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001. list	TIMSS Announcement List [Personally Identifiable Information] [partial] (1 page)	06/09/1997	b(6)

COLLECTION:

Clinton Presidential Records
Domestic Policy Council
William Kincaid
OA/Box Number: 11093

FOLDER TITLE:

TIMSS [Third International Mathematics and Science Study] - 4th Grade Release

2017-0692-S

in103

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

P1 National Security Classified Information [(a)(1) of the PRA]
P2 Relating to the appointment to Federal office [(a)(2) of the PRA]
P3 Release would violate a Federal statute [(a)(3) of the PRA]
P4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
P5 Release would disclose confidential advice between the President and his advisors, or between such advisors [(a)(5) of the PRA]
P6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

C. Closed in accordance with restrictions contained in donor's deed of gift.

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RR. Document will be reviewed upon request.

Freedom of Information Act - [5 U.S.C. 552(b)]

b(1) National security classified information [(b)(1) of the FOIA]
b(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
b(3) Release would violate a Federal statute [(b)(3) of the FOIA]
b(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
b(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
b(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
b(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
b(9) Release would disclose geological or geophysical information concerning wells [(b)(9) of the FOIA]

Good News for American Education at Close of School Year

June 10, 1997

U.S. 4th Grade Students Are Internationally Competitive in Science and Math. President Clinton announced today the fourth-grade results of the Third International Math and Science Study (TIMSS), which show that U.S. students score above the international average in both science and math, compared with 25 other participating countries. The President welcomed the news, calling the results a good first step toward our national goal of being first in the world in math and science, and a clear indication that our students and schools can compete with those all over the world.

- In science, U.S. students' average score was 565 -- 41 points above the international average science score of 524. U.S. fourth graders were outperformed only by students in Korea, and scored higher than students in 19 other countries.
- In math, U.S. students' average score was 545 -- 16 points above the international average of 529. Only seven countries -- Singapore, Korea, Japan, Hong Kong, Netherlands, the Czech Republic and Austria -- outperformed U.S. students, while U.S. students outperformed those in 12 other countries.

These results show that U.S. schools are improving. The mathematics results in particular show gains from a previous international assessment, which had indicated that U.S. students performed below the international average.

President Calls for National Standards and Tests for 8th Grade Math to Keep American Students on Track. While U.S. 4th grade math and science achievement is strong, 8th grade achievement is relatively weak, especially in math, based on TIMSS results released in November. To keep American students achieving at a high level, the President again challenged all states to adopt national standards and tests in 8th grade math. The voluntary national test in 8th grade math will be based on the existing widely accepted National Assessment of Educational Progress (NAEP) 8th grade math test, and will also be linked to TIMSS, allowing students, parents and teachers to see how schools and students did compared with international benchmarks. The new test will focus on the years when U.S. achievement begins to falter and will help ensure that students have mastered the basics of math, including the essentials of algebra and geometry.

Kentucky to Participate in The Voluntary National Tests in 4th Grade Reading And 8th Grade Math. The President also announced that Governor Paul Patton of Kentucky has asked that Kentucky be included in the voluntary national tests in 4th grade reading and 8th grade math when the tests are first given in the Spring of 1999. Governor Patton joins a growing list of educational leaders in California, Maryland, Massachusetts, Michigan, North Carolina and West Virginia in endorsing the tests.

Final

Questions and Answers on TIMSS 4th Grade Results

Are these results showing strong 4th grade performance in math and science a surprise?

We pleased but not totally surprised. Prior international studies of science achievement showed that U.S. fourth graders were above average but not top ranked. TIMSS indicates that our 4th graders are top ranked in science -- second only to Korea. We felt our efforts to raise standards, increase parent involvement, and stress accountability would pay off.

In mathematics, the only prior international comparison of 4th graders (IEAP, 1991) showed that our fourth graders were slightly below the international average. TIMSS shows that we are above the international average. While our students did not perform at the very top in math, it is still encouraging that we have moved from below average to above average. Our own 4th grade results on the National Assessment of Educational Progress (NAEP) show similar progress since 1990.

Why is this study so important?

TIMSS is the largest, most rigorous, and most comprehensive international comparison of education ever undertaken. It tested a half million students. 41 nations participated in the 8th grade assessment and 26 in the 4th grade. It provides not only information about relative student performance in math and science, but also valuable information about curriculum, instruction and achievement.

Why do we do so much better at 4th grade than at 8th grade?

Those who have studied this issue carefully, based on TIMSS and other data, point to what our schools teach and how we teach it.

The first issue is curriculum. Our schools -- like schools around the world -- spend the early grades teaching the basics of math and science. We do this well-- which one reason our students do relatively well at 4th grade on TIMSS. But, between 4th and 8th grade, U.S. schools tend to repeat the basics over and over while schools in other nations move on to more demanding material. For example, our students tend to learn the basics of arithmetic by 4th grade and then keep doing arithmetic until they get to study algebra

in 8th or 9th grade. High achieving nations, however, introduce several new topics -- such as elements of algebra and geometry -- in each of these years. As a result, our curriculum is less demanding than and out of sync with curriculum in other nations.

A second issue is how we teach. In many states, middle school and elementary school teachers have essentially the same preparation in mathematics -- a couple of courses in college. That might be enough to teach arithmetic really well. But it probably is not sufficient to ensure that a teacher understands the foundations of algebra and geometry well enough to teach it really well.

Finally, as a nation we have put a lot of effort in to improving the early years of school. Many state and local reform efforts are starting with kindergarten and working their way up. The TIMSS results suggest that these reforms may be paying off. The challenge is to expand them into the later grades.

What is the relation between TIMSS and the President's proposed National Tests?

The TIMSS results confirm the importance of a national voluntary test in mathematics at 8th grade. They show that U.S. students can measure up to world class standards, and that we must set higher standards for 8th grade students, as we already have for our 4th graders.

The national test in 8th grade math proposed by the President will be based on widely accepted national standards, and will also be linked to the TIMSS international test. That means that students who take the test, and their parents, would find out how well the student measures up compared to international benchmarks.

If we perform so well at 4th grade, why do we keep hearing about students who cannot do basic math and science?

Despite our relatively strong performance, the range of achievement between our highest and lowest performing students is still distressingly wide. While we were second only to Korea in science, 39% of our students scored below the international average. And, while we were above the international average in math, 47% of our students scored below the international average. This shows that we must continue to work to give every child a real chance to master challenging material.

What about 12th grade?

TIMSS 12th grade results will be released next February. The data have not yet been analyzed.

How reliable are these findings given that fewer nations participated in the 4th grade study?

Of the 41 nations that participated in the 8th grade study, 26 also participated in the 4th grade study. In determining the U.S. performance relative to other nations and U.S. 4th grade performance relative to 8th grade, the TIMSS analysis took into account the fact that fewer nations participated in 4th grade. Moreover, the results were confirmed by the comparisons of total U.S. performance among the 26 nations that participated in both the 4th and 8th grades.

What is the Administration doing to improve math and science education?

In addition to our testing initiative, the Administration has taken a number of steps to help improve math and science. For example, Goals 2000 funds help every state set higher standards in academic subjects including math and science. The Eisenhower Professional Development Program provides training to upgrade teachers skills, especially in math and science. The President's Technology Literacy Challenge provides funds to states and school districts to purchase computers and software and to train teachers to improve instruction.

In addition, last March the President issued a directive to the Education Department, the National Science Foundation, and the Office of Science and Technology Policy, to develop an interagency strategy for helping states and communities prepare students for reaching the 8th grade math standards. That plan will be completed shortly.

What is the response to the President's directive on improving math and science education?

In March the President issued a directive to the Secretary of Education and the Director of the National Science Foundation asking them to develop an Action Strategy for improving math and science education by June 6. They formed an interagency working group that is now completing that strategy. The effort is taking into account the findings released today as it finishes work on the plan.

SCHEDULE OF THE PRESIDENT

FOR

WEDNESDAY, JUNE 25, 1997

SCHEDULING DIRECTOR:

STEPHANIE STREETT

HOME: 202-332-5651

OFFICE: 202-456-2823

WHCA PAGER: 4033

TRIP COORDINATOR:

LAURA GRAHAM

HOME: 703-212-7642

OFFICE: 202-456-2349

WHCA PAGER: 4809

PRESS DESK:

JEREMY GAINES

HOME: 202-362-5475

OFFICE: 202-456-5771

WHCA PAGER: 4194

**SCHEDULE OF THE PRESIDENT
FOR
WEDNESDAY, JUNE 25, 1997**

8:40 am **THE PRESIDENT** proceeds to the South Lawn

Note: This departure is closed to staff and guests.

8:45 am **THE PRESIDENT** departs the White House via Marine One en route
Andrews Air Force Base
[flight time: 10 minutes]

8:55 am **THE PRESIDENT** arrives Andrews Air Force Base

9:10 am (EDT) **THE PRESIDENT** departs Andrews Air Force Base via Air Force
One en route Nashville International Airport, Nashville, Tennessee
[flight time: 1 hour, 55 minutes]
[time change: - 1 hour]

10:05 am (CDT) **THE PRESIDENT** arrives Nashville International Airport, Nashville,
Tennessee
OPEN PRESS
CLOSED PUBLIC

Greeters:

10:20 am **THE PRESIDENT** departs Nashville International Airport via
motorcade en route Vanderbilt University
[drive time: 20 minutes]

10:40 am **THE PRESIDENT** arrives Vanderbilt University

Greeters:

10:45 am-
10:55 am **JOINT BRIEFING WITH VICE PRESIDENT**
ROOM TBA
Vanderbilt University
Staff Contact: Bruce Reed

11:00 am-
12:00 pm

DISCUSSION ON EDUCATION
LANGFORD AUDITORIUM
Vanderbilt University
Talking Points:
Staff Contact: Bruce Reed
Event Coordinator: Laura Graham
OPEN PRESS

*800 audience
educators, community
empowerment, children
health issues, papers etc.
from throughout the country*

Note: There is a pre-program.

- Off-stage announcement of **the President** and Vice President by Mrs. Gore.
- **The President** and Vice President proceed to their places on stage.
- The Vice President welcomes **the President** and opens a discussion with stage participants.

12:00 pm-
12:45 pm

ADDRESS TO THE FAMILY CONFERENCE
LANGFORD AUDITORIUM
Vanderbilt University
Remarks: Jordan Tamagni
Staff Contact: Bruce Reed
Event Coordinator: Laura Graham
OPEN PRESS

- The Vice President concludes the discussion and invites **the President** to make formal remarks.
- **The President** proceeds to the lectern and makes remarks.
- Upon conclusion of remarks, **the President** and Vice President work a ropeline and depart.

12:55 pm

THE PRESIDENT departs Vanderbilt University via motorcade en route Nashville International Airport
[drive time: 20 minutes]

1:15 pm

THE PRESIDENT arrives Nashville International Airport

1:30 pm

THE PRESIDENT departs Nashville International Airport, Nashville, Tennessee via Air Force One en route Chicago O'Hare International Airport, Chicago, Illinois
[flight time: 1 hour, 15 minutes]
[time change: none]
OPEN PRESS
CLOSED PUBLIC

2:45 pm	THE PRESIDENT arrives Chicago O'Hare International Airport, Chicago, Illinois OPEN PRESS CLOSED PUBLIC Greeters: Senator Carol Moseley-Braun
3:00 pm	THE PRESIDENT departs Chicago O'Hare International Airport via motorcade en route the Sheraton Hotel [drive time: 25 minutes]
3:25 pm	THE PRESIDENT arrives the Sheraton Hotel
3:30 pm- 6:00 pm	DOWN TIME PRESIDENTIAL SUITE The Sheraton Hotel
6:00 pm	THE PRESIDENT proceeds to room tba
6:05 pm- 6:25 pm	PHOTO RECEIVING LINE ROOM TBA The Sheraton Hotel Staff Contact: Craig Smith Event Coordinator: Laura Graham CLOSED PRESS -- The President does a photo receiving line with guests. (50 photos)
6:30 pm- 7:45 pm	DINNER FOR DSCC/SENATOR CAROL MOSELEY-BRAUN ROOM TBA The Sheraton Hotel Remarks: Laura Capps Staff Contact: Craig Smith Event Coordinator: Laura Graham POOL PRESS (Speaking Program Only) -- The President, accompanied by Senator Carol Moseley-Braun, is announced into the room and proceeds to his seat at the head table. -- Dinner is served. -- Person tba makes brief remarks and introduces person tba. -- Person tba makes brief remarks and introduces Senator Carol Moseley-Braun.

-- Senator Carol Moseley-Braun makes brief remarks and introduces **the President**.

-- **The President** makes remarks.

-- Upon conclusion of remarks, **the President** departs.

7:55 pm **THE PRESIDENT** departs the Sheraton Hotel via motorcade en route Chicago O'Hare International Airport
[drive time: 25 minutes]

8:20 pm **THE PRESIDENT** arrives Chicago O'Hare International Airport

8:35 pm **THE PRESIDENT** departs Chicago O'Hare International Airport, Chicago, Illinois via Air Force One en route John F. Kennedy International Airport, Jamaica, New York
[flight time: 1 hour, 40 minutes]
[time change: + 1 hour]

11:15 pm **THE PRESIDENT** arrives John F. Kennedy International Airport, Jamaica, New York
OPEN PRESS
CLOSED PUBLIC

Greeters:

11:30 pm **THE PRESIDENT** departs John F. Kennedy International Airport via Marine One en route Wall Street Landing Zone
[flight time: 15 minutes]

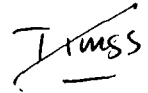
11:40 pm **THE PRESIDENT** arrives Wall Street Landing Zone

11:50 pm **THE PRESIDENT** departs Wall Street Landing Zone via motorcade en route the Waldorf Astoria Hotel
[drive time: 10 minutes]

12:00 am **THE PRESIDENT** arrives the Waldorf Astoria Hotel

BC RON **THE WALDORF ASTORIA HOTEL**
NEW YORK, NEW YORK

HRC RON **THE WHITE HOUSE**



**Voluntary National Tests in Reading and Math
A Strategy to Master the Basics and Reach High Standards**

Tonight, I issue a challenge to the nation: Every state should adopt high national standards, and by 1999, every state should test every 4th grader in reading and every 8th grader in math to make sure these standards are met.

President Clinton, State of the Union Address, February 4, 1997

STRONG SCHOOLS WITH CLEAR STANDARDS OF ACHIEVEMENT AND DISCIPLINE ARE ESSENTIAL TO OUR CHILDREN AND SOCIETY. These standards are needed to help children develop the skills and capacity for hard work that they need to succeed in school and in life. Toward that end we must establish meaningful standards for what students should be expected to learn and achieve in the basic subjects in reading and mathematics.

A CHALLENGE TO PARENTS, TEACHERS, AND SCHOOLS TO MAKE SURE THAT EVERY STUDENT MASTERS THE BASICS IN READING AND MATHEMATICS.

Reading well by grade 4 and mastering mathematics -- including the foundations of algebra and geometry -- by grade 8 are the gateways for further learning and achievement. Research shows that students who fail to learn to read English well by the end of grade 3 are at greater risk of dropping out and facing diminished success in school and life. Students who fail to master the basics of mathematics by the end of grade 8 do not have the foundation to take tough mathematics and science courses in high school which in turn prepare them for college and high-skills jobs.

While our students have been making progress in reading and mathematics, we are not yet where we need to be as a nation. According to the National Assessment of Educational Progress (NAEP), 40 percent of our 4th grade students do not reach the "basic" achievement level. In the Third International Mathematics and Science Study (TIMSS), the U.S. scores below the international average in mathematics at the 8th grade, and only 5 percent of U.S. eighth grade students score in the top 10 percent internationally.

RIGOROUS NATIONAL TESTS IN 4TH GRADE READING AND 8TH GRADE

MATHEMATICS. Parents need to know that students have mastered the basics no matter where they live or move in this country. And they have the right to know how well their children are doing compared with students in other schools, states, and countries. To help give parents this information, the U.S. Department of Education is offering every state and school district the opportunity to use voluntary national tests of 4th grade reading and 8th grade mathematics, beginning in 1999. These rigorous tests will provide, for the first time, scores for individual students, measured against widely accepted national and international standards of excellence. They will give states, local communities, teachers and parents the kind of accurate information they need to help students master basic and advanced skills and strengthen academic performance.

TESTS BASED ON WIDELY RECOGNIZED NATIONAL STANDARDS. The tests will be modeled on the National Assessment of Educational Progress (NAEP) in 4th grade reading and 8th grade mathematics. The NAEP tests are based on widely accepted standards developed by parents, teachers, reading and mathematics specialists, curriculum specialists, and researchers. The NAEP standards reflect a national consensus of what students should know and be able to do when they reach these crucial stages of learning.

BETTER INFORMATION FOR PARENTS, STUDENTS, TEACHERS AND COMMUNITIES. The current NAEP is designed to assess how well groups of students across the entire nation and individual states perform in reading and mathematics and ~~they are~~ ^{is} administered to samples of students in participating states. No parents know how their children do on this test. In contrast, the voluntary national tests will provide students, parents, and teachers with meaningful scores to compare individual student performance to widely accepted national and international standards.

MORE CHALLENGING TESTS THAT WILL RAISE STANDARDS. These voluntary national tests will give parents and communities reliable benchmarks for determining how well their students are progressing toward challenging national standards and identify students and schools that need extra help. These standard measures of excellence will help parents hold schools accountable for improved performance, help teachers and principals improve curriculum and instruction, and give students a guide for charting their own progress. Today, while most states assess their students in reading and mathematics, they generally set their proficiency levels lower than the rigorous levels in NAEP and currently do not have available information to compare their students' performance against other states or countries.

