree Type	See Column 4 Note (below)	See Column 5 Note (below)
	1	2	3	4	5		1	2	3	4	5
Jersey City PS, NJ	Math	NT			NT	Pennsylvania	Math		0.9	0.0	0.0
	Multiple Science		7.4	0.0	0.0		Multiple Science	*	14.2	0.8	6.0
	Biology	*	28.1	4.3	15.4		Biology	*	27.1	0.2	0.8
	Chemistry	NT			NT		Chemistry	*	6.5	0.0	0.0
	Physics	NT			NT		Physics		1.7	0.0	0.0
	Science Ed		20.1	0.0	0.0		Science Ed	*	20.1	0.0	0.0
	Other	*	44.4	0.0	0.0		Other	*	29.6	0.5	1.8
Rochester City Sch. Dist., NY	Math	NT			NT	SW M/S Collaborative, PA	Math		4.1	0.0	0.0
	Multiple Science		16.5	0.0	0.0		Multiple Science	*	5.0	0.8	17.0
	Biology	*	48.3	0.0	0.0		Biology	*	30.5	1.0	3.1
	Chemistry		5.7	0.0	0.0		Chemistry	*	9.8	0.0	0.0
	Physics	NT			NT		Physics		6.7	0.0	0.0
	Science Ed		14.1	0.0	0.0		Science Ed	*	22.2	0.0	0.0
	Other		15.4	0.0	0.0		Other	*	21.6	2.5	11.6
Guilford County, NC	Math		1.5	0.0	0.0	South Carolina	Math		1.8	1.2	66.4
	Multiple Science	*	18.4	0.0	0.0		Multiple Science	*	16.1	2.6	16.2
	Biology	*	14.9	0.0	0.0		Biology	*	22.7	3.9	17.2
	Chemistry		4.4	0.0	0.0		Chemistry	NT			NT
	Physics	NT			NT		Physics		0.2	0.0	0.0
	Science Ed	*	36.7	1.9	5.3		Science Ed	*	30.0	3.2	10.7
	Other	*	24.2	0.0	0.0		Other	*	29.2	0.3	1.1
Project SMART Constm., OH	Math	NT			NT	Texas	Math	NT			NT
	Multiple Science	*	31.2	4.9	15.7		Multiple Science	*	21.1	3.0	14.3
	Biology	*	10.3	1.4	13.3		Biology	*	37.8	1.6	4.3
	Chemistry		4.0	0.0	0.0		Chemistry		3.0	0.0	0.0
	Physics		1.7	0.0	0.0		Physics		5.8	1.7	29.8
	Science Ed	*	41.5	3.5	8.4		Science Ed	*	9.5	0.0	0.0
	Other	*	11.3	0.0	0.0		Other	*	22.7	1.9	8.4
Oregon	Math		0.3	0.0	0.0						
	Multiple Science	*	20.3	0.3	1.4						
	Biology	*	32.0	5.3	16.5						
	Chemistry		8.0	0.0	0.0						
	Physics		2.4	0.0	0.0						
	Science Ed	*	25.5	2.4	9.3						
	Other	*	11.4	0.0	0.0						

Column 4: % of total students taught by teachers (by degree type) very well prepared to teach all 10 topics
Column 5: % of students taught by teachers(as % of specific degree type) very well prepared to teach all 10 topics
NT: No questionnaires completed by teachers with this degree type

Display 13A: Distribution of Percentage of Students in Science Courses Taught by Teachers with Different Degree Types and Level of Preparedness



* These teachers indicated that they are very well prepared to teach all 10 science topics.

Display 13B: Percent of students taught by teachers (by degree type) who indicated they are very well prepared academically to teach specific science topics

TIMSS-R Jurisdiction	Degree Type	* Sample > 5	Earth's Features and Physical Processes	The Solar System and the Universe	Structure and Function of Human Systems	Diversity, Structure, and the Processes of Plant and Animal Life	Classification and Structure of Matter	Chemical Reactivity and Transformations	Types of Energy, Sources of Energy, Conversion Between Energy Types	Light	Environmental and Resource Issues	Scientific Methods and Inquiry Skills
United States	Math	*	68	16	63	23	87	87	87	87	13	86
	Multiple Science	*	47	48	80	76	81	67	63	55	52	91
	Biology	*	54	48	88	88	56	35	51	27	60	90
	Chemistry	*	73	62	5	16	100	61	71	56	49	77
	Physics	*	70	81	54	49	68	68	100	97	39	71
	Science Ed	*	83	69	43	40	60	46	66	46	63	94
	Other	*	50	50	43	41	34	16	30	20	46	70
Academy SD, CO	Multiple Science	*	39	39	65	65	100	83	100	35	49	65
	Biology		31	58	100	100	42	42	69	42	58	100
	Science Ed		100	100			100	100	100	100	100	100
	Other		59	59	41	41			41		59	41
DE Science Coalition, DE	Multiple Science		75	100	100	100	100	82	75	30	55	100
	Biology	*	56	44	47	73	45	27	12	12	57	42
	Science Ed	*	75	80	13	26	50	40	15	14	43	82
	Other	*	29	26	51	22	31		39	39	54	58
Miami-Dade County PS, FL	Math				100	100	100				100	100
	Multiple Science	*	46	40	78	82	90	72	88	88	63	90
	Biology	*	22	36	69	69	65	43	53	28	49	63
	Chemistry		100	100	100	12	100	100	100	100	56	100
	Science Ed	*	39	49	24	21	34	34	49	49	72	100
	Other	*	69	37	63	55	45	31	54	39	85	77
Idaho	Math				68							
	Multiple Science	*	8	28	53	64	85	59	70	61	45	75
	Biology	*	53	52	78	80	35	30	47	15	61	67
	Chemistry		100				100	100	100		100	100
	Science Ed	*	57	59	22	22	47	40	55	45	24	64
	Other	*	37	29	20	20	41	14	42	30	38	62
Illinois	Math	*	47		47		65	65	65	64		60
	Multiple Science	*	71	60	52	70	97	97	70	38	46	99
	Biology	*	28	21	83	87	60	45	52	39	72	72
	Chemistry				100	100	100	100	100	100	100	100
	Physics			44	62	44	100	82	100	15	47	100
	Science Ed	*	79	86	48	43	68	56	42	40	80	98
	Other	*	36	39	58	69	33	31	11	18	37	86

Display 13B: Percent of students taught by teachers (by degree type) who indicated they are very well prepared academically to teach specific science topics

TIMSS-R Jurisdiction	Degree Type	* Sample > 5	Earth's Features and Physical Processes	The Solar System and the Universe	Structure and Function of Human Systems	Diversity, Structure, and the Processes of Plant and Animal Life	Classification and Structure of Matter	Chemical Reactivity and Transformations	Types of Energy, Sources of Energy, Conversion Between Energy Types	Light	Environmental and Resource Issues	Scientific Methods and Inquiry Skills
Naperville Sch. Dist. #203, IL	Math						67	67	67			67
	Multiple Science		38	38	65	72	100	100	100	100	45	100
	Biology		26		100	100	83	26	83	30	48	100
	Science Ed		53		53		47		100	53	53	100
	Other		100	100		100	100		100	100		100
First in the World Consort., IL	Multiple Science		23		84	84	45	45	38	22	29	100
	Biology	*	53	39	89	84	84	84	63	64	65	100
	Chemistry				100	100	100	100	100	100	100	100
	Physics				100		100		100		100	100
	Science Ed		19	28	53		100	100	47	47	53	81
	Other		10	1	91	91	90				100	9
Chicago Public Schools, IL	Math						38	38	38	38		12
	Multiple Science			81	81	81	81	81	81	81		81
	Biology		49	36	100	100	75	61	75	50	60	75
	Physics				100		100		100	100		100
	Science Ed		100	100	11	11	11		100	11	100	100
	Other	*	59	56	64	65	40	43	23	3	22	82
Indiana	Math			73			73	73	73	73	73	73
	Multiple Science	*	68	42	76	76	88	64	86	87	60	100
	Biology	*	41	42	76	74	57	54	29	30	49	86
	Chemistry						100	100	100	19		81
	Physics			100	100		100	100	100	100		100
	Science Ed	*	48	58	32	51	65	29	52	41	45	82
	Other	*	65	83	48	26	43	34	22	5	34	89
Montgomery County, MD	Math											
	Multiple Science	*	100	94	94	94	81	81	42	42	77	100
	Biology	*	83	61	73	73	44	42	42	51	71	100
	Physics		100	100					100	100	100	100
	Science Ed	*	86	86	17	9	50	37	28	24	19	78
	Other	*	99	67	24	12	54	13	25	12	55	100
Michigan	Math		2	71	80	50			80	50	50	41
	Multiple Science	*	70	35	76	78	86	65	73	47	34	100
	Biology	*	50	51	93	89	66	44	58	44	72	88
	Chemistry		18	18	12	23	100	100	58	18	29	58
	Physics		0	0	0	0	58	24	100	100	0	
	Science Ed	*	68	41	39	43	36	15	51	41	27	82
	Other	*	25	23	56	55	37	37	34	48	43	51