DEVELOPMENT AND ADMINISTRATION OF THE TESTS. The U.S. Department of Education will contract with independent test developers to produce the new tests, which will be available for the first time in the spring of 1999. Guidance for test development will come from the most successful mathematics and reading teachers from across the country, parents, governors, and local and state education, civic and business leaders. Interested test publishers, states, and local school districts will be licensed to administer the tests each year. Individual test scores will *not* be collected by the federal government; state and local school districts will decide how to use the data.

Each test will require approximately 90 minutes of total testing time. States and school districts can administer the tests as part of their local testing programs. The tests will be updated each year, and after each administration, the entire test (along with answers, scoring guides, and other materials) will be released to the public and available on the Internet so that students, parents, and teachers can know what is expected for students to reach standards of excellence.



UNITED STATES DEPARTMENT OF EDUCATION
OFFICE OF THE SECRETARY

FAX TRANSMITTAL

TO: Mike Cohen / Bill Kincaid

ORGANIZATION: DPC

PHONE NUMBER: _____

FAX NUMBER: _____

FROM: Kevin Sullivan

PHONE NUMBER: 401-0831

MESSAGE: TIMSS

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2 PAGE(S) TO FOLLOW



UNITED STATES DEPARTMENT OF EDUCATION
THE SECRETARY

June 6, 1997

MEMORANDUM TO: ERSKINE BOWLES
 WHITE HOUSE CHIEF OF STAFF

FROM: RICHARD W. RILEY
 SECRETARY OF EDUCATION

RE: PRESIDENT CLINTON'S INVOLVEMENT IN THE RELEASE
 OF 4TH GRADE TIMSS REPORT

Thank you for considering our request that President Clinton participate in the release of the 4th grade TIMSS report. Per our telephone conversation this evening, I am sending you a short summary of the latest TIMSS study which is very good news for public education. I have also attached a copy of the report that will be released this coming Tuesday.

Last November we released the first TIMSS study that showed that our 8th graders were below the international average in math and slightly above the international average in science. The President went to Northbrook, Illinois soon after to talk about the need to raise standards and to praise the Northbrook school system for taking the TIMSS test.

Now we have some very solid good news. This TIMSS study shows that our 4th graders are *above* the international average in both math and science. In fact, only Korea outperforms the U.S. in science. Our students are 41 points above the international science average (524) and 16 points above the average international math score. (529)

I believe this is a positive "end of the school year" story that should involve the President. It appears to be one more sign that U.S. students -- at least at the 4th grade -- are making gains in math compared to other countries. The President should make the point that our children seem to be getting a solid foundation which is good news, but that we really need to press ahead to make sure that our students study to higher standards. The link between the USA performance at 4th and 8th grade gives us clear evidence that math at 8th grade is a weak link. This gives us a very strong rationale for our proposed national test in math at 8th grade.

The international results are being released by Boston College at 10 am on Tuesday. We can release the U.S. results immediately afterwards (sometime between 11 and 1pm). We can move our event to the White House or the President could participate in our press conference at the Marriott Hotel.

**THE FOLLOWING PEOPLE ARE THE CURRENT PARTICIPANTS
IN THE "TIMSS" PRESS CONFERENCE**

PRESENTATION OF DATA

1. PAT FORGIONE -- COMMISSIONER OF EDUCATION STATISTICS

COMMENTARY

1. RICHARD W. RILEY -- SECRETARY OF EDUCATION
2. JOSEPH BORDOGNA -- ACTING DEPUTY DIRECTOR, NATIONAL SCIENCE FOUNDATION
3. BRUCE ALBERTS -- PRESIDENT, NATIONAL ACADEMY OF SCIENCES

EXPERTS AT SIDE TABLE

1. LOIS PEAK -- TIMSS, PROJECT DIRECTOR FOR NCES
2. BILL SCHMIDT -- TIMSS NATIONAL RESEARCH DIRECTOR
3. LINDA VIETH -- PRINCIPAL OF SUNSET RIDGE SCHOOL IN NORTHBROOK, ILLINOIS, (K-8), A PARTICIPANT IN THE "FIRST IN THE WORLD CONSORTIUM.
4. LOURDES MONEGUDO -- EXEC. DIRECTOR OF THE "TEACHERS ACADEMY FOR MATHEMATICS AND SCIENCE, A NON-PROFIT CORP. SERVING CHICAGO PUBLIC SCHOOLS, FOCUSES ON PROFESSIONAL DEVELOPMENT FOR TEACHERS. SHE IS HISPANIC-AMERICAN
5. SHARON SIMPSON -- 4TH GRADE MATH TEACHER, AURORA, COLORADO, WILL RECEIVE PRESIDENTIAL AWARD FOR EXCELLENCE IN MATH AND SCIENCE TWO DAYS AFTER THIS EVENT. SHE IS AFRICAN-AMERICAN .

ALSO PLEASE NOTE: LEON LETTERMAN, A NOBEL PRIZE WINNER, WHO IS ON THE BOARD OF DIRECTORS OF THE CHICAGO TEACHERS ACADEMY IS SCHEDULED TO BE IN THE AUDIENCE AS WELL.

- EMBARGOED until June 10th 11:00 a.m. EDT -

Key Findings from Fourth-Grade TIMSS

Background on TIMSS

<u>Question</u>	<u>Answer</u>																		
When were students tested?	1995																		
How many nations participated?	4 th grade - 26 nations 8 th grade - 41 nations																		
How many students participated?	500,000 in all nations and all grades 13,000 students in 180 schools at the 7 th - 8 th grades 13,000 students in 190 schools at the 3 rd - 4 th grades																		
What methodologies does the report draw from?	<table><tr><th></th><th><u>8th Grade</u></th><th><u>4th Grade</u></th></tr><tr><td>assessments</td><td>x</td><td>x</td></tr><tr><td>questionnaires</td><td>x</td><td>x</td></tr><tr><td>curriculum analysis</td><td>x</td><td>x</td></tr><tr><td>videotape</td><td>x</td><td></td></tr><tr><td>case studies</td><td>x</td><td></td></tr></table>		<u>8th Grade</u>	<u>4th Grade</u>	assessments	x	x	questionnaires	x	x	curriculum analysis	x	x	videotape	x		case studies	x	
	<u>8th Grade</u>	<u>4th Grade</u>																	
assessments	x	x																	
questionnaires	x	x																	
curriculum analysis	x	x																	
videotape	x																		
case studies	x																		

Achievement

- In mathematics, U.S. fourth graders perform above the international average of the 26 TIMSS countries. U.S. students are outperformed by those in 7 countries and outperform those in 12 countries. Among our major economic partners who participated in the study, our students' scores are below those of Japan, not significantly different from those of Canada, and are significantly higher than those of England.
- In science, U.S. fourth graders also perform above the international average of the 26 TIMSS countries. U.S. students are outperformed by students in only one country - Korea. U.S. students outperform those in 19 countries. Among our major economic partners who participated in the study, our students' scores are not significantly different from those of fourth graders in Japan. Our students outperform those in England and Canada.

JUN 7 1997 9:40AM OFFICE OF SECRETARY NO. 1555 1. 5

- EMBARGOED until June 10th 11:00 a.m. EDT -

- In mathematics content areas, our fourth graders exceed the international average in five of the six areas assessed. These five areas are: whole numbers; fractions and proportionality; data representation, analysis, and probability; geometry; and patterns, relations, and functions. In one content area, the U.S. average is lower than the international average - measurement, estimation, and number sense.
- In science content areas, our fourth graders' performance exceeds the international average in the areas assessed. In three of these content areas - earth science; life science; and environmental issues and the nature of science - U.S. fourth grade students are significantly outperformed by only one or two other nations. In physical science, five other nations perform significantly better than the U.S.
- If an international talent search were to select the top 10 percent of all fourth-grade students in the 26 countries, in mathematics 9 percent of U.S. fourth-grade students would be included. In science, 16 percent would be included.
- The international standing of U.S. fourth graders is stronger than that of U.S. eighth graders in both mathematics and science.
- In comparison with their international counterparts, U.S. students perform better in science than in mathematics at both the fourth and eighth grades.

Previous International Studies of Fourth-Grade Math and Science

<u>Math</u>	<u>U.S. Score</u>	<u>Science</u>	<u>U.S. Score</u>
1991 IAEP	below average	1960s FISS	above average
1995 TIMSS	above average	1980s SISS	average
		1991 IAEP	above average
		1995 TIMSS	above average

Contexts of Learning

- It is too early in the process of data analysis to provide strong evidence to suggest factors that may be related to the patterns of achievement described here. No single factor or combination of factors emerges as particularly important.
- On most background factors studied, there is no difference between the U.S. and the international average, or the differences are small. Therefore, these factors are unlikely to be strongly associated with our international standing.

- EMBARGOED until June 10th 11:00 a.m. EDT -

- On those background factors on which there is a difference between the U.S. and the international average, the factor is not shared with most high performing countries. Therefore, these factors are also unlikely to be strongly associated with our international standing.
- In general, preliminary analyses shed little light on factors which might account for the difference between our performance in mathematics and science, and our performance at the fourth and eighth grades. Further analyses are needed to provide more definitive insights on these subjects.

How Does the Context of Learning for U.S. Fourth Graders Compare to the International Average?

Even though differences from the international average may not appear to have a strong relationship to our international performance, understanding such differences helps us view the context of U.S. education in comparative perspective. The following points summarize the initial questionnaire findings about how U.S. fourth-grade mathematics and science education differs from the international average:

- Curriculum is not determined at the national level, as it is in most TIMSS countries.
- Students spend more class time per week studying mathematics and science than the international average.
- Teachers assign about the same amount of mathematics homework as teachers in other TIMSS countries.
- Students use calculators and computers in mathematics class more often than do students in most other TIMSS countries.
- Teachers have more university training than do their colleagues in many other TIMSS countries.
- Teachers' professional challenges are perceived to be similar to, but possibly less limiting than, those experienced by teachers in other TIMSS countries.
- Students have more educational resources in their homes than the international average.
- More U.S. students believe it is important to do well in mathematics and science and have more confidence about their performance in these subjects than their average international counterpart.

- EMBARGOED until June 10th 11:00 a.m. EDT -

- More U.S. fourth graders watch large amounts of TV than their international counterparts.

Conclusions

The fourth grade TIMSS data bring very good news.

The TIMSS data released thus far do not tell us why U.S. fourth grade students perform above the international mean.

Even without definitive answers about “why,” TIMSS continues to take us “beyond the horse race” by giving the nation more precise targets with which to focus their research and reform efforts by:

- **Shattering some widespread myths about what leads to high performance. Specifically, the results show that:**
 - Just like in the eighth grade, fourth-grade students in Japan watch as much television as U.S. students.
 - U.S. fourth-grade math teachers assign more math homework than some countries who outperform us.
 - U.S. students are more likely to use computers and calculators in their math classes than students in most of the countries that outperform them.
- **Providing needed direction for investigating our current science and mathematics practices, and how they can best be improved.**
 - **Why do U.S. fourth graders perform better than eighth graders in relation to their peers in other countries?**

Potential explanations might be:

- **Environmental.** Are factors such as living in a society that may emphasize science and technology more than other nations a potential explanation for our consistently strong fourth-grade science performance? Does the turbulence of adolescence undermine learning between the fourth and eighth grades in the U.S. more than in other countries?

- EMBARGOED until June 10th 11:00 a.m. EDT -

- **Teacher preparation.** Are fourth-grade teachers in the U.S. in greater command of their subject matter than their eighth-grade counterparts?
- **In-school.** Are U.S. curricula more focused and closer to international norms at the fourth-grade level than they are in eighth grade? Do U.S. fourth graders get a head start on studying science that boosts their performance in the earlier grades? What are the effects of various forms of tracking in the U.S. and elsewhere?

- Why is the relative performance of U.S. fourth and eighth graders stronger in science than in mathematics?

- **Environmental.** Do American students get more exposure to basic science concepts in the general media?
- **Teacher preparation.** Are U.S. teachers better able to handle the pedagogical challenges of science than math?
- **Organization of teaching and learning.** Is there less tracking in science than in math in the fourth and eighth grades?

Adequate understanding of our nation's education in an international perspective must await findings from the twelfth-grade data and deeper analysis of data at all grade levels.

TIMSS is not an answer book, but a tool to examine our own national educational strengths and weaknesses in an international perspective. All countries, including the U.S., have something to learn from other nations, and have something from which other countries can learn. These TIMSS findings will be an important source of information to guide our nation in the pursuit of excellence into the next century.

For more information, contact:
NCES - Lois Peak (202) 219-1804
TIMSS Customer Service Line: (202) 219-1333

THE WHITE HOUSE
WASHINGTON

June 9, 1997

EDUCATION STANDARDS EVENT

DATE:	June 10, 1997
LOCATION:	Rose Garden
BRIEFING TIME:	10:45 am - 11:00 am
EVENT TIME:	11:00 am - 11:20 am
FROM:	Bruce Reed/Mike Cohen

I. PURPOSE

To highlight the results of the Third International Mathematics and Science Study (TIMSS) in 4th grade math and science, and to reaffirm the need for national standards to reach improved scores in the 8th grade. You will also announce that Kentucky has endorsed your national standards and testing proposal.

II. BACKGROUND

The International Release of the new 4th grade TIMSS results is being held in Boston at 10:00a.m. Each country, including the U.S., will then release its own results at 11:00 a.m. You will be announcing the U.S. results, which are very positive. U.S. fourth graders tie for second in the world in science and score above the international average in math. This is in contrast to the 8th grade results announced last fall, which show U.S. students below the international average in math and slightly above in science. This shows that our students can be internationally competitive, if we put in place the right strategies. It also reinforces your call for national standards and tests in 8th grade math in order to keep American students on the right track.

You announced the Chicago area TIMSS 8th grade results for the First in the World Consortium in suburban Chicago last January. This will be the first time you have participated in a release of national results. Within the next year the 12th grade results will be released. We expect that they show even lower U.S. performance than the eighth grade results.

At this event you will also be announcing that Kentucky will participate in your national testing program, joining leaders in California, North Carolina, Maryland, Michigan, West Virginia, Massachusetts, and the Department of Defense Schools. Governor Paul Patton of Kentucky is traveling abroad and is unable to attend this event.

Specific highlights from the 4th grade TIMSS Study:

- In science, U.S. students' average score was 565 -- 41 points above the international average science score of 524. U.S. 4th graders were outperformed only by students in Korea, and scored higher than students in 19 other countries.
- In math, U.S. students' average score was 545 -- 16 points above the international average of 529. Only seven countries -- Singapore, Korea, Japan, Hong Kong, Netherlands, the Czech Republic, and Austria -- outperformed U.S. students, while U.S. students outperformed those in 12 other countries.

III. PARTICIPANTS

Briefing Participants:

Secretary Riley

Pat Forgione, Commissioner of Education Statistics

Bruce Reed

Mike Cohen

Michael Waldman

Event Participants:

Secretary Riley

Also Standing on Stage:

Pat Forgione, Commissioner of Education Statistics

Linda Vieth, Principal of Middlefork Elementary School, Northfield, Illinois

Sharon Simpson, 4th grade Math Teacher at Ponderosa Elementary School,
Aurora, Colorado

Lourdes Monteagudo, Executive Director of the Teachers Academy for
Mathematics and Science, which is a non-profit corporation serving
Chicago Public Schools.

IV. PRESS PLAN

Open Press.

V. SEQUENCE OF EVENTS

- You will be announced onto the stage accompanied by Secretary Riley, Pat Forgione, Linda Vieth, Sharon Simpson, and Lourdes Monteagudo.
- Secretary Riley will make remarks and introduce you.
- You will make remarks and then depart.

VI. REMARKS

Remarks Provided by Laura Capps in Speechwriting.

EXECUTIVE SUMMARY

PREFACE

The Third International Mathematics and Science Study (TIMSS) is the largest, most comprehensive, and most rigorous international comparison of education ever undertaken. During the 1995 school year, the study tested the mathematics and science knowledge of a half-million students from 41 nations at five different grade levels. This report presents findings from the tests, questionnaires, and curriculum analysis performed at the fourth grade. Twenty-six nations participated in the fourth-grade assessment.

- TIMSS' information not only compares achievement, but also provides insights into how life in U.S. schools differs from that in other nations.
- This report on fourth-grade students is the second of a series of three public-audience reports titled *Pursuing Excellence*. The first report presented findings on student achievement at eighth grade. The third report will be released in the spring of 1998, and will present findings from the twelfth grade. Additional reports will provide information on various other topics.

TIMSS is a fair and accurate comparison of mathematics and science achievement in the participating nations. It is *not* a comparison of "all of our students with other nations' best students," a charge that some critics have leveled at previous international comparisons. The students who participated in TIMSS were randomly selected to represent all students in their respective nations, with the exception of a few nations which are clearly noted in this report. The entire assessment process was scrutinized by international technical review commit-

tees to ensure its adherence to established standards. Those nations in which irregularities arose are clearly noted in this and other TIMSS reports.

ACHIEVEMENT

One of our national goals is to be "first in the world in mathematics and science achievement by the year 2000," as President Bush and 50 governors declared in 1989. In fourth-grade science achievement, we are close to this mark. Fourth graders in only one country—Korea—outperform U.S. students in this subject.