Display 13B: Percent of students taught by teachers (by degree type) who indicated they are very well prepared academically to teach specific science topics

TIMSS-R Jurisdiction	Degree Type	* Sample > 5	Earth's Features and Physical Processes	The Solar System and the Universe	Structure and Function of Human Systems	Diversity, Structure, and the Processes of Plant and Animal Life	Classification and Structure of Matter	Chemical Reactivity and Transformations	Types of Energy, Sources of Energy, Conversion Between Energy Types	Light	Environmental and Resource Issues	Scientific Methods and Inquiry Skills
MI Invitational Group, MI	Math		100			100					100	100
	Multiple Science	*	88	64	23	23	88	88	44	44	16	91
	Biology	*	62	62	83	91	57	52	50	21	53	89
	Science Ed	*	68	65	21	16	73	54	78	16	61	81
	Other	*	71	42	77	77	27	27	54	27	37	56
Missouri	Math		85	100	100	100	85		85	85	85	85
	Multiple Science	*	58	68	82	70	64	40	43	39	65	96
	Biology	*	64	42	100	89	40	16	23	20	59	76
	Chemistry				100	100	100	100	100			100
	Physics		100	100							100	100
	Science Ed	*	85	69	32	23	50	29	56	34	60	78
	Other	*	41	41	43	51	44	10	12	7	47	58
Jersey City PS, NJ	Multiple Science				100	100	53				53	53
	Biology	*	76	76	71	100	52	27	52	52	76	100
	Science Ed		82	82	50	50	82	32	82	82		82
	Other	*	16		16	16	16		16		48	37
Rochester City Sch. Dist., NY	Multiple Science			11	73	29	100	56	98	45	40	15
	Biology	*			100	100	51	22	53	15	64	100
	Chemistry		31		69	69	100	100	100	100	100	100
	Science Ed		66	24	34	34	34		47	34	34	59
	Other			39	72	72	39		39	39	39	72
Guilford County, NC	Math											
	Multiple Science	*	62	63	81	100	86	86	47	47	86	86
	Biology	*	77	48	77	88	88	60	60	23	65	100
	Chemistry				100	100	100	100	100	46	54	46
	Science Ed	*	82	55	36	38	65	37	64	20	63	67
	Other	*	27	1			24	24	28	28	75	70
Project SMART Constm., OH	Multiple Science	*	74	49	83	74	82	82	71	68	72	94
	Biology	*	59	67	86	86	35	35	21	21	59	86
	Chemistry						100	100	100	100		100
	Physics		100		100				100	100		100
	Science Ed	*	96	78	38	49	68	29	73	56	46	81
	Other	*	68	68			12	12				12

Display 13B: Percent of students taught by teachers (by degree type) who indicated they are very well prepared academically to teach specific science topics

TIMSS-R Jurisdiction	Degree Type	* Sample > 5	Earth's Features and Physical Processes	The Solar System and the Universe	Structure and Function of Human Systems	Diversity, Structure, and the Processes of Plant and Animal Life	Classification and Structure of Matter	Chemical Reactivity and Transformations	Types of Energy, Sources of Energy, Conversion Between Energy Types	Light	Environmental and Resource Issues	Scientific Methods and Inquiry Skills
Oregon	Math										100	100
	Multiple Science	*	54	62	70	70	56	44	64	23	42	96
	Biology	*	78	68	82	88	48	42	51	36	73	91
	Chemistry		100	100		15	100	52	100	74	52	78
	Physics		100				100	47	53		53	100
	Science Ed	*	95	71	47	57	36	25	32	32	79	87
	Other	*	41	27	55	35	26	18	17	8	28	41
Pennsylvania	Math								35	35		
	Multiple Science	*	42	33	66	78	79	53	62	62	60	98
	Biology	*	16	18	67	81	52	33	25	14	55	82
	Chemistry	*	18	40		1	100	78	22	33	63	78
	Physics		47	30		44	100	70	73	73	30	100
	Science Ed	*	77	72	24	20	54	40	47	31	66	85
	Other	*	53	39	39	22	14	6	9	8	31	63
SW M/S Collaborative, PA	Math								35	35		
	Multiple Science	*	89	76	87	87	87	85	53	53	54	100
	Biology	*	49	58	68	95	55	34	32	9	35	86
	Chemistry	*	55	55		2	100	100	66	35	57	100
	Physics		36	36		33	100	64	67	67	36	100
	Science Ed	*	81	44	37	20	54	33	80	22	59	74
	Other	*	77	60	46	39	47	31	29	14	68	94
South Carolina	Math		100	100	66	66	66	66	66	66	66	100
	Multiple Science	*	74	77	78	71	75	44	53	45	56	81
	Biology	*	66	75	80	80	65	48	48	40	68	94
	Physics		100	100			100				100	100
	Science Ed	*	88	91	36	39	42	18	27	31	59	87
	Other	*	55	55	46	41	29	17	20	21	58	80
Texas	Multiple Science	*	95	64	81	69	84	66	78	35	67	93
	Biology	*	70	62	93	85	38	23	35	5	63	90
	Chemistry		100	100			100	30			100	100
	Physics		100	100	30	30	44	30	76	62	53	86
	Science Ed	*	100	88	20	25	55	47	41	40	60	100
	Other	*	92	77	45	44	18	15	22	24	40	72

Data Sources for Displays

Display 1: Data are assessment results from the 1999 TIMSS-R. This display includes results from the twenty-seven U.S. Benchmark participants, all of whom participated in the TIMSS 1999 assessment. Only the 23 countries that participated in TIMSS (1995) and TIMSS-R (1999) at eighth-grade level, and that met sampling guidelines in both 1995 and 1999 are included here.

Displays 2 and 3: The box plot, top achieving countries' composite, and U.S. data are from the TIMSS 1995 study. Jurisdiction data are from the 1999 TIMSS-R study.

Display 4: Curriculum data from the six top achieving countries as identified in the 1995 TIMSS mathematics assessment. This data is also depicted as the shaded area in Displays 5 and 6.

Displays 5 and 6: The solid circles depict topics intended according to mathematics curriculum data gathered from the state and/or local entity as a part of the 1999 TIMSS-R study. The shaded area depicts topics intended for coverage in more than half of the top achieving TIMSS countries, as identified in the 1995 TIMSS.

Display 7: Curriculum data from the four top achieving countries as identified in the 1995 TIMSS science assessment. This data is also depicted as the shaded area in Displays 8 and 9.

Displays 8 and 9: The solid circles depict topics intended according to science curriculum data gathered from the state and/or local entity as a part of the 1999 TIMSS-R study. The shaded area depicts topics intended for coverage in more than half of the top achieving TIMSS countries, as identified in the 1995 TIMSS.

Displays 10 and 10A: Mathematics achievement data is from the 1999 TIMSS-R assessment.

Displays 11 and 11A: Science achievement data is from the 1999 TIMSS-R assessment.

Displays 12, 12A, 12B: Mathematics teacher preparedness data collected in conjunction with the 1999 TIMSS-R study.

Displays 13, 13A, 13B: Science teacher preparedness data collected in conjunction with the 1999 TIMSS-R study.