- In mathematics, U.S. fourth graders perform above the international average of the 26 TIMSS countries. U.S. students are outperformed by those in 7 countries and outperform those in 12 countries. Among our major economic partners who participated in the study, our students' scores are below those of Japan, not significantly different from those of Canada, and are significantly higher than those of England.
- In science, U.S. fourth graders also perform above the international average of the 26 TIMSS countries. U.S. students are outperformed by students in only one country—Korea. U.S. students outperform those in 19 countries. Among our major economic partners who participated in the study, our students' scores are not significantly different from those of fourth graders in Japan. Our students outperform those in England and Canada.
- In mathematics content areas, our fourth graders exceed the international average in five of the six areas

assessed. These five areas are: whole numbers; fractions and proportionality; data representation, analysis, and probability; geometry; and patterns, relations, and functions. In one content area, the U.S. average is lower than the international average—measurement, estimation, and number sense.

- In science content areas, our fourth graders' performance exceeds the international average in all four of the areas assessed. In three of these content areas—earth science; life science; and environmental issues and the nature of science—U.S. fourth grade students are significantly outperformed by only one or two other nations. In physical science, five other nations perform significantly better than the U.S.
- If an international talent search were to select the top 10 percent of all fourth-grade students in the 26 countries, in mathematics 9 percent of U.S. fourth-grade students would be included. In science, 16 percent would be included.
- The international standing of U.S. fourth graders is stronger than that of U.S. eighth graders in both mathematics and science.
- In comparison with their international counterparts, U.S. students perform better in science than in mathematics at both the fourth and eighth grades.

CONTEXTS OF LEARNING

- It is too early in the process of data analysis to provide strong evidence to suggest factors that may be related to the patterns of achievement described here. No single factor or combination of factors emerges as particularly important.
- On most background factors studied, there is no difference between the U.S. and the international average, or the differences are small. Therefore, these factors are unlikely to be strongly associated with our international standing.
- On those background factors on which there is a difference between the U.S. and the international average, the factor is not shared with most high performing countries. Therefore, these factors are also unlikely to be strongly associated with our international standing.
- In general, preliminary analyses shed little light on factors which might account for the differences between our performance in mathematics and science, and our performance at the fourth and eighth grades. Further analyses are needed to provide more definitive insights on these subjects.

CONCLUSION

This report presents initial findings from TIMSS for fourth-grade mathematics and science, and evidence from early analyses concerning the context of U.S. education achievement. Adequate understanding of our nation's education in an international perspective must await findings from the twelfth-grade data and deeper analysis of data at all grade levels.

TIMSS is not an answer book, but a tool to examine our own national educational strengths and weaknesses in an international perspective. All countries, including the U.S., have something to learn from other nations, and have something from which other countries can learn. These TIMSS findings will be an important source of information to guide our nation in the pursuit of excellence into the next century.



COMMONWEALTH OF KENTUCKY
OFFICE OF THE GOVERNOR

PAUL E. PATTON
GOVERNOR

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May 7, 1997

Secretary Richard W. Riley
United States Department of Education
600 Independence Ave., S.W.
Washington, D.C. 20202-0100

Dear Secretary Riley:

Please include Kentucky among the states which plan to administer the new national tests of reading proficiency of 4th graders and math proficiency of 8th grade students in 1999. I understand that Deputy Secretary Marshall Smith has already received a request from Kentucky Commissioner Bill Cody that our state be included in this individual student assessment.

This initiative of President Clinton promises to be a valuable addition to Kentucky's ongoing work to assess the results of efforts to achieve very high standards. The Kentucky Education Reform Act passed in 1990 called for an assessment of student achievement that was primarily performance-based and similar to NAEP. Our state has developed such an assessment system, but the new national tests based on the NAEP content and performance standards would greatly strengthen our assessment of individual students and our ability to report to parents how their child performs relative to national standards.

We look forward to the availability of this new tool for improving the education of boys and girls in Kentucky's schools.

Sincerely

A handwritten signature in dark ink, appearing to read "Paul E. Patton".

Paul E. Patton

cc: Wilmer S. Cody
Commissioner of Education



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THIRD INTERNATIONAL
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MICHIGAN STATE UNIVERSITY
464 ERICKSON HALL
EAST LANSING, MICHIGAN 48824-1
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FAX TRANSMISSION COVER SHEET

Date 6/9/97

To: MICHAEL COHEN

Subject: PRESS RELEASE : DR. W. H. SCHMIDT

Sender: S. VALVERDE

YOU SHOULD RECEIVE

~~16~~ 17 PAGE(S), INCLUDING THIS COVER SHEET.

06/09/97 12:48 517 432 1727 MSU TIMSS PROJ.
EMBARGOED UNTIL 11:00 AM, JUNE 10, 1997

Media contact: Jacqie Babcock, 517/353-7755/jbabcock@pilot.msu.edu

Program contact: Gilbert Valverde, 517/353-7755/valverde@pilot.msu.edu

**WILLIAM H. SCHMIDT
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WHAT CAN WE LEARN FROM THE US 4th GRADE ACHIEVEMENT RESULTS?

Today the TIMSS achievement results for the population including US 4th graders have been released. We can now compare our 4th graders knowledge of science and mathematics to their counterparts in other countries. More importantly, the results can give us insights that may help improve US mathematics and science education.

What can we learn from the mathematics results?

Today we have both good news and bad news about mathematics achievement. The good news is that US 4th graders did better. The bad news is that they did better when compared to our 8th graders.

For mathematics our 4th graders got the US a B- or C+ and our 8th graders a C- at best. Our 4th grade achievement places us in the middle tier of countries for this level. We were also in the middle tier in 8th grade mathematics. At 4th grade we are at the top of the middle. At 8th grade we were towards the bottom of the middle. Fewer countries took part in 4th grade testing. Many of the missing were countries that did well at the 8th grade. However, even adjusting for this, our 4th grade performance gave us a higher ranking compared to the countries that did take part than our ranking for 8th grade.

What can we learn from this? Why would our 4th graders do better than our 8th graders? For one thing, our 4th grade mathematics curricula, textbooks and teachers

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emphases were more like those of other countries (see Figure 1). Our 8th grade mathematics curriculum showed far more difference (see Figure 2). The TIMSS mathematics tests were designed largely to test common denominator topics among countries. As a result, the 4th grade mathematics test reflected our 4th grade mathematics curriculum better than the 8th grade test reflected our 8th grade curriculum. Most would claim that since school matters, students do better on things they are taught than those they learn more indirectly. Our better 4th grade mathematics performance is evidence that supports this claim.

US public discussion about education contains much about the importance of the "basics". For 4th grade mathematics, the basics for both the US and more than 70 percent of the TIMSS countries are about whole number arithmetic, fractions, and units of measurement. They also include simple geometry - mainly naming different kinds of figures (triangles, squares, and so on). Since what was basic was widely shared, the 4th grade test focused on that basic content. Our mathematics education focused on those same basics and our students earned the US a B- or C+ among TIMSS nations.

In the US, being part of the "basics" often means being "so important that it bears repeating" - and repeating and repeating. Our educational hammer drives home arithmetic grade after grade. Even at 8th grade, our classrooms still make arithmetic a major part of mathematics instruction.

Other countries act as if far more mathematical topics are basic. For them basic content is so important that it must receive heavy attention and mostly be mastered when introduced so that attention can turn to other basic content the next year. Instruction's focus is sharper than in the US. In most other countries that focus changes year by year. In other countries, a nail from the basics is hammered hard and fast then moves on. In some of the highest achieving countries, each year sees new topics receiving intense attention to prepare for and build towards mastering of more complicated topics yet to come.

TIMSS' studies of curricula, textbooks and teacher's practices show the US clearly has a different view of what is basic and how to handle it. As a result, US 8th graders are studying a very different mathematics curriculum than other countries' 8th graders. In the US, the same topics appear repeatedly. Instructional attention at any grade level is rarely intense or focused. This is true both at 4th and 8th grades. We introduce only one new topic with focused attention between 4th and 8th grade, while most other countries introduce six or seven (see Figure 5 - Math). Further, the other countries typically introduce these new topics with intense attention given to each in turn. Each new topic receives a "jump start" of focused attention. In the US curricula and textbooks, about 25 percent of the topics studied at 8th grade are new since 4th grade. For most other countries about 75 percent are new.

The result of these different views of the "basics" and how to handle them seems reflected in our achievement results. We do quite well in the simple algebra and geometry topics covered at 4th grade (see Figures 6 and 7). Only two countries did better in the 4th grade geometry tested (about 10 percent of the countries testing 4th grades). By 8th grade, about 60 percent of the countries did better than the US on the more advanced geometry tested. We do well in both grades in data representation and statistics (see Figure 8). In arithmetic we held our own but we paid a price for doing so - perhaps too great a price. There are costs for continuing to hammer at more limited arithmetic basics and failing to move attention to other important topics such as algebra and geometry. In short, the US does not start behind other countries but, rather, falls behind them (see Figure 10). Can we afford to build US mathematics education around a static set of basic contents gradually mastered if that puts us further and further behind other countries? We cannot afford to go back unnecessarily to arithmetic basics in a world going forward by making basic more advanced, powerful topics.

What can we learn from the science results?

Today we have very good news about 4th grade science achievement. We have our first A. US 4th graders placed us in the top tier of countries. We were outperformed by only one country (Korea). Unfortunately, as we already know, US 8th graders earned us another C+, placing us towards the top of the middle group. Our younger students' high science achievement is good news. The decline by 8th grade is troubling.

Again the important question is "Why?" "Why did our 4th graders do so well? Why did our 8th graders not do comparably well?" These are the most important questions raised by today's science results. What lessons can we learn?

Why is a promising start not sustained through 8th grade? US 4th grade science curricula and textbooks are more focused than for 8th grade. Our lack of "staying power" accompanies a lack of focus as more is added to science education between 4th and 8th grades.

US 4th grade science curricula, textbooks, and teacher emphases are very similar to those of other countries (see Figure 3). This is not true at 8th grade (see Figure 4). This 4th grade similarity results in our science education being more like what is tested in the 4th grade science test. Again this is not true at 8th grade. By 8th grade our view of what is basic in science education changes. It is more inclusive, adding new topics without dropping attention to material already covered repeatedly. We are less focused on more advanced subject matter. We give less intense attention to advanced content regarded as fundamental by many countries. This is partly because we must divide our attention among more topics than they.

The change in science curricula from 4th to 8th grades is more pronounced than in mathematics. We add new topics. We do not shift attention from older topics. No new topics are introduced with a "jump start" of intense attention. Other countries introduce many new topics between 4th and 8th grades. Typically they introduce eight to eleven advanced topics (see Figure 5 – Science). However, they report providing "jump starts" for these new topics through intense attention when they are introduced.

We do comparatively poorly at both grades in some areas (see Figure 9). Our lowest performance is in physics (called "physical science" at 4th grade and "physics" at 8th). This is the only 4th grade area in which we do not at least match what most other countries achieve. This is at least a warning: some of our students' accomplishments are in more peripheral, less fundamental areas of science.

In summary, US science education begins on a promising note. Our students do comparatively very well when younger students are tested. However, our conception of what is basic is still repetitive, inclusive, and not marked by intense attention on any one topic at any grade. Most other TIMSS countries introduce new ideas with focused attention that makes this content basic by working towards its mastery intensively on introduction. What is basic for these countries moves from the simple to the more advanced by a dynamic approach to fundamental content. Can the US afford to continue treating what is fundamental mainly by introducing it early and leaving it longer? Our C+ in 8th grade science says, "No."

The only prize in international achievement comparisons is improving our children's educations. There is no winning except by learning from our results, no losing except by failing to learn. TIMSS is important for what it tells us about how to improve. New data means new lessons. The full story waits for next year's 12th grade results. However, the initial answers from examining our curricula remain. Our approaches to what is basic in science and mathematics education is faulty. It is static. It is unfocused. It is less effective. We are not where we need to be, where we must be. If we do not change, we risk continuing to be a C country and creating a country of C students when graded by the curve of other countries' achievements.

Figure 1: 4th Grade Core Mathematics Topics. These topics are those that are common to 70 percent of the official curricula and textbooks of the US ("US core") and 70 percent of other TIMSS countries ("world core"). The "US Teacher Core" are those topics reported by 70 percent of the US teachers surveyed. Asterisks show emphasized topics. Even at 4th grade, US curricula, textbooks and teachers commonly include more topics than the other TIMSS countries. All except one of the "world core" topics is included by the US and all three internationally emphasized topics are also emphasized in the US. US 4th grade mathematics includes what is common to most TIMSS countries but also enough others to make our curriculum "a mile wide and an inch deep."

World Core	US Core	US Teacher Core ¹
Whole Numbers: Meaning*	Whole Numbers: Meaning*	Whole Numbers*
Whole Numbers: Operations*	Whole Numbers: Operations*	Whole Numbers*
Whole Numbers: Properties of Operations		Whole Numbers*
Common Fractions	Common Fractions	Common Fractions
	Decimal Fractions	Decimal Fractions
		Rel. of Common & Dec. Frac.
		Prop. of Common & Dec. Frac.
		Number Theory
	Estimating Computations	Estimation and Number Sense*
Measurement Units*	Measurement Units*	Measurement Units*
Perimeter, Area, and Volume	Perimeter, Area, and Volume	Perimeter, Area, and Volume
	Meas. Estimation & Error	
	2-D Geo.: Coord. Geo.	One- and Two-Dimensional Geometry
2-D Geo.: Basics	2-D Geo.: Basics	One- and Two-Dimensional Geometry
2-D Geo.: Poly. & Circles	2-D Geo.: Poly. & Circles	One- and Two-Dimensional Geometry
	3D Geometry	
	Geometric Congruence and Similarity	Geometric Congruence and Similarity
	Geometric Transformations and Symmetry	Geometric Transformations and Symmetry
	Functions, Relations, and Patterns	Functions, Relations, and Patterns
	Equations and Formulas	
	Data Representation and Statistics	Data Representation and Statistics
	Probability	Probability

¹ Some of the framework topics were aggregated together when presented to teachers and were at a different level of specificity than presented here in the world core; therefore, the numbers in this column may represent teaching of the larger category which includes the specific topic listed here.

Figure 2: 8th Grade Core Mathematics Topics. Common topics for 8th grade mathematics are shown here just as they were in Figure 1 for 4th grade. Additionally, US algebra curricula and books are separated from those not wholly on algebra. Again the US contains most of the common topics in other TIMSS countries but many others as well. This is true even in books supposedly dedicated wholly to algebra. US teachers report spending time on an even wider range of topics than those in official curricula and textbooks. US 8th grade mathematics is "a mile wide and an inch deep" in an even more pronounced way than 4th grade. It also suggests less "fit" to a test designed mainly to assess achievement in the "world core".

World Core	US Non-Algebra Core	US Algebra Core	US Teacher Core ¹
	Whole Numbers: Operations Common Fractions	Whole Numbers: Operations Common Fractions	Whole Numbers: Meaning Whole Numbers: Operations & Properties Common Fractions Decimal Fractions
	Relationship of Comm. & Dec. Frac. Percentages	Relationship of Comm. & Dec. Frac. Percentages	Relationship of Comm. & Dec. Frac. Percentages Properties of Fractions
Integers & Their Properties	Integers & Their Properties	Integers & Their Properties	Number Sets and Concepts*
Rational Numbers & Their Properties			Number Sets and Concepts*
Exponents, Roots & Radicals			Number Sets and Concepts*
	Estimating Quantity & Size Rounding Estimating Computations Measurement Units		Number Theory Estimation and Number Sense Estimation and Number Sense Estimation and Number Sense Measurement Units
Perimeter, Area, and Volume	Perimeter, Area, and Volume Meas. Estimation & Error	Perimeter, Area, and Volume	Perimeter, Area, and Volume
2-D Geometry: Coordinate Geo.	2-D Geometry: Coordinate Geo.	2-D Geometry: Coordinate Geo.*	One- and Two-Dimensional Geometry
2-D Geometry: Basics	2-D Geometry: Basics	2-D Geometry: Basics	Geometry
2-D Geometry: Polygons & Circles	2-D Geometry: Polygons & Circles	2-D Geometry: Polygons & Circles	One- and Two-Dimensional Geometry
3-D Geometry	3-D Geometry		
	Geometric Congruence and Similarity	Geometric Congruence and Similarity	Geometric Congruence and Similarity
Geometric Transformations and Symmetry	Geometric Transformations and Symmetry	Geometric Transformations and Symmetry	
	Proportionality Concepts	Proportionality Concepts	Proportionality Concepts
Proportionality Problems			Proportionality Problems
Patterns	Patterns	Patterns	
Equations and Formulas	Equations and Formulas*	Equations and Formulas*	Equations and Formulas
	Data Representation and Analysis Probability	Data Representation and Analysis Probability	Data Representation and Analysis

¹ Some of the framework topics were aggregated together when presented to teachers and were at a different level of specificity than presented here in the world core; therefore, the numbers in this column may represent teaching of the larger category which includes the specific topic listed here.

Figure 3: 4th Grade Core Science Topics. These topics are those that are common to 70 percent of the official curricula and textbooks of the US ("US core") and 70 percent of other TIMSS countries ("world core"). The "US Teacher Core" are those reported by 70 percent of the US teachers surveyed. Asterisks show emphasized topics. The "basics" (core) of US 4th grade science are far fewer than was true for mathematics, although teachers indicate teaching more than these common topics. The US core matches the world core quite well and thus is likely to be appropriately assessed by a test designed to test the "world core".

World Core	US Core	US Teacher Core ¹
Weather & Climate		Earth Composition Landforms Bodies of Water Rocks, Soil Weather & Climate Earth Physical Cycles/Bldg. & Break.
Earth in the Solar System		
Plants, Fungi*	Plants, Fungi*	Diversity of Living Things
Animals*	Animals*	Diversity of Living Things
Organs, Tissues	Organs, Tissues	Organs, Tissues, Cells Life Processes and Systems Life Cycles & Genetics
Interdependence of Life	Biomes and Ecosystems Interdependence of Life	Interactions of Living Things Interactions of Living Things Animal Behavior Human Health Human Biology
Physical Properties of Matter	Physical Properties of Matter	
Energy Types, Sources, and Conversions	Energy Types, Sources, and Conversions Light Electricity	Energy Processes Physical Transformations
Conservation of Land, Water, and Sea Resources		Environmental and Resource Issues Nature of Science

¹ Some of the framework topics were aggregated together when presented to teachers and were at a different level of specificity than presented here in the world core; therefore, the numbers in this column may represent teaching of the larger category which includes the specific topic listed here.

Figure 4: 8th Grade Core Science Topics. Common topics for 8th grade science are shown here just as they were in Figure 3 for 4th grade. Here the "world core" is more extensive than the US core and the match is not good. US teachers indicate devoting attention to even more topics than are in the official curricula and textbook core. Compared both to the science "world core" and to the US mathematics cores, comparatively few topics are covered in 8th grade science.

World Core	US Core	US Teacher Core ¹
Rocks, Soil		
Weather, Climate		
Plants, Fungi	Plants, Fungi	Earth in the Universe
Animals		
Organs, Tissues*	Organs, Tissues	
Energy Handling		
Sensing, Responding		
Life Cycles		
Reproduction		
Interdependence of Life	Interdependence of Life	
Human Disease		
Classification of Matter		Types & Properties of Matter
Physical Properties of Matter	Physical Properties of Matter	Types & Properties of Matter
Chemical Properties of Matter	Chemical Properties of Matter	Types & Properties of Matter
Atoms, Ions, Molecules		Structure of Matter
Energy Types, Sources, and Conversions	Energy Types, Sources, and Conversions	Energy Types, Sources, and Conversions
Heat & Temperature		Energy Processes
Light		
Electricity	Electricity	Energy Processes
		Physical Changes
Explanations of Chemical Changes		General Chemical Changes
Types of Forces		
	Time, Space, Motion	
Science App. in Math, Tech.		Science, Technology, and Society
Influence of Science, Tech. on Society		Science, Technology, and Society
Pollution	Pollution	Environmental and Resource Issues
Cons. of Land, Water, Sea Resources		Environmental and Resource Issues
Cons. of Material & energy Res.		Environmental and Resource Issues
	Nature of Scientific Knowledge	Nature of Science

¹ Some of the framework topics were aggregated together when presented to teachers and were at a different level of specificity than presented here in the world core; therefore, the numbers in this column may represent teaching of the larger category which includes the specific topic listed here.

Figure 5: Number of Mathematics Topics Introduced in each Grade with Focused Attention. This figure shows how many topics are introduced with a "jump start" of focused coverage in each grade for the US, the average internationally and the average for the ten highest achieving countries. Only one topic receives this kind of an introduction in the US compared to far more on average for the other TIMSS countries, especially the ten highest achieving countries.

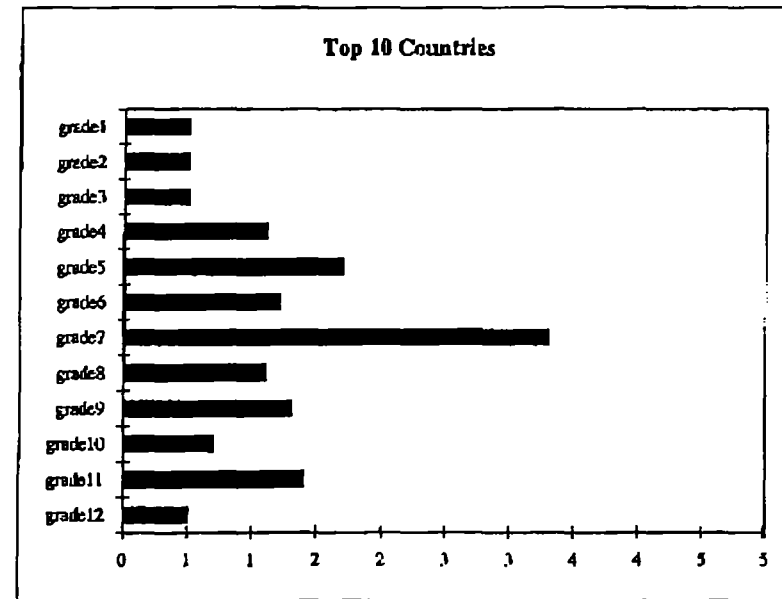
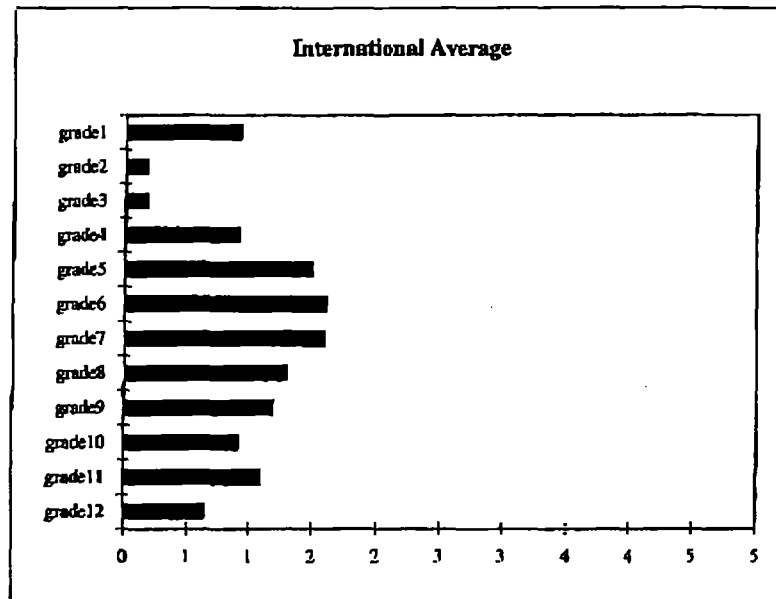
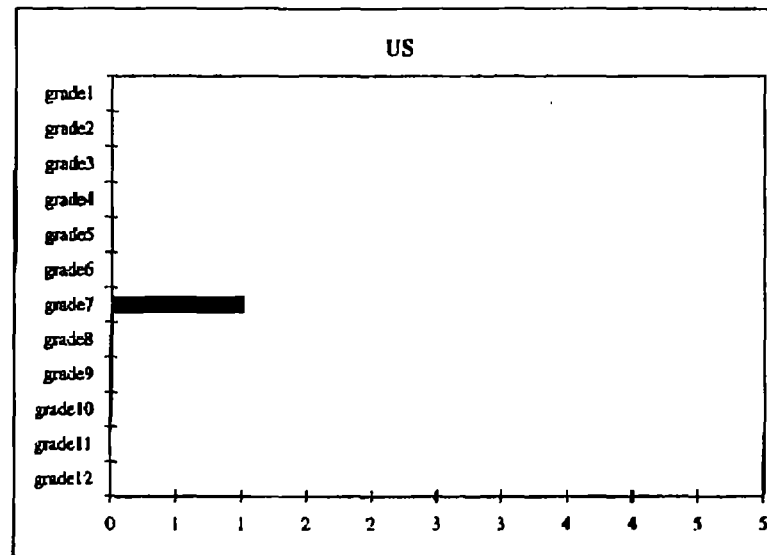


Figure 5: Number of Science Topics Introduced in each Grade with Focused Attention. This figure shows how many topics are introduced with a "jump start" of focused coverage in each grade for the US, the average internationally and the average for the nine highest achieving countries. In the US, no topics receive this treatment before grade 9.

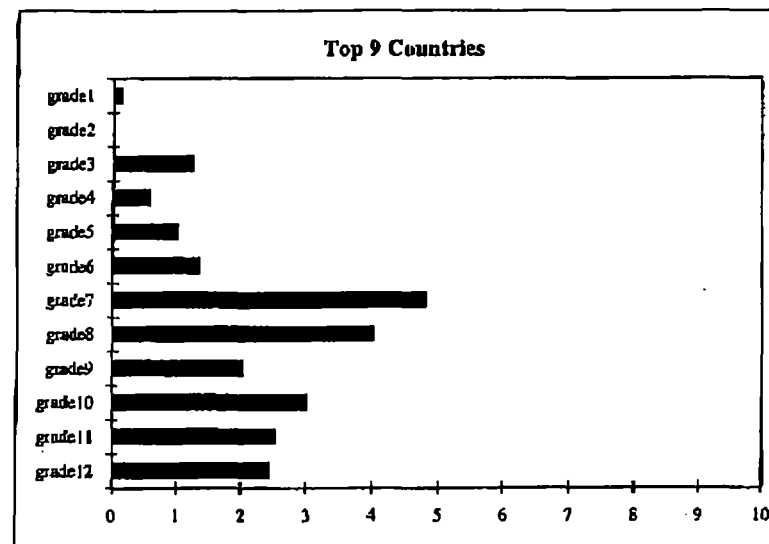
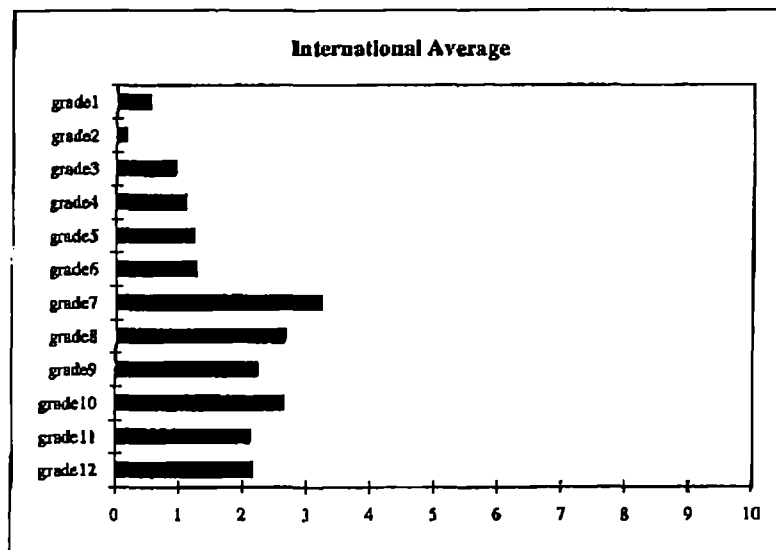
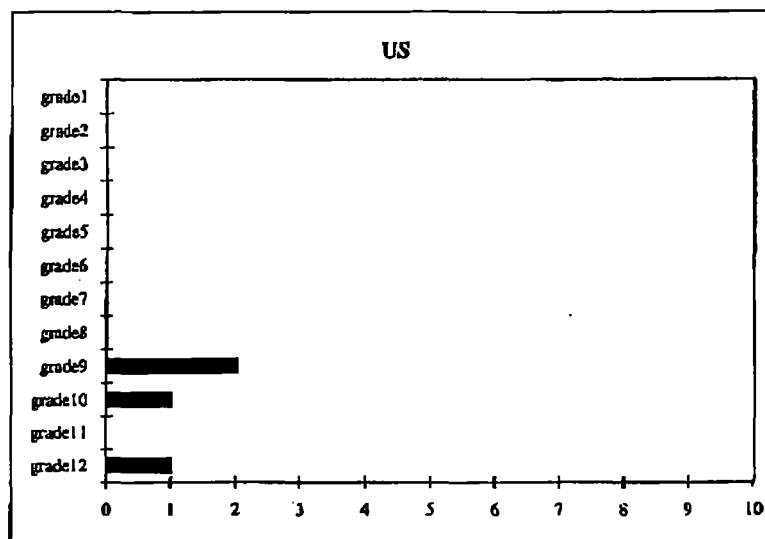


Figure 6. US 4th and 8th Grade Student Achievement in Algebra-Related Content. The TIMSS 4th grade test had an algebra related sub-test ("patterns, relations and functions") and the 8th grade test a full-scale algebra subtest. Here are the average percent correct on each for all TIMSS countries. Each list is divided into three tiers: those significantly above the mean, those not significantly different from the mean, and those significantly below the mean. The US was in the middle tier in both cases. However, US 4th graders got a higher percentage of their algebra sub-test correct than US 8th graders did for theirs. The 8th grade test had more difficult items but US 8th grader mathematics was also less focused on algebra than many other countries.

Grade 4 (PRF)	
Nation	Percent Correct
Japan	78
Singapore	75
Hong Kong	73
(Hungary)	69
(Slovenia)	68
Czech Republic	67
United States	66
(Latvia (LSS))	65
(Netherlands)	65
(Austria)	64
(Australia)	64
Ireland	64
Canada	62
(Israel)	60
Scotland	57
Cyprus	55
England	54
New Zealand	50
Norway	50
Thailand	50
Iceland	48
Portugal	47
Greece	47
Iran, Islamic Republic	46
Kuwait	43

Grade 8 (Algebra)	
Nation	Percent Correct
Singapore	67
Japan	65
Hong Kong	64
Korea	62
Czech Republic	61
Hungary	60
Russian Federation	59
Belgium-French	58
Slovak Republic	57
England	56
Poland	55
(Austria)	54
(Australia)	55
Spain	54
France	54
Canada	54
Ireland	53
(Belgium- French)	53
(Thailand)	53
Switzerland	53
(Netherlands)	53
(Romania)	52
United States	51
Latvia (LSS)	51
New Zealand	49
England	49
(Germany)	48
Cyprus	48
Lithuania	47
(Scotland)	46
Sweden	45
India	45
Portugal	45
Sweden	44
Iceland	44
Finland	43
Iran, Islamic Republic	42
Kuwait	39
(Colombia)	38
(South Africa)	28

Figure 7. US 4th and 8th Grade student Achievement in

Geometry. Both the 4th and 8th grade TIMSS tests had geometry sub-tests. The items for 8th grade were naturally more advanced. These lists are divided into three tiers just were those in Figure a6. US Students in both grades were in the middle tier. US students in both grades were in the middle tier. US 4th graders performed far better on the simpler geometry items in their tests than US 8th graders did with more demanding items in their test. These different levels of achievement probably show effects from differences in how focused the curriculum was at the two grades.

Grade 4	
Nation	Percent Correct
Hong Kong	74
Australia	74
England	74
Scotland	72
Japan	72
Singapore	72
Korea	72
Canada	72
(Slovenia)	72
(Netherlands)	71
United States	71
Czech Republic	71
Austria	67
Taiwan (SS)	67
France	65
New Zealand	65
Hungary	65
Iceland	64
Israel	62
Norway	62
Greece	62
Finland	61
Cyprus	61
Portugal	62
Iran, Islamic Republic	43
Kuwait	36

Grade 8	
Nation	Percent Correct
Hong Kong	88
Singapore	76
Korea	73
Hong Kong	70
French Republic	66
France	65
Bulgaria	65
Belgium (Flemish)	64
Belgium (Walloon)	63
Spain	63
Finland	62
Sweden	61
Norway	60
Switzerland	60
Netherlands	59
Belgium (French)	58
Germany	58
Australia	57
Israel	57
Austria	57
Latvia (SS)	57
New Zealand	57
England	57
Denmark	57
Lithuania	53
(Romania)	52
(Scotland)	52
Ireland	51
(Germany)	51
Iceland	51
Norway	51
(Greece)	51
Spain	49
Sweden	48
United States	48
Cyprus	47
Portugal	44
Iran, Islamic Republic	44
Kuwait	36
Belgium (Flemish)	29
Belgium (Walloon)	24

Figure 8. US 4th and 8th Grade Student Achievement in "Data Representation, Analysis" and "Probability". The TIMSS tests at both 4th and 8th grades had sub-tests that built on items from two categories in the TIMSS framework of mathematical topics. "Data representation and analysis" dealt with organizing data, creating graphs, and interpreting them as well as simple statistics such as means. "Probability" consisted mainly of problems and concepts in probability. As with earlier figures, three tiers of countries are identified. the US was in the middle tier at both grades. Far more countries scored significantly less well than the US at 4th grade. The high mean percentage of items correct for the US 4th grade may well reflect the impact of recent reforms such as the NCTM *Standards*.

Grade 4	
Nation	Percent Correct
Singapore	81
Korea	79
Japan	78
Hong Kong	78
(Netherlands)	75
United States	73
Ireland	69
Canada	68
(Austria)	67
Czech Republic	67
(Australia)	66
Scotland	66
England	64
(Israel)	64
(Slovenia)	64
New Zealand	61
(Hungary)	60
Norway	59
Iceland	58
(Thailand)	56
(Lava, LSS)	54
Cyprus	52
Greece	50
Portugal	48
(Ireland)	46
(Iran, Islamic Republic)	43

Grade 8	
Nation	Percent Correct
Singapore	81
Korea	79
Japan	78
Hong Kong	78
(Netherlands)	75
United States	73
Ireland	69
Canada	69
(Austria)	68
Czech Republic	68
(Belgium-French)	68
(Australia)	67
(Denmark)	67
Norway	66
New Zealand	66
(Slovenia)	66
England	66
Hungary	66
United States	65
(Scotland)	65
(Germany)	64
(Israel)	63
Iceland	63
(Thailand)	63
(Bulgaria)	62
Slovak Republic	62
Russian Federation	60
Spain	58
(Greece)	55
(Lava, LSS)	54
(Ireland)	52
Cyprus	52
Lithuania	52
(Romania)	49
(Iran, Islamic Republic)	49
Kuwait	48
(Colombia)	47
(South Africa)	46

Figure 9. US 4th and 8th Grade Student Achievement in Physics-Related Content. Both the 4th and 8th grade TIMSS tests had sub-test related to physics ("physical science" at the 4th grade). The results are presented here and countries are again divided into three tiers. Unlike other sub-tests for which US 4th grade scores placed us in the top tier, this fundamental area of science placed us in the middle tier for both grades. US performance was average in both cases. The upcoming 12th grade science results will be entirely on physics so the relationship of these data to those yet-to-be-released should be informative. Performing less well in an area as fundamental as physics is troubling.

Grade 4 (Physical Science)	
Nation	% Correct
Korea	75
Japan	70
Netherlands	65
Singapore	64
(Austria)	64
Australia)	63
Czech Republic	62
(Slovenia)	61
Canada	61
United States	60
England	60
Hong Kong	60
(Hungary)	59
Scotland)	57
France	57
New Zealand	57
Norway	57
Latvia (LSS)	54
Ireland	52
Cyprus	50
Portugal	49
Greece	46
(Ireland)	45
Islamic Republic	40
(Kuwait)	37

Grade 8 (Physics)	
Nation	% Correct
England	59
France	57
Korea	57
Czech Republic	57
(Slovenia)	57
Australia	56
England	56
Singapore	56
(Slovenia)	56
England	56
England	56
England	56
England	56
Canada	59
Hong Kong	58
New Zealand	58
Switzerland	58
Russian Federation	57
(Germany)	57
Sweden	57
(Israel)	57
(Scotland)	57
Norway	57
Ireland	56
United States	56
Spain	55
France	54
(Thailand)	54
Iceland	53
(Greece)	53
(Denmark)	53
(Belgium)	51
Latvia (LSS)	51
Lithuania	51
(Romania)	49
Portugal	48
Islamic Republic	48
Cyprus	46
Kuwait	46
(Greece)	45
(South Korea)	45

FIGURE 10. PATTERNS, RELATIONS, & FUNCTIONS (ALGEBRA at Grade 8).

17. Tanya has read the first 78 pages in a book that is 130 pages long. Which number sentence could Tanya use to find the number of pages she must read to finish the book?

A. $130 + 78 = \square$

B. $\square - 78 = 130$

C. $130 \div 78 = \square$

D. $130 - 78 = \square$

Percent Correct on Item (D)

Grade 3	Grade 4
49.0	64.9

PATTERNS, RELATIONS & FUNCTIONS:

- U.S. Average Percent Correct.....
- International Average Percent

53	66
47	59

- K $4\frac{x}{2} < 7$ is equivalent to

A $.x < \frac{7}{2}$

B $.x < 5$

C $.x < 14$

D $.x > 5$

E $x > 14$

Percent Correct on Item (C)

Grade 7	Grade 8
38.4	50.2

ALGEBRA:

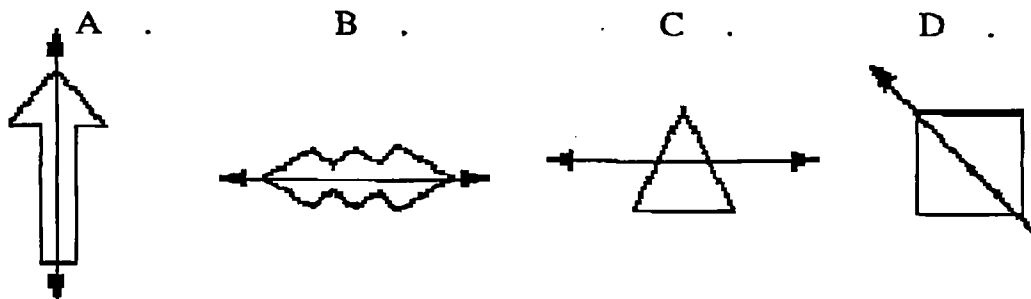
- U.S. Average Percent Correct.....
- International Average Percent

44	51
44	52

Figure 10. Sample 4th and 10th Grade Test Items in Algebra-Related Content. Here are two sample items, one from the algebra related sub-test of both the 4th and 8th grade tests. The items happen to be multiple choice but many others were short answer, fill-in-the-blank items and even longer open response items. The 4th grade item focuses on representing a real world situation with a simple equation. The 8th grade item focuses on solving an inequality presented in symbolic form. The latter is clearly more demanding. US 4th graders performed better on their less demanding item and did even better than the international average. The 8th graders did not. The "percent correct" is for US students on each particular item. The average scores are for the whole sub-test. These items were at about the typical difficulty for US students at 4th and 8th grades (that is, the "percent correct" was close to the US average for the grade).

FIGURE 10. GEOMETRY.

J 2 Which of these does NOT show a line of symmetry?



Percent Correct on Item (C)	Grade 3	Grade 4
	63.3	71.7

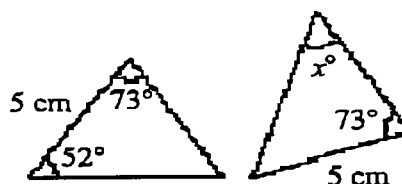
GEOMETRY:

• U.S. Average Percent Correct.....	61	71
• International Average Percent	55	64

K 8 These triangles are congruent. The measures of some of the sides and angles of the triangles are shown.

What is the value of x ?

- A .5 2
- B .5 5
- C .6 5
- D .7 3
- E .7 5



Percent Correct on Item (B)	Grade 7	Grade 8
	14.7	16.2

GEOMETRY:

• U.S. Average Percent Correct.....	44	48
• International Average Percent	49	56

Figure 10. Sample 4th and 10th Grade Test Items for Geometry. Here are two sample items, one from the geometry sub-test of both the 4th and 8th grade tests. The items are again multiple choice although the test included other kinds of items also. The 4th grade item is a simple one about lines of symmetry. The 8th grade item is a more advanced one based on knowledge about congruent triangles. The "percent correct" for the 4th grade item shows it is typical of US performance and somewhat above the international average. The "percent correct" for the 8th grade item is below the percent that would result if everyone guessed. It is far below the international average at 8th grade. This reflects in part the fact that US 8th grade mathematics does not move on to more advanced geometry topics such as congruent triangles while many of the other countries do.



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FAX TRANSMISSION COVER SHEET

Date June 9, 1997
To: Mike Cohen
Subject: Press Release
Sender: Bill Schmidt

YOU SHOULD RECEIVE 4 PAGE(S), INCLUDING THIS COVER SHEET.

CONFIDENTIAL

Mike: For your information, following is my statement for tomorrow's press release on the TIMSS fourth grade achievement results. Thank you for your help and support.

Bill



EMBARGOED UNTIL 11:00 AM, JUNE 10, 1997

**PRESS STATEMENT FROM WILLIAM H. SCHMIDT
NATIONAL RESEARCH COORDINATOR - US TIMSS**

Media contact: Jackie Babcock, 517/353-7755/jbabcock@pilot.msu.edu

Program contact: Gilbert Valverde, 517/353-7755/valverde@pilot.msu.edu

TOWARD A NEW UNDERSTANDING OF BASICS IN MATHEMATICS AND SCIENCE INSTRUCTION

Today the Third International Mathematics and Science Study (TIMSS) released new achievement results for US 4th graders and their counterparts around the world. We have learned an important new lesson. US students do not begin behind other countries' students, they fall behind them. US 4th graders did better than our 8th graders when compared with their respective peers. TIMSS' curriculum studies show US 4th grade mathematics and science to be similar to ideas and topics studied by most children around the world. We were more similar to other countries at 4th than at 8th grade.

The US 4th grade mathematics curriculum treats arithmetic as the heart of basic content. By middle school, especially 8th grade, most other TIMSS countries move from a curriculum emphasizing arithmetic to one that considers algebra and geometry basic. The US 8th grade mathematics curriculum remains fixed primarily on arithmetic. US school mathematics at both 4th and 8th grades remain "a mile wide and an inch deep." At 8th grade time is devoted to even more topics than at 4th grade. We give less time and focused attention to any one topic. Our holding onto arithmetic, and our lack of focus, seem clearly related to US students' falling behind in mathematics achievement.

Our view of what is basic in 4th grade science - for example, classifying plants and animals - is very consistent with what other TIMSS countries consider basic at this level. US 4th grade science is more focused on a few strategic topics than US 8th grade science. What we treat as basic content at 8th grade science includes more ideas and topics than 4th grade. We are also less focused on advanced topics than other TIMSS countries at 8th grade.

Released today in Washington D.C., the latest TIMSS achievement data show US 4th graders in science grouped with students from the top performing nations. Their performance was surpassed only by Korea's students. Our 4th graders were also above the international average in mathematics. This puts us in the middle tier of countries, but clearly not among the best in the world. In 4th grade we were near the top of this middle tier. At 8th grade we were near the bottom of the middle.

"These new 4th grade TIMSS results reinforce conclusions drawn earlier in our book *A Splintered Vision* [published by Kluwer in early 1997]. We wrote that what we teach and how we teach it were among the most critical factors that explained our students' achievements in science and mathematics at 8th grade. The pattern of 4th grade results supports that idea. It also helps explain the sharp decline in US student performance between 4th and 8th grades," said William H. Schmidt, the US National Research Coordinator, who heads the US research team and oversees US participation in TIMSS. "This helps make clear some of what we as a nation must do to improve our performance during the middle grades. We need a curriculum that focuses on fewer topics. We need to focus intense attention on far fewer "basic" topics. However, these basic topics must deal with more advanced content. In mathematics we must move from arithmetic to serious study of algebra and geometry. In science we must focus more on fundamentals in physics and chemistry. We cannot cling to the same content we have been covering every year - content to which we have given only a small amount of attention. Other countries are moving on to seriously study these advanced topics and so must we. These new, more advanced basics must also be taught in a way that builds understanding of important ideas. We cannot continue to emphasize recalling simple facts or performing routine procedures."

Other countries' dynamic view of what is basic differs greatly from the US traditional view of what is basic and how to help students master it. In the US, what is basic stays the same for many grades, even to the end of middle school. Other countries focus on new basic content each year. They begin with intense attention in the classroom to what is basic for that year. Between 4th and 8th grades most other TIMSS countries introduce with focused attention 6 to 7 mathematics and 8 to 11 science topics. However, the US introduces with focused attention only one mathematics topic and no science topics.

We also see curriculum's importance when we look at US achievements in more specific areas of mathematics and science. We do quite well in the kind of simple algebra and geometry topics covered at 4th grade. For example, only two countries did better than the US in 4th grade geometry - mostly involving identifying geometric patterns, shapes and lines of symmetry. By 8th grade more than half the countries did better than the US in geometry. By 8th grade geometry for most TIMSS countries was now more advanced content and the TIMSS tests reflected that. We do well at both grades in data representation and statistics. This seems to reflect the NCTM standards which call for emphasizing these topics. We also see that other countries are reforming their curricula to include such content.

In science, we do comparatively more poorly at both grades in physics (called "physical science" at 4th grade). Our science curricula cover this area less well than those of other countries.

Schmidt further said, "What we teach and how we teach it matters. What we consider as the 'basics' and how we handle them in our schools matters. We cannot afford to go back to the same old basics in a world going forward - a world making basics out of more advanced, powerful topics."

The TIMSS US research center is housed at Michigan State University and oversees the involvement of the US in the IEA TIMSS study. The address is 463 Erickson Hall, Michigan State University, East Lansing, Michigan 48824-1034, telephone 517-353-7755, fax 517-432-1727, or email: request@ustimss.msu.edu. Visit the US TIMSS National Research Center website at <http://ustimss.msu.edu>. The Center also coordinates the Survey of Mathematics and Science Opportunity (SMSO) and is the international center for the curriculum components of TIMSS.

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Ruth Chacon

Robertta Heine

Samantha Edwards

Ted Fiske

Westat

Nancy Caldwell/Trevor Williams/Leslie Martin

more from group
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Sunly
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**U.S. 4TH-GRADERS NEAR THE TOP IN SCIENCE;
ABOVE INTERNATIONAL AVERAGE IN MATH**

For the first time, an international comparison of fourth-grade math and science achievement shows American students above average in both math and science -- 41 points above the average science score of 524 and 16 points above the international average math score of 529.

According to the Third International Math and Science Study (TIMSS), released today by the Education Department's National Center for Education Statistics, statistically, only Korea outperformed the U.S. in fourth grade science and of the other 25 participating nations, only seven -- Singapore, Korea, Japan, Hong Kong, Netherlands, the Czech Republic and Austria -- did better than the U.S. in math in the fourth grade..

U.S. Secretary of Education Richard W. Riley said: "This report shows that at the fourth-grade level, we can be proud of the progress we've made, even as we seek to do more."

Riley noted that these results suggest national progress in elementary school math and science. A similar international study in 1991 found U.S. fourth graders well below average in math and near the top in science, but not as outstanding as in this study. According to the new report, 16 percent of U.S. fourth graders rank among the world's top 10 percent in science performance, and nine percent among the world's top 10 percent in math.

Riley said that no country had a significantly higher percentage among top performers in science, but added, "we cannot lose sight of the students at the bottom. Every child must have a real chance to master challenging material, and our work is far from done."

-MORE-

A TIMSS report issued last November found U.S. eighth graders performing slightly above average in science and slightly below in math. When compared to counterparts abroad, U.S. students perform better in science than in math at both the fourth and eighth grades, and better at fourth grade than at eighth grade in both math and science.

“Studying our international performance at grades four and eight gives clear evidence that math at eighth grade is a weak link,” Riley said. “We now have further evidence of the critical importance of the president’s proposal for a national test of math at grade eight to help students master math, no matter where they live in this great country.”

Of the G-7 countries, the U.S., Japan, Canada and England participated in the fourth-grade study; Italy, Germany, and France did not. Compared to our major economic partners, U.S. students’ science scores are not significantly different from those in Japan. And U.S. students outperform those in England and Canada. In math, U.S. scores are below those of Japan, not significantly different from those of Canada, and significantly higher than those of England.

Overall, in the 10 areas studied, U.S. fourth graders are above average in life, earth and physical sciences, and in environmental issues, as well as in whole numbers, fractions, geometry, data representation and patterns, but below the international average in measurement.

“We can’t definitively explain our fourth graders’ strong international standing, why we seem to be stronger in science than math, or why our fourth graders score higher than our eighth graders,” said Commissioner of Education Statistics Pascal Forgione, Jr. “I feel confident in pointing to some of the education reform efforts that have taken hold in elementary schools over the past five or six years.

-MORE-

“We know that tough standards, parent involvement and engaging classrooms that help students master and use challenging concepts are very important, and we must extend this apparent progress in the early grades to the middle and junior high schools where math and science achievement is not at the higher levels we want.”

According to the new report, factors such as amount of homework given, time spent watching television, amount of class time, number of years of college training for teachers, and curriculum offer no conclusive explanation of the fourth graders' high test scores.

Among the findings reported in *Pursuing Excellence: A Study of U.S. Fourth-Grade Mathematics and Science Achievement in International Context* :

- o More U.S. fourth graders watch large amounts of TV than the international average;
- o U.S. fourth graders have more educational resources in their homes than the average student in other TIMSS countries;
- o Computers are more common in the homes of U.S. fourth-graders than the international average, but the U.S. is not the world leader;
- o U.S. teachers assign about the same amount of math homework as teachers in other countries;
- o U.S. students spend more class time per week studying math and science than their average international counterparts;
- o U.S. students use calculators and computers in class more often than the average student in other TIMSS countries.

The fourth and eighth grade reports are available on the department's web site at www.ed.gov/NCES/timss. Printed copies of the new report are available while they last from the NCES TIMSS Customer Service Line at (202) 219-1333. The report will also be available from the U.S. Government Printing Office.

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Good News for American Education at Close of School Year
revised DRAFT June 9, 1997

U.S. 4th Grade Students Are Internationally Competitive in Science and Math. President Clinton announced today the fourth-grade results of the Third International Math and Science Study (TIMSS), which show that U.S. students score above the international average in both science and math, compared with 25 other participating countries. The President welcomed the news, calling the results a good first step toward our national goal of being first in the world in math and science, and a clear indication that our students and schools can compete with those all over the world.

- In science, U.S. students' average score was 565 -- 41 points above the international average science score of 524. U.S. fourth graders were outperformed only by students in Korea, and, in turn, scored higher than students in 19 other countries.
- In math, U.S. students' average score was 545 -- 16 points above the international average of 529. Only seven countries -- Singapore, Korea, Japan, Hong Kong, Netherlands, the Czech Republic and Austria -- outperformed U.S. students, while U.S. students outperform those in 12 other countries.

President Clinton added that these results show that U.S. schools are improving. The mathematics results in particular show gains from a previous international assessment, which had indicated that U.S. students performed below the international average.

National Standards and Tests for 8th Grade Math Needed for Continued Progress. While U.S. 4th grade math and science achievement is strong, achievement in 8th grade is relatively weak, especially in math, based on TIMSS results released in November. However, ~~we know that~~ we can attain the same high results for American 8th graders, or better, if states and school districts make the changes that are necessary: raising expectations for student performance, adopting challenging curricula, and improving teaching, *and holding schools and teachers accountable for their performance.*

The President's proposal for national standards in math is an essential tool in raising achievement. ~~These standards~~ will help parents, teachers and school districts set high expectations and figure out what's working and what isn't. ~~The voluntary national test in 8th grade math test will be based on the existing widely accepted National Assessment of Educational Progress (NAEP) 8th grade math test, and will also be linked to TIMSS, allowing students, parents and teachers to see how schools and students did compared with the TIMSS data.~~ The new test will help place a sharper focus on the critical late elementary, middle school and junior high school years--precisely the years when U.S. achievement appears to falter. It will also help schools and districts make sure that students have mastered the basics of math, including the essentials of algebra and geometry, by the end of grade 8, to give students the foundation to take tough math and science courses in high school to prepare for college and high-skills jobs. *international benchmark*

Kentucky to Participate in The Voluntary National Tests in 4th Grade Reading And 8th Grade Math. The President also announced that Governor Paul Patton of Kentucky has asked

and measure their progress. They will help determine which schools need help. And they will help determine what works and what doesn't.

that Kentucky be included in the voluntary national tests in 4th grade reading and 8th grade math when the tests are first given in the Spring of 1999. Governor Patton joins a growing list of educational leaders in California, Maryland, Massachusetts, Michigan, North Carolina and West Virginia in endorsing the tests.



Christa Robinson
06/09/97 05:34:47 PM

Record Type: Record

To: Julia R. Green/WHO/EOP
cc: Michael Cohen/OPD/EOP, William R. Kincaid/OPD/EOP
Subject: Re: reserved seating

titles are on the list I think you got from Education (they will also be on the briefing memo). Yes, we're definitely announcing KY tomorrow. We have the following paper that I will forward to you and Josh:

- 1 pager on event
- TIMSS Report

Internal:
2 page fact sheet on key findings from TIMSS.
Q&A
Event Memo
Letter from KY Governor endorsing standards proposal.

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President Calls for

National Standards and Tests for 8th Grade Math Needed for Continued Progress. While

U.S. 4th grade math and science achievement is strong, achievement in 8th grade is relatively weak, especially in math, based on TIMSS results released in November. ~~However, we know that~~ ^{to keep American students on track,} we can attain the same high results for American 8th graders, or better, if states and school districts make the changes that are necessary: raising expectations for student performance, ~~ensuring the same high~~ adopting challenging curricula, and improving teaching. ~~results for American 8th graders, the~~ ^{again challenged all states to adopt} and tests in 8th grade math.

The President's ~~proposal for national standards in math is an essential tool in raising achievement.~~ ^{Keep} These standards will help parents, teachers, and school districts set high expectations and figure out what's working and what isn't. The voluntary national test in 8th grade math test will be based on the existing widely accepted National Assessment of Educational Progress (NAEP) 8th grade math test, and will also be linked to TIMSS, allowing students, parents and teachers to see how schools and students did compared with the TIMSS data. The new test will ~~help place a sharper focus on the critical late elementary, middle school and junior high school years -- precisely the years when U.S. achievement appears to falter.~~ ^{ensure the same high} It will also help schools and districts make sure that students have mastered the basics of math, including the essentials of algebra and geometry, ~~by the end of grade 8, to give students the foundation to take tough math and science courses in high school to prepare for college and high-skills jobs.~~

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students achieving at this high level,

Focus on the years when US achievement begins to falter and will help ensure



UNITED STATES DEPARTMENT OF EDUCATION

OFFICE OF THE DEPUTY SECRETARY

FOB-10 Rm 6251

Telephone Number: (202) 401-3281

Fax Number: (202) 401-3095

FAX COVER SHEET

TO: Bill Kincaid

FROM: JUDY WURTZEL

FAX: 456-7028

NUMBER OF PAGES TO FOLLOW, INCLUDING COVER SHEET: _____

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MESSAGE:

600 INDEPENDENCE AVE., S.W. WASHINGTON, D.C. 20202

Our mission is to ensure equal access to education and to promote educational excellence throughout the Nation.

- EMBARGOED until June 10th 11:00 a.m. EDT -

Key Findings from Fourth-Grade TIMSS

Background on TIMSS

<u>Question</u>	<u>Answer</u>																		
When were students tested?	1995																		
How many nations participated?	4 th grade - 26 nations 8 th grade - 41 nations																		
How many students participated?	500,000 in all nations and all grades 13,000 students in 180 schools at the 7 th - 8 th grades 13,000 students in 190 schools at the 3 rd - 4 th grades																		
What methodologies does the report draw from?	<table><tr><th></th><th><u>8th Grade</u></th><th><u>4th Grade</u></th></tr><tr><td>assessments</td><td>x</td><td>x</td></tr><tr><td>questionnaires</td><td>x</td><td>x</td></tr><tr><td>curriculum analysis</td><td>x</td><td>x</td></tr><tr><td>videotape</td><td>x</td><td></td></tr><tr><td>case studies</td><td>x</td><td></td></tr></table>		<u>8th Grade</u>	<u>4th Grade</u>	assessments	x	x	questionnaires	x	x	curriculum analysis	x	x	videotape	x		case studies	x	
	<u>8th Grade</u>	<u>4th Grade</u>																	
assessments	x	x																	
questionnaires	x	x																	
curriculum analysis	x	x																	
videotape	x																		
case studies	x																		

Achievement

- In mathematics, U.S. fourth graders perform above the international average of the 26 TIMSS countries. U.S. students are outperformed by those in 7 countries and outperform those in 12 countries. Among our major economic partners who participated in the study, our students' scores are below those of Japan, not significantly different from those of Canada, and are significantly higher than those of England.
- In science, U.S. fourth graders also perform above the international average of the 26 TIMSS countries. U.S. students are outperformed by students in only one country - Korea. U.S. students outperform those in 19 countries. Among our major economic partners who participated in the study, our students' scores are not significantly different from those of fourth graders in Japan. Our students outperform those in England and Canada.

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- **In mathematics content areas, our fourth graders exceed the international average in five of the six areas assessed. These five areas are: whole numbers; fractions and proportionality; data representation, analysis, and probability; geometry; and patterns, relations, and functions. In one content area, the U.S. average is lower than the international average - measurement, estimation, and number sense.**
- **In science content areas, our fourth graders' performance exceeds the international average in the areas assessed. In three of these content areas - earth science; life science; and environmental issues and the nature of science - U.S. fourth grade students are significantly outperformed by only one or two other nations. In physical science, five other nations perform significantly better than the U.S.**
- **If an international talent search were to select the top 10 percent of all fourth-grade students in the 26 countries, in mathematics 9 percent of U.S. fourth-grade students would be included. In science, 16 percent would be included.**
- **The international standing of U.S. fourth graders is stronger than that of U.S. eighth graders in both mathematics and science.**
- **In comparison with their international counterparts, U.S. students perform better in science than in mathematics at both the fourth and eighth grades.**

Previous International Studies of Fourth-Grade Math and Science

<u>Math</u>	<u>U.S. Score</u>	<u>Science</u>	<u>U.S. Score</u>
1991 IAEP	below average	1960s FISS	above average
1995 TIMSS	above average	1980s SISS	average
		1991 IAEP	above average
		1995 TIMSS	above average

Contexts of Learning

- **It is too early in the process of data analysis to provide strong evidence to suggest factors that may be related to the patterns of achievement described here. No single factor or combination of factors emerges as particularly important.**
- **On most background factors studied, there is no difference between the U.S. and the international average, or the differences are small. Therefore, these factors are unlikely to be strongly associated with our international standing.**

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- On those background factors on which there is a difference between the U.S. and the international average, the factor is not shared with most high performing countries. Therefore, these factors are also unlikely to be strongly associated with our international standing.
- In general, preliminary analyses shed little light on factors which might account for the difference between our performance in mathematics and science, and our performance at the fourth and eighth grades. Further analyses are needed to provide more definitive insights on these subjects.

How Does the Context of Learning for U.S. Fourth Graders Compare to the International Average?

Even though differences from the international average may not appear to have a strong relationship to our international performance, understanding such differences helps us view the context of U.S. education in comparative perspective. The following points summarize the initial questionnaire findings about how U.S. fourth-grade mathematics and science education differs from the international average:

- Curriculum is not determined at the national level, as it is in most TIMSS countries.
- Students spend more class time per week studying mathematics and science than the international average.
- Teachers assign about the same amount of mathematics homework as teachers in other TIMSS countries.
- Students use calculators and computers in mathematics class more often than do students in most other TIMSS countries.
- Teachers have more university training than do their colleagues in many other TIMSS countries.
- Teachers' professional challenges are perceived to be similar to, but possibly less limiting than, those experienced by teachers in other TIMSS countries.
- Students have more educational resources in their homes than the international average.
- More U.S. students believe it is important to do well in mathematics and science and have more confidence about their performance in these subjects than their average international counterpart.

- EMBARGOED until June 10th 11:00 a.m. EDT -

- More U.S. fourth graders watch large amounts of TV than their international counterparts.

Conclusions

The fourth grade TIMSS data bring very good news.

The TIMSS data released thus far do not tell us why U.S. fourth grade students perform above the international mean.

Even without definitive answers about “why,” TIMSS continues to take us “beyond the horse race” by giving the nation more precise targets with which to focus their research and reform efforts by:

- **Shattering some widespread myths about what leads to high performance. Specifically, the results show that:**
 - Just like in the eighth grade, fourth-grade students in Japan watch as much television as U.S. students.
 - U.S. fourth-grade math teachers assign more math homework than some countries who outperform us.
 - U.S. students are more likely to use computers and calculators in their math classes than students in most of the countries that outperform them.
- **Providing needed direction for investigating our current science and mathematics practices, and how they can best be improved.**
 - **Why do U.S. fourth graders perform better than eighth graders in relation to their peers in other countries?**

Potential explanations might be:

- **Environmental.** Are factors such as living in a society that may emphasize science and technology more than other nations a potential explanation for our consistently strong fourth-grade science performance? Does the turbulence of adolescence undermine learning between the fourth and eighth grades in the U.S. more than in other countries?

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- **Teacher preparation.** Are fourth-grade teachers in the U.S. in greater command of their subject matter than their eighth-grade counterparts?
- **In-school.** Are U.S. curricula more focused and closer to international norms at the fourth-grade level than they are in eighth grade? Do U.S. fourth graders get a head start on studying science that boosts their performance in the earlier grades? What are the effects of various forms of tracking in the U.S. and elsewhere?

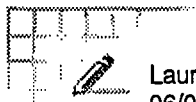
• Why is the relative performance of U.S. fourth and eighth graders stronger in science than in mathematics?

- **Environmental.** Do American students get more exposure to basic science concepts in the general media?
- **Teacher preparation.** Are U.S. teachers better able to handle the pedagogical challenges of science than math?
- **Organization of teaching and learning.** Is there less tracking in science than in math in the fourth and eighth grades?

Adequate understanding of our nation's education in an international perspective must await findings from the twelfth-grade data and deeper analysis of data at all grade levels.

TIMSS is not an answer book, but a tool to examine our own national educational strengths and weaknesses in an international perspective. All countries, including the U.S., have something to learn from other nations, and have something from which other countries can learn. These TIMSS findings will be an important source of information to guide our nation in the pursuit of excellence into the next century.

**For more information, contact:
NCES - Lois Peak (202) 219-1804
TIMSS Customer Service Line: (202) 219-1333**



Laura K. Capps
06/09/97 08:04:57 PM

Record Type: Record

To: William R. Kincaid/OPD/EOP, Michael Coheri/OPD/EOP, Christa Robinson/OPD/EOP

cc:

Subject: pls. review before I send it in to Staff Secretary

**PRESIDENT WILLIAM J. CLINTON
TIMMS TEST RESULTS REPORT
THE ROSE GARDEN
June 10, 1997**

Acknowledge: Secretary Riley, Pat Forgione [] Commissioner of the National Center for Education Statistics.

Today, as the Secretary stated, is a good day for American education. We are releasing new results from the Third International Mathematics and Science study. In my hands, I have a copy of the report and I'm proud to tell you that we have good news: America's 4th graders are performing above the international average in math and science. In fact, in science education our 4th graders do very well -- ranking 2nd, just behind Korea. We are making great strides.

This report demonstrates that we have built a solid foundation in our national effort to establish standards of excellence in education. This is a significant achievement. The American people expect and deserve to have the best schools in the world. And if there is one thing that Americans can agree on when it comes to improving education, it is our absolute conviction that every child in America has to learn the basics. This report proves that our decade long effort to raise standards is paying off.

also ^g In a similar study conducted in 1991, our 4th graders were well below average in math; ^{they were} ~~and~~ near the top in science, but not near enough. We are making across the board progress in both these areas of study.

As some of you may recall, Secretary Riley and Commissioner Forgione released the first results from TIMSS last November. Those results were mixed. Our nation's 8th graders were above the international average in science, but again, below the international average in mathematics. More importantly, the TIMSS study told us why we were not doing as well as we should and how we could get better.

These past results were ~~one results were~~ one reason why I called for voluntary national tests in 4th grade reading and 8th grade math. I have challenged every state in this country to adopt high national academic standards, not just in math and language, but in other areas as well, to participate nationally by 1999 in an examination of 4th graders in reading and 8th graders in math so that we can see how every child is doing in meeting those basic standards. Since I issued that call, 5 states -- Maryland, Michigan, North Carolina, California, West Virginia -- along with the Department of Defense, states have adopted my plan of national standards. I am pleased to announce that the state of Kentucky is joining the national movement, becoming the 6th state to do so.

[Acknowledge Kentucky members present]

The results today are good and we should feel proud. They also provide us with direction for improvement. I do not think we can be satisfied with the fact that our young people are above the international average in 4th grade mathematics but below the international average four years later in the 8th grade. Something is happening in the middle school years that needs our attention.

We know that parents are much more involved in their children's education in the first few years of school but less so as they get older. Experts also tell us that we seem to repeating course work from the 5th grade on; that we should challenge our students to do more. We can do better and we have a growing number of examples of how.

Last January, I went to Northbrook, Illinois to congratulate a group of school districts that had joined together in something called the **First in the World Consortium**. The goal of the consortium is quite simply to be the first in the world in math and science and many of the Northbrook schools are close to achieving that goal. One of the members of that consortium, Linda Veith, the principal at Sunset Ridge School in Northbrook, is with us today.

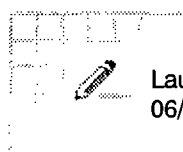
As the school year comes to a close, I want to thank the thousands of parents, teachers and principals, like Linda, who have done the hard work to achieve these positive results. They deserve an **A** for effort. Together we have committed ourselves to having the best education in the world, not just for the few, but for the many. The results we have learned today tell us that if we redouble our effort in middle school and high school, this country can meet the goal of national excellence. We have made a good first step: our students and schools can compete with those all over the world.

Finally, let me discuss one more thing that we must do together, reaching out across all the lines that divide us. As you know, the people of the Dakotas and Minnesota have suffered terribly from devastating floods this year. We have worked hard to help them stave off the worst, to keep their communities together, and to begin to rebuild.

It is vital that Congress pass straightforward disaster relief legislation to help

1

them begin the process of long-term recovery. Instead, the Congressional majority chose politics over the public interest. It insisted on weighting down this critical measure with a wish list of unacceptable, highly partisan provisions. They did this knowing full-well that this would be unacceptable to me, and to the American people. In the name of the people who have had to face devastating floods -- in the name of families who have suffered and who need our help -- I call on the Congressional majority to put aside political games, step up to their sober responsibility, and send me a straightforward disaster relief bill now.



Laura K. Capps
06/09/97 07:14:52 PM

Record Type: Record

To: Michael Cohen/OPD/EOP, William R. Kincaid/OPD/EOP

cc:

Subject: first draft -- please review

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This report demonstrates that we have built a solid foundation in our national effort to establish standards of excellence in education. This is a significant achievement. The American people expect and deserve to have the best schools in the world; schools that teach to high standards. And if there is one thing that Americans can agree on when it comes to improving education, it is their absolute conviction that every child in America has to learn the basics. This report proves that our decade long effort to raise standards is paying off.

In a similar study conducted in 1991, our 4th graders were well below average in math and near the top in science, but not near enough. We are making across the board progress in both these areas of study.

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We know how to improve public education. The Chicago public school system is another example to point to. Standards are making a difference: test scores are going up, schools are being reconstituted. The school district has put an end to social promotions. And groups like the Chicago Teachers Academy are helping teachers to become better teachers.

As the school year comes to a close, I want to thank the thousands of parents, teachers and principals who have done the hard work to achieve these positive results.

Good News for American Education at Close of School Year
DRAFT June 9, 1997

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President Clinton said that these results show that U.S. schools are improving, and that students are getting off to a good start in school. The mathematics results in particular show gains from previous international assessments, which showed that U.S. students performed below the international average.

Raising Standards and Measuring Progress Are Key to Further Improvement. While 4th grade achievement is strong, previous results from TIMSS, announced in November, show that at the 8th grade level, U.S. students performed slightly above the international average in science and slightly below average in math. This means that U. S. 4th grade students performed substantially better than 8th graders in relation to their peers in other countries.

President Clinton called on states and local school districts to build on the solid math and science foundation that our students are getting in their earliest years of schooling by raising standards for student achievement in the late elementary, middle school and junior high grades, by improving teaching and curricula, and by holding schools accountable for progress through participating in the voluntary national test of 8th grade mathematics. The 8th grade math test will be based on the existing widely accepted National Assessment of Educational Progress (NAEP) 8th grade math test, and will also be linked to the 8th grade math test used in TIMSS. The President stated that students who master the basics of math, including the essentials of algebra and geometry, by the end of grade 8, will have the foundation to take tough math and science courses in high school to prepare for college and high-skills jobs.

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**U.S. 4TH-GRADERS NEAR THE TOP IN SCIENCE;
ABOVE INTERNATIONAL AVERAGE IN MATH**

For the first time, an international comparison of fourth-grade math and science achievement shows American students above average in both math and science -- 41 points above the average science score of 524 and 16 points above the international average math score of 529.

According to the Third International Math and Science Study (TIMSS), released today by the Education Department's National Center for Education Statistics, statistically, only Korea outperformed the U.S. in fourth grade science and of the other 25 participating nations, only seven -- Singapore, Korea, Japan, Hong Kong, Netherlands, the Czech Republic and Austria -- did better than the U.S. in math in the fourth grade..

U.S. Secretary of Education Richard W. Riley said: "This report shows that at the fourth-grade level, we can be proud of the progress we've made, even as we seek to do more."

Riley noted that these results suggest national progress in elementary school math and science. A similar international study in 1991 found U.S. fourth graders well below average in math and near the top in science, but not as outstanding as in this study. According to the new report, 16 percent of U.S. fourth graders rank among the world's top 10 percent in science performance, and nine percent among the world's top 10 percent in math.

Riley said that no country had a significantly higher percentage among top performers in science, but added, "we cannot lose sight of the students at the bottom. Every child must have a real chance to master challenging material, and our work is far from done."

-MORE-

A TIMSS report issued last November found U.S. eighth graders performing slightly above average in science and slightly below in math. When compared to counterparts abroad, U.S. students perform better in science than in math at both the fourth and eighth grades, and better at fourth grade than at eighth grade in both math and science.

“Studying our international performance at grades four and eight gives clear evidence that math at eighth grade is a weak link,” Riley said. “We now have further evidence of the critical importance of the president’s proposal for a national test of math at grade eight to help students master math, no matter where they live in this great country.”

Of the G-7 countries, the U.S., Japan, Canada and England participated in the fourth-grade study; Italy, Germany, and France did not. Compared to our major economic partners, U.S. students’ science scores are not significantly different from those in Japan. And U.S. students outperform those in England and Canada. In math, U.S. scores are below those of Japan, not significantly different from those of Canada, and significantly higher than those of England.

Overall, in the 10 areas studied, U.S. fourth graders are above average in life, earth and physical sciences, and in environmental issues, as well as in whole numbers, fractions, geometry, data representation and patterns, but below the international average in measurement.

“We can’t definitively explain our fourth graders’ strong international standing, why we seem to be stronger in science than math, or why our fourth graders score higher than our eighth graders,” said Commissioner of Education Statistics Pascal Forgione, Jr. “I feel confident in pointing to some of the education reform efforts that have taken hold in elementary schools over the past five or six years.

-MORE-

“We know that tough standards, parent involvement and engaging classrooms that help students master and use challenging concepts are very important, and we must extend this apparent progress in the early grades to the middle and junior high schools where math and science achievement is not at the higher levels we want.”

According to the new report, factors such as amount of homework given, time spent watching television, amount of class time, number of years of college training for teachers, and curriculum offer no conclusive explanation of the fourth graders' high test scores.

Among the findings reported in *Pursuing Excellence: A Study of U.S. Fourth-Grade Mathematics and Science Achievement in International Context* :

- o More U.S. fourth graders watch large amounts of TV than the international average;
- o U.S. fourth graders have more educational resources in their homes than the average student in other TIMSS countries;
- o Computers are more common in the homes of U.S. fourth-graders than the international average, but the U.S. is not the world leader;
- o U.S. teachers assign about the same amount of math homework as teachers in other countries;
- o U.S. students spend more class time per week studying math and science than their average international counterparts;
- o U.S. students use calculators and computers in class more often than the average student in other TIMSS countries.

The fourth and eighth grade reports are available on the department's web site at www.ed.gov/NCES/timss. Printed copies of the new report are available while they last from the NCES TIMSS Customer Service Line at (202) 219-1333. The report will also be available from the U.S. Government Printing Office.

###



UNITED STATES DEPARTMENT OF EDUCATION
OFFICE OF THE SECRETARY

FAX TRANSMITTAL

TO: Mike Cohen / Bill Kincaid

ORGANIZATION: DPC

PHONE NUMBER: _____

FAX NUMBER: _____

FROM: Kevin Sullivan

PHONE NUMBER: 401-0831

MESSAGE: TIMSS

CONFIDENTIALITY NOTICE

THIS TRANSMISSION IS INTENDED FOR AND RESTRICTED TO THE NAMED ADDRESSEE ONLY. IT MAY CONTAIN CONFIDENTIAL AND/OR PRIVILEGED INFORMATION. IF YOU RECEIVE THIS TRANSMISSION IN ERROR. YOU ARE NOTIFIED THAT YOU ARE PROHIBITED FROM READING, COPYING, OR DISSEMINATING THE TRANSMISSION. PLEASE CALL 202-401-3000 TO ARRANGE FOR RETURN OF ANY TRANSMISSION SET IN ERROR. THANK YOU.

7 PAGE(S) TO FOLLOW



UNITED STATES DEPARTMENT OF EDUCATION
THE SECRETARY

June 6, 1997

MEMORANDUM TO: ERSKINE BOWLES
 WHITE HOUSE CHIEF OF STAFF

FROM: RICHARD W. RILEY
 SECRETARY OF EDUCATION

RE: PRESIDENT CLINTON'S INVOLVEMENT IN THE RELEASE
 OF 4TH GRADE TIMSS REPORT

Thank you for considering our request that President Clinton participate in the release of the 4th grade TIMSS report. Per our telephone conversation this evening, I am sending you a short summary of the latest TIMSS study which is very good news for public education. I have also attached a copy of the report that will be released this coming Tuesday.

Last November we released the first TIMSS study that showed that our 8th graders were below the international average in math and slightly above the international average in science. The President went to Northbrook, Illinois soon after to talk about the need to raise standards and to praise the Northbrook school system for taking the TIMSS test.

Now we have some very solid good news. This TIMSS study shows that our 4th graders are *above* the international average in both math and science. In fact, only Korea outperforms the U.S. in science. Our students are 41 points above the international science average (524) and 16 points above the average international math score. (529)

I believe this is a positive "end of the school year" story that should involve the President. It appears to be one more sign that U.S. students -- at least at the 4th grade -- are making gains in math compared to other countries. The President should make the point that our children seem to be getting a solid foundation which is good news, but that we really need to press ahead to make sure that our students study to higher standards. The link between the USA performance at 4th and 8th grade gives us clear evidence that math at 8th grade is a weak link. This gives us a very strong rationale for our proposed national test in math at 8th grade.

The international results are being released by Boston College at 10 am on Tuesday. We can release the U.S. results immediately afterwards (sometime between 11 and 1pm). We can move our event to the White House or the President could participate in our press conference at the Marriott Hotel.

**THE FOLLOWING PEOPLE ARE THE CURRENT PARTICIPANTS
IN THE "TIMSS" PRESS CONFERENCE**

PRESENTATION OF DATA

1. PAT FORGIONE -- COMMISSIONER OF EDUCATION STATISTICS

COMMENTARY

1. RICHARD W. RILEY -- SECRETARY OF EDUCATION
2. JOSEPH BORDOGNA -- ACTING DEPUTY DIRECTOR, NATIONAL SCIENCE
FOUNDATION
3. BRUCE ALBERTS -- PRESIDENT, NATIONAL ACADEMY OF SCIENCES

EXPERTS AT SIDE TABLE

1. LOIS PEAK -- TIMSS, PROJECT DIRECTOR FOR NCES
2. BILL SCHMIDT -- TIMSS NATIONAL RESEARCH DIRECTOR
3. LINDA VIETH -- PRINCIPAL OF SUNSET RIDGE SCHOOL IN NORTHBROOK,
ILLINOIS, (K-8), A PARTICIPANT IN THE "FIRST IN THE
WORLD CONSORTIUM.
4. LOURDES MONEGUDO -- EXEC. DIRECTOR OF THE "TEACHERS ACADEMY
FOR MATHEMATICS AND SCIENCE, A NON-PROFIT CORP.
SERVING CHICAGO PUBLIC SCHOOLS, FOCUSES ON
PROFESSIONAL DEVELOPMENT FOR TEACHERS. SHE IS
HISPANIC-AMERICAN
5. SHARON SIMPSON -- 4TH GRADE MATH TEACHER, AURORA, COLORADO,
WILL RECEIVE PRESIDENTIAL AWARD FOR EXCELLENCE
IN MATH AND SCIENCE TWO DAYS AFTER THIS EVENT.
SHE IS AFRICAN-AMERICAN .

ALSO PLEASE NOTE: LEON LETTERMAN, A NOBEL PRIZE WINNER, WHO IS ON THE BOARD OF DIRECTORS OF THE CHICAGO TEACHERS ACADEMY IS SCHEDULED TO BE IN THE AUDIENCE AS WELL.

- EMBARGOED until June 10th 11:00 a.m. EDT -

Key Findings from Fourth-Grade TIMSS

Background on TIMSS

<u>Question</u>	<u>Answer</u>																		
When were students tested?	1995																		
How many nations participated?	4 th grade - 26 nations 8 th grade - 41 nations																		
How many students participated?	500,000 in all nations and all grades 13,000 students in 180 schools at the 7 th - 8 th grades 13,000 students in 190 schools at the 3 rd - 4 th grades																		
What methodologies does the report draw from?	<table><tr><th></th><th><u>8th Grade</u></th><th><u>4th Grade</u></th></tr><tr><td>assessments</td><td>x</td><td>x</td></tr><tr><td>questionnaires</td><td>x</td><td>x</td></tr><tr><td>curriculum analysis</td><td>x</td><td>x</td></tr><tr><td>videotape</td><td>x</td><td></td></tr><tr><td>case studies</td><td>x</td><td></td></tr></table>		<u>8th Grade</u>	<u>4th Grade</u>	assessments	x	x	questionnaires	x	x	curriculum analysis	x	x	videotape	x		case studies	x	
	<u>8th Grade</u>	<u>4th Grade</u>																	
assessments	x	x																	
questionnaires	x	x																	
curriculum analysis	x	x																	
videotape	x																		
case studies	x																		

Achievement

- **In mathematics, U.S. fourth graders perform above the international average of the 26 TIMSS countries.** U.S. students are outperformed by those in 7 countries and outperform those in 12 countries. Among our major economic partners who participated in the study, our students' scores are below those of Japan, not significantly different from those of Canada, and are significantly higher than those of England.
- **In science, U.S. fourth graders also perform above the international average of the 26 TIMSS countries.** U.S. students are outperformed by students in only one country - Korea. U.S. students outperform those in 19 countries. Among our major economic partners who participated in the study, our students' scores are not significantly different from those of fourth graders in Japan. Our students outperform those in England and Canada.

- EMBARGOED until June 10th 11:00 a.m. EDT -

- **In mathematics content areas, our fourth graders exceed the international average in five of the six areas assessed. These five areas are: whole numbers; fractions and proportionality; data representation, analysis, and probability; geometry; and patterns, relations, and functions. In one content area, the U.S. average is lower than the international average - measurement, estimation, and number sense.**
- **In science content areas, our fourth graders' performance exceeds the international average in the areas assessed. In three of these content areas - earth science; life science; and environmental issues and the nature of science - U.S. fourth grade students are significantly outperformed by only one or two other nations. In physical science, five other nations perform significantly better than the U.S.**
- **If an international talent search were to select the top 10 percent of all fourth-grade students in the 26 countries, in mathematics 9 percent of U.S. fourth-grade students would be included. In science, 16 percent would be included.**
- **The international standing of U.S. fourth graders is stronger than that of U.S. eighth graders in both mathematics and science.**
- **In comparison with their international counterparts, U.S. students perform better in science than in mathematics at both the fourth and eighth grades.**

Previous International Studies of Fourth-Grade Math and Science

<u>Math</u>	<u>U.S. Score</u>	<u>Science</u>	<u>U.S. Score</u>
1991 IAEP	below average	1960s FISS	above average
1995 TIMSS	above average	1980s SISS	average
		1991 IAEP	above average
		1995 TIMSS	above average

Contexts of Learning

- **It is too early in the process of data analysis to provide strong evidence to suggest factors that may be related to the patterns of achievement described here. No single factor or combination of factors emerges as particularly important.**
- **On most background factors studied, there is no difference between the U.S. and the international average, or the differences are small. Therefore, these factors are unlikely to be strongly associated with our international standing.**

- EMBARGOED until June 10th 11:00 a.m. EDT -

- On those background factors on which there is a difference between the U.S. and the international average, the factor is not shared with most high performing countries. Therefore, these factors are also unlikely to be strongly associated with our international standing.
- In general, preliminary analyses shed little light on factors which might account for the difference between our performance in mathematics and science, and our performance at the fourth and eighth grades. Further analyses are needed to provide more definitive insights on these subjects.

How Does the Context of Learning for U.S. Fourth Graders Compare to the International Average?

Even though differences from the international average may not appear to have a strong relationship to our international performance, understanding such differences helps us view the context of U.S. education in comparative perspective. The following points summarize the initial questionnaire findings about how U.S. fourth-grade mathematics and science education differs from the international average:

- Curriculum is not determined at the national level, as it is in most TIMSS countries.
- Students spend more class time per week studying mathematics and science than the international average.
- Teachers assign about the same amount of mathematics homework as teachers in other TIMSS countries.
- Students use calculators and computers in mathematics class more often than do students in most other TIMSS countries.
- Teachers have more university training than do their colleagues in many other TIMSS countries.
- Teachers' professional challenges are perceived to be similar to, but possibly less limiting than, those experienced by teachers in other TIMSS countries.
- Students have more educational resources in their homes than the international average.
- More U.S. students believe it is important to do well in mathematics and science and have more confidence about their performance in these subjects than their average international counterpart.

- EMBARGOED until June 10th 11:00 a.m. EDT -

- More U.S. fourth graders watch large amounts of TV than their international counterparts.

Conclusions

The fourth grade TIMSS data bring very good news.

The TIMSS data released thus far do not tell us why U.S. fourth grade students perform above the international mean.

Even without definitive answers about “why,” TIMSS continues to take us “beyond the horse race” by giving the nation more precise targets with which to focus their research and reform efforts by:

- **Shattering some widespread myths about what leads to high performance. Specifically, the results show that:**
 - Just like in the eighth grade, fourth-grade students in Japan watch as much television as U.S. students.
 - U.S. fourth-grade math teachers assign more math homework than some countries who outperform us.
 - U.S. students are more likely to use computers and calculators in their math classes than students in most of the countries that outperform them.
- **Providing needed direction for investigating our current science and mathematics practices, and how they can best be improved.**
 - **Why do U.S. fourth graders perform better than eighth graders in relation to their peers in other countries?**

Potential explanations might be:

- **Environmental.** Are factors such as living in a society that may emphasize science and technology more than other nations a potential explanation for our consistently strong fourth-grade science performance? Does the turbulence of adolescence undermine learning between the fourth and eighth grades in the U.S. more than in other countries?

- EMBARGOED until June 10th 11:00 a.m. EDT -

- **Teacher preparation.** Are fourth-grade teachers in the U.S. in greater command of their subject matter than their eighth-grade counterparts?
- **In-school.** Are U.S. curricula more focused and closer to international norms at the fourth-grade level than they are in eighth grade? Do U.S. fourth graders get a head start on studying science that boosts their performance in the earlier grades? What are the effects of various forms of tracking in the U.S. and elsewhere?

- Why is the relative performance of U.S. fourth and eighth graders stronger in science than in mathematics?

- **Environmental.** Do American students get more exposure to basic science concepts in the general media?
- **Teacher preparation.** Are U.S. teachers better able to handle the pedagogical challenges of science than math?
- **Organization of teaching and learning.** Is there less tracking in science than in math in the fourth and eighth grades?

Adequate understanding of our nation's education in an international perspective must await findings from the twelfth-grade data and deeper analysis of data at all grade levels.

TIMSS is not an answer book, but a tool to examine our own national educational strengths and weaknesses in an international perspective. All countries, including the U.S., have something to learn from other nations, and have something from which other countries can learn. These TIMSS findings will be an important source of information to guide our nation in the pursuit of excellence into the next century.

For more information, contact:
NCES - Lois Peak (202) 219-1804
TIMSS Customer Service Line: (202) 219-1333



Judy_Wurtzel @ ed.gov

04/19/97 10:18:00 AM

Record Type: Record

To: Daryl E. Chubin, William R. Kincaid

cc:

Subject: Event releasing action plan

I have been meeting with Pat Forgione to figure our strategy re the release of the 4th grade TIMSS data -- which will be on June 10th. It obviously makes sense to have our report be written in light of that data -- and to show how we are addressing the issues raised by TIMSS about performance-- especially in the late elementary and middle school years.

I was unclear from our discussion about the plan for releasing the strategy it at the Presidential awardees event (which I think is a fine idea) if a day had been settled on (I know how difficult that is with POTUS scheduling) and whether thought had been given to the 4th grade release tie in.

My sense is that we might want the release on the 10th and the Presidential event on the 11th or 12th as the response (-- and that is probably what NCES would prefer --but the press people might think otherwise). We should discuss among ourselves and then a larger crew of folks.....



Christa Robinson
04/21/97 03:49:23 PM

Record Type: Record

To: See the distribution list at the bottom of this message

cc:

Subject: POTUS Schedule

4/21 Tomorrow POTUS goes to North Dakota to visit flood relief sites.
4/23 **Tape National Service Video**
FLOTUS Reading Is Fundamental Event
CWC Vote Event
4/24 Press interviews, ENDA photo-op
4/25 Visit with Hashimoto
4/26 **Radio Address on America Reads & AmeriCorps reading tutors.**
4/27-28 **Service Summit**
5/1 Foreign Policy Speech (tentatively scheduled)
5/2 FDR Memorial Event
Tape Radio Address tbd
5/5-12 SOUTH AMERICA TRIP
5/14 Possible Press Conference
5/13-23 **Possible Legal Immigrant Benefits Event**
5/15 **Possible Police Officers Memorial Speech**
5/16 **Possible Tuskegee Meeting**
Tape Radio Address tbd
5/17 White House News Photographers' Assoc. Dinner
5/18 **Morgan State Commencement Speech (tentatively scheduled)**
5/19 **Welfare to Work Foundation launch (tentatively scheduled)**
5/20 **Possible Education Town Hall**
5/21 **US Conference of Mayors Drug Summit**

Message Sent To: _____

4th grade TIMSS

Scrub on 4th grade data -

July 1

my late today

8 M/S
4 M

✓ Prob will not move ahead with either -

6:15 MS office

Problem - validation of Linkage not as
strong as we thought.
state

Those that actually took TIMSS
not always well v/
practical sense in NAEP

Think prob is with state TIMSS
tests.

Dely would prob be back to school.

NAEP-TIMSS linkU.S. DEPARTMENT OF EDUCATION
OFFICE OF EDUCATIONAL RESEARCH AND IMPROVEMENT

NATIONAL CENTER FOR EDUCATION STATISTICS

DATE: 6/3/97

TIME: _____

TO: William KincaidFAX #: 202-456-7028FROM: Enid SimmonsMESSAGE: As requested.

--

NUMBER OF PAGES, INCLUDING COVER SHEET: 3If you did not receive the complete transmission,
please call _____RETURN FAX NUMBER: (202) 219-1736

June 3, 1997

MEMORANDUM TO MARSHALL SMITH
TERRY PETERSON
JENNIFER DAVIS
KEVIN SULLIVAN
DAVID FRANK
MIKE COHEN
BILL KINCAID

FROM: Pascal D. Forgione, Jr.
Commissioner

SUBJECT: Notification Memorandum on Postponing the July 1 TIMSS

Please review and advise me of your comments on the proposed memo to go out to Chief

State School Officers' and Govenors' offices on TIMSS. I need your comments by 4 p.m. today

via fax (202) 219-1736 or ccmial to Sherran Osborne at NCES.

Thanks

cc: Marty Orland
Maureen Treacy
Eugene Owen
Lois Peak
Mary Frase

Dear chief/governor

I would like to take this opportunity to bring you up-to-date regarding the National Center for Education Statistics' (NCES) plans for the upcoming releases of the Third International Mathematics and Science Study (TIMSS) results.

As you know, NCES released the 8th grade TIMSS results on November 20, 1996. We will be releasing the fourth grade results on June 10th at 11:00 at the National Press Club in Washington, DC. The United States was one of 26 countries that participated in the fourth grade study. In February 1999, we plan on releasing the results for the 12th grade. We had also originally planned to release a special research and development report on July 1 that would link the TIMSS results and the National Assessment of Educational Progress (NAEP) results for eighth grade math and science and fourth grade math. However, the July 1 event has been postponed as we are still in the process of analyzing the state data for fourth grade. *We will notify you*

We will be conducting an embargoed briefing for education organizations and associations on June 9 at 10:00 a.m. in room 326 at 555 New Jersey Avenue, NW in advance of the June 10th release. I hope that your representative will be able to attend.

If you have any questions regarding the release of the TIMSS report on June 10, please don't hesitate to contact me 202/219-1828, or Maureen E. Treacy, NCES Communications Officer at 202/219-1329.

Sincerely,

Pascal D. Forgione, Jr., Ph.D.
Commissioner

cc: State Test Director



U.S. DEPARTMENT OF EDUCATION
OFFICE OF EDUCATIONAL RESEARCH AND IMPROVEMENT

NATIONAL CENTER FOR EDUCATION STATISTICS

DATE: 6/5/97

TIME: _____

TO: Bell Kincaid

FAX #: _____

FROM: Pat Forzese

MESSAGE:

NUMBER OF PAGES, INCLUDING COVER SHEET: _____

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RETURN FAX NUMBER: (202) 219-1736



U. S. DEPARTMENT OF EDUCATION
OFFICE OF EDUCATIONAL RESEARCH AND IMPROVEMENT

NATIONAL CENTER FOR EDUCATION STATISTICS

June 5, 1997

MEMORANDUM TO MARSHALL SMITH

TERRY PETERSON
JENNIFER DAVIS
KEVIN SULLIVAN
DAVID FRANK
MIKE COHEN
BILL KINCAID

FROM : Pascal D. Forgione, Jr.
Commissioner

SUBJECT : Notification Memorandum on Postponing the July 1 TIMSS

The attached copy are letters that were sent to the chief state school officers, governors, governors education advisors, and state test directors.

If you have further questions, please let me know.

Best Regards.

cc: Marty Orland
Maurcen Treacy
Eugene Owen
Lois Peak
Mary Frase
Gary Phillips



U. S. DEPARTMENT OF EDUCATION
OFFICE OF EDUCATIONAL RESEARCH AND IMPROVEMENT

NATIONAL CENTER FOR EDUCATION STATISTICS

June 5, 1997

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If you have any questions regarding the release of the TIMSS report on June 10, please don't hesitate to contact me 202/219-1828, or Maurcen E. Treacy, NCES Communications Officer at 202/219-1329.

Sincerely,

Pascal D. Forgione, Jr., Ph.D.
Commissioner

cc: Governor's Education Advisor



U. S. DEPARTMENT OF EDUCATION
OFFICE OF EDUCATIONAL RESEARCH AND IMPROVEMENT

NATIONAL CENTER FOR EDUCATION STATISTICS

June 5, 1997

Dear Chief State School Officer:

I would like to take this opportunity to bring you up-to-date regarding the National Center for Education Statistics' (NCES) plans for the upcoming releases of the Third International Mathematics and Science Study (TIMSS) results.

As you know, NCES released the 8th grade TIMSS results on November 20, 1996. We will be releasing the fourth grade results on June 10th at 11:00 at the National Press Club in Washington, DC. The United States was one of 26 countries that participated in the fourth grade study. In February 1999, we plan on releasing the results for the 12th grade. We had also originally planned to release a special research and development report on July 1 that would link the TIMSS results and the National Assessment of Educational Progress (NAEP) results for eighth grade math and science and fourth grade math. However, the July 1 event has been postponed as we are still in the process of analyzing the state data for fourth grade.

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If you have any questions regarding the release of the TIMSS report on June 10th, please don't hesitate to contact me at 202/219-1828, or Maurcen E. Treacy, NCES Communications Officer at 202/219-1329.

Sincerely,

Pascal D. Forgione, Jr., Ph.D.
Commissioner

cc: State Test Director



U.S. DEPARTMENT OF EDUCATION
OFFICE OF EDUCATIONAL RESEARCH AND IMPROVEMENT

NATIONAL CENTER FOR EDUCATION STATISTICS

DATE: 5/6

TIME: _____

TO: Bill Kincaid

FAX #: 456-7028

FROM: Marty Orland

MESSAGE:

Bill,

This was faxed to Mike Cohen yesterday. I wanted to make sure you saw it as well.

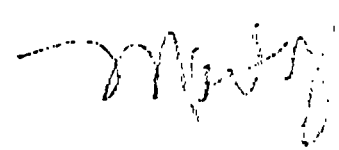
We're finalizing a formal scheduling request to go out today. Please call if you have questions.

Marty

NUMBER OF PAGES, INCLUDING COVER SHEET: 7

If you did not receive the complete transmission,
please call 219-2292

RETURN FAX NUMBER: (202) 219-1736



May 5, 1997

To: Mike Cohen

From: Marty Orland and Pat Morgione

Subject: Possible White House Involvement in TIMSS Releases of June 10 and July 1

Here is a brief summary of the June 10 and July 1 TIMSS releases. We are converting these into formal scheduling requests today, but thought you'd want this as well.

June 10 TIMSS Grade 4 Report Release

Background

On Tuesday June 10 at 11am at the national press club, NCES will be releasing the US grade 4 findings from the TIMSS. Twenty-six countries participated in the grade 4 assessment, compared with 41 in grade 8. Of the G-7 nations, the US, Canada, England and Japan participated (France, Germany and Italy did not). As with the grade 8 TIMSS findings from last fall, the US release will follow by an hour the international grade 4 results being released by the IEA at Boston College in Boston.

Please note that we have very limited flexibility here regarding the timing of this release. We cannot release the US findings before the international release, and since the US findings will be part of the international report, we really can't delay our US report findings past June 10 either. The fourth grade release can help set the stage for subsequent events that week such as announcing the NSF presidential award winners (who will be in town June 12-14), and the administration's "action strategy".

Major Findings

The grade 4 results paint a very different picture of early US mathematics and science performance than appeared in grade 8:

- US grade 4 mathematics performance is above the international average. We perform significantly better than 12 of the 26 countries, including England, and perform comparably with Slovenia, Ireland, Hungary, Australia, Canada and Israel. We trail Japan as well as six other countries (Korea, Singapore, Hong Kong, Netherlands, Czech Republic and Austria).
- US grade 4 science performance is among the top nations of the world. We trail only Korea, are comparable with Japan, Austria, Australia, the Netherlands and the Czech Republic, and score better than England, Canada, Singapore, and 16 other nations.

These patterns are consistent with earlier international studies (we do better in the early grades, and in science, as opposed to math), but the magnitude of the difference here is considerably greater.

Explanations/Implications

Three major points are apparent from the grade 4 data:

- The US gets off to an internationally competitive start with respect to math and (especially) science performance;
- As was true in grade 8, we do considerably better in science than math;
- Relative to other countries, there's a major US performance slide in both science and math between grades 4 and 8.

Preliminary analysis of the TIMSS data do not establish clear explanations for any of these patterns. We're continuing to line up the usual suspects and are convening a group of experts to help us sort this out, this Wednesday at 9:30, in Room 5165 FOB10. (You should have gotten an invite). At this point all we can say is that we're clearly doing some things right in the early years, but are not able to sustain our successes.

July 1 NAEP-TIMSS Link Report Release

Background

On July 1, at 10 am at the National Press Club, NCES will be releasing an R and D report linking state NAEP scores with the TIMSS findings. Three separate scores will be reported for the states who participated in the recent state NAEP assessments in math and science:

- grade 4 predicted TIMSS scores for 43 states (compared with 26 countries);
- grade 8 predicted TIMSS scores for 40 states (compared with 41 countries);
- grade 8 predicted science scores for 40 states (compared with 41 countries).

Secretary Riley will be in Ireland that day (and through July 5 as we understand).

Format

The report will present two-page profiles of each states' relative performance including:

- which countries outperform the particular state, which countries it outperforms, and which countries it is similar to;
- what percent of its students perform in the international top 10 and top 25 percent;
- reiteration of recent state NAEP data including changes since the early 1990s in math achievement.

Major Findings

When viewed in an international perspective, the variability among the states is pretty striking. Our highest performing states (North Dakota, Maine, Minnesota, Iowa) are comparable to the top-rank countries in the world in science (except for Singapore) and are exceeded by only a handful of countries in math. Conversely, our lowest ranking states (mostly the deep south plus California), only consistently outperform the very lowest ranked countries (Kuwait, Iran, South Africa), and in grade 8 almost always score significantly lower than other industrialized nations.

Implications/Outreach

Because these findings bring the TIMSS data to the state level, they offer a unique opportunity for state policymakers to benchmark their own performance to the world. Anticipating strong state and local interest in the findings as well as the likely next question by policymakers, "Now that we know how we're doing, what are we supposed to do about it?", we have been working with ED and OERI to construct a "Benchmarking Toolkit" that would allow LEAs to relate not only their achievement, but also their frameworks, curriculum, and instructional practices with other countries, and what we know about best practice.

I'm including the latest outline on the Toolkit modules. Current plans are to note its late July availability on the day of the NAEP/TIMSS release. ED is planning some aggressive marketing of the Toolkit materials, as well as training sessions this summer with Eisenhower Consortium grantees and possibly other groups like NEA, AFT, and NCTM.

ED is also exploring the possibility of downlinking the event with selected states/LEAs on July 1 who wish to use the NAEP/TIMSS link as a springboard to showcase their own reforms. And we're also talking with NAB about downlinking the event to their 270 local BCER sites.

cc: Ray Cortines
Mike Smith
Judy Wurtzel
David Frank
Terry Peterson
Kevin Sullivan
Frank Hollenman

DRAFT

TIMSS BENCHMARKING TOOLKIT: ACHIEVEMENT, TEACHING, CURRICULUM, AND ASSESSMENT

Introduction to the TIMSS Benchmarking Toolkit

The November release of the TIMSS eighth-grade results has generated a strong interest among policy makers at various levels in using TIMSS as a "benchmark," or medium by which to compare their systems to those of other countries. This interest is likely to be heightened on June 10, when the National Center for Education Statistics (NCES) expects to release the TIMSS fourth-grade data; and on July 1, when NCES will release the TIMSS/NAEP link, enabling the comparison of U.S. states to the TIMSS countries. At that time, states and districts will need a concrete method to compare their systems to TIMSS findings about other countries. Such comparisons will assist local policy makers in preparing for the new test in 1999.

The TIMSS benchmarking project provides policy tools based on the TIMSS experience to assist officials who desire to compare their district and state with other nations. These tools will help answer the question: How do mathematics and science achievement, teaching, curriculum, and assessment frameworks in my state or district compare to other countries? The toolkit project is being undertaken by NCES and the Office of Educational Research and Improvement (OERI).

The toolkit has an overview to the TIMSS project and its findings, and four modules that draw upon findings from different components of the study. These modules allow policy makers to compare themselves to TIMSS in four respects:

- Achievement,
- Teaching,
- Curriculum, and
- Assessment Frameworks

Overview Module

The overview will provide background information on the TIMSS study and an overview of the toolkit. The overview material will also be summarized in a 16-page booklet which will be included in each of the five modules.

Components of the overview will include: Pursuing Excellence; the fourth-grade U.S. TIMSS report; TIMSS The Movie; a set of overheads on the TIMSS study findings; and an annotated bibliography of TIMSS-related resources.

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Achievement Module

In 1998, states and districts will have the opportunity to use the TIMSS survey to compare their math and science achievement with that of other countries. (A similar program known as State/District TIMSS was also previously offered in 1995, 1996, and 1997). The achievement module describes how the 1998 State/District TIMSS program can assist local policy makers and encourages them to use it in 1998 to prepare for the new national test in 1999.

Components of the achievement module will include: a description of district TIMSS, an example report, and a guidebook for policy makers on how to understand and use results.

Teaching Module

The purpose of the teaching module is to help district leaders and teachers learn about and reflect on the findings of the TIMSS Videotape Classroom Study. The teaching module will facilitate in-depth discussions about teaching practice through discussion guides designed around the TIMSS eight grade mathematics lesson videos, from the US, Japan, and Germany.

Components of the teaching module will include: a 75-minute videotape of the TIMSS classroom observations; a moderator's guide that provides discussion questions for practitioners and policy makers; background information on the video study and the lessons of each country; and supporting materials, including NCTM's recommended teaching standards.

Curriculum Module

The curriculum module is designed to help school level personnel think about their current curriculum in light of TIMSS' curriculum analysis findings. The module includes information for evaluating mathematics and science curriculum materials. It will provide baseline information on the curriculum analysis methodology used in TIMSS, AAAS Project 2061, and other similar projects, and findings from the TIMSS curriculum analysis study.

Components of the curriculum module will include: a guidebook that includes an overview of the studies, a guide to the module (explaining the content and ways it can be used), the findings and methodology of the TIMSS curriculum analysis model and other curriculum analysis models, and the executive summary of *Splintered Vision*.

Assessment Frameworks Module

The assessment framework module provides information on the TIMSS and NAEP assessment framework content and performance expectations. This information allows local school district personnel with responsibility for curriculum and instruction to compare their curriculum and/or assessment frameworks against these. A guidebook will facilitate use of this module to catalyze discussion of national and international expectations.

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Components of the assessment frameworks module will include: the NAEP and TIMSS frameworks for math and for science, with selected representative items from each, and a guide book.

Contact Information

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SPECIFICATIONS OF THE TIMSS BENCHMARKING TOOLKIT

The TIMSS benchmarking toolkit will have five sections: an extensive overview, the teaching module, achievement module, curriculum module, and the assessment module. Also, there will be a mini-overview that will accompany each module, when the modules are distributed separately. Each module will be shrunk-wrapped or otherwise packaged separately. All five modules will have a single corporate identify. The extensive overview will be distributed separately. Materials will be two-color.

Component	Pgs/min.	Packaging
Extensive Overview (1 booklet, 2 books, VHS tape, set of transparencies, and unbound reports)		
Mini-Overview	16	booklet
Pursuing Excellence	as is	book
Fourth-grade report	as is	book
TIMSS The Movie	10 min.	VHS tape
Introduction to TIMSS	25-30	transparencies
Teaching Module (VHS tape, 100-page spiral bound book, 5 booklets)		
Mini-Overview	16	booklet
Six Lessons Video with introduction	80-85 minutes	VHS tape
Moderator's guide	100	spiral bound book
Japanese standards	25	booklet
German standards	50	booklet
NCTM standards	50	booklet
Lesson context and tables	150	booklet
Achievement Module (1 ad/brochure, 3 booklets)		
Mini-Overview	16	booklet
Description of District TIMSS	3	Ad/brochure
Report example	25	booklet
Guide book on understanding and using results	25	booklet
Curriculum Module (3 booklets)		
Mini-Overview	16	booklet
Guidebook	60	booklet
Executive summary of Splintered Vision	16	booklet
Assessment Frameworks Module (3 booklets)		
Mini-Overview	16	booklet
Frameworks and examples	160	booklet
Guidebook	60	booklet