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ACHIEVING EXCELLENCE

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A REPORT OF INITIAL FINDINGS OF EIGHTH GRADE
PERFORMANCE FROM THE THIRD INTERNATIONAL
MATHEMATICS AND SCIENCE STUDY

First in the World Consortium

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CONSORTIUM PRESIDENT'S STATEMENT

Two years ago 10 superintendents signed a pledge with Secretary of Education Richard W. Riley to pursue high-stakes effort to attain world-class achievement by the year 2000. The number of superintendents participating in the Consortium grew to 20 and now includes most of the elementary and high school districts in this area.

Each of the districts is considered successful and operates independently. We had no compelling need to commit ourselves to a project that involved intense cooperation, shared resources, and compromise. We consider this project unique and worthy of replication by other educators.

We have benefited from an incredible amount of technical assistance from Secretary Riley and the staff of the U.S. Department of Education. We consider their partnership a quality example of how local school districts can work with the federal government and still maintain local control. The technical support of the staff, in particular Maggie McNeely from the Student Achievement Institute, has been invaluable. Others worthy of mention from the Department are Terry Peterson, Joe Conaty, Eugene Owen, Lois Peak, and Susan Frost. We also appreciate the assistance of Mike Cohen, formerly with the Department of Education and currently at the White House Domestic Policy Council. Mike has consistently challenged us in many thought-provoking discussions. Our congressman, John Porter, has met with us on many occasions, raising issues for us that aided our success. Congressman Porter's leadership of the House Labor, Health and Human Services and Education Committee has helped us learn more about the issues confronting public schools. The North Central Regional Educational Laboratory has been an active participant with the Consortium. The Lab has provided technical assistance, facilitated meetings, and assisted with the production of materials.

This Consortium has become a success story. We are proud of our efforts that helped school districts participate in the TIMSS. We are also proud of the work we have done with policy makers at both the state and national level. We believe in U.S. public education, yet we recognize the importance of constant improvement. The fact is that U.S. students can be the very best in the world.

The *First in the World Consortium* is on course to be among the best in the world. Our Boards of Education and communities are supportive, but hold us to the highest education standards; our teachers are well-trained, dedicated, and committed; our schools are led by effective administrators; our education programs are enhanced with quality support personnel; our parents are actively involved; and our students come to school eager to learn.

Finally, thank you, Mr. President, for sharing this event with us. We know you are a strong proponent of public education, and we applaud your leadership as a true education president.

Dr. Paul L. Kimmelman
President, *First in the World Consortium*

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CHAPTER 1

THE FIRST IN THE WORLD CONSORTIUM: WHO WE ARE

HISTORY

The *First in the World Consortium* is the product of a study group of superintendents from Chicago's North Shore. Originally this group was formed to fulfill administrative recertification requirements and, as a consequence, met regularly for several months. The discussions at these meetings focused primarily on contemporary educational issues facing administrators at these schools: school finance, education and business collaboration, and education reform. One of the last meetings of the superintendents' study group centered on *Goals 2000*—which codified the national goals and called for world-class standards. From the superintendents' discussion about the national goals came a commitment to create a consortium of districts driven by the need to pursue a "world-class education" for their students.

Pledging to take the national goals seriously, the superintendents in the Consortium collectively decided to focus first on Goal 5—*U.S. students will be first in the world in mathematics and science achievement*. This goal would become the rallying cry for their collective effort and would define their common benchmark.

PURPOSE

Toward that end, the superintendents launched the *First in the World Consortium*. While the title felt uncomfortable, the group believed it was the best description of the goal of their work. The Consortium established a clear benchmark for accountability that would require decisions to be data driven.

The emerging leadership of the *First in the World Consortium* directed the group's initial efforts toward three goals:

- Benchmarking Consortium schools' performance on an international measure—the Third International Mathematics and Science Study (TIMSS);
- Creating a forum to clarify world-class standards for business leaders, policy makers, educators, and community members; and
- Establishing a network of learning communities throughout the Consortium and beyond to involve mathematics and science staff, research and development personnel, parents, and community leaders in the work needed to achieve the goal.

DEMOGRAPHICS

The Consortium is composed of 15 elementary (K-8) school districts, 3 high school districts (grades 9-12), the Illinois Mathematics and Science Academy, and the North Suburban Special Education District located in the northeastern suburban area of Chicago, Illinois. These districts represent 32 elementary schools, 17 middle schools, and 6 high schools.

Enrollment

- 37,125 students attend Consortium schools.

Student Ethnicity

- 13.8% are Asian/Pacific Islanders.
- 6.1% are Hispanic.
- 1.5% are Black non-Hispanic.
- 0.1% are Native American (American Indian/Alaskan native)
- 78.5% are Caucasian non-Hispanic.

Attendance Information

- 95.3% of the students are in school daily.
- 0.5% or fewer of the students are reported as absent from school without valid cause for 10% or more of the school days.
- 94.7% graduate from the high schools.

Other

- 7.2% of the students speak a language other than English in the home, qualifying them for bilingual education.

- 6.3% of the students receive public aid, live in institutions for neglected or delinquent children, are supported in foster homes with public funds, or are eligible to receive free or reduced-price lunches.
- \$6,847 is the average per-pupil expenditure.

Faculty Characteristics

- 2,587 classroom and special education teachers are employed in the Consortium.
- 74.6% of the teachers are females; 25.4% are males.
- 62.6% of the teachers have earned at least a master's degree.
- 13.8 is the average years of teaching experience.
- 97.5% are Caucasian; 1% are Hispanic; 1.5% other.

NOTE: The source of the demographic information is the Illinois State Report Card. The Illinois Mathematics and Science Academy and the North Suburban Special Education District are not represented in the above information because state report cards are not published for these schools.

CHAPTER 2

ACHIEVING EXCELLENCE: THE RESULT OF HIGH EXPECTATIONS

On November 20, 1996, U. S. Secretary of Education Richard Riley announced the results of the Third International Mathematics and Science Study (TIMSS). These results were both timely and eye-opening. The data provide an international benchmark of what it means to pursue educational excellence.

The U.S. performance fell short of our national goal, suggesting the necessity for continued reform of our schools. Secretary Riley reiterated the need to raise standards. He challenged the educational community and the entire nation to "move American education into the 21st Century."

The report raised many issues about the following:

- the content and rigor of our curriculum;
- the quality of our classroom instruction;
- the preparation of our teachers; and most importantly,
- the performance expectations for our nation's students.

These are some of the thoughts that have guided the work of the Consortium. The initial analyses of the Consortium's TIMSS results demonstrate that U.S. students can compete with the best students in the world. The data show that the Consortium places

among the highest achieving nations in the world and suggest a few possible reasons for this level of performance. Moreover, the data provide us with solid information for continuous improvement.

ACHIEVEMENT DATA

HOW WELL DO CONSORTIUM STUDENTS PERFORM?

The Consortium students perform at a world-class level in both mathematics and science. In mathematics, only students in Singapore outperformed our eighth graders. Figure 1 demonstrates that our students are not significantly different from students in six other nations. The figure also shows that Consortium students outperformed their counterparts in 34 countries.

In science, no nations outperformed the Consortium. Figure 2 illustrates that our students were not significantly different from students in eight other nations. This figure also shows that consortium students outperformed their counterparts in 33 countries.

FIGURE 1:

NATIONS' AVERAGE MATHEMATICS PERFORMANCE COMPARED TO THE CONSORTIUM

NATIONS WITH AVERAGE SCORES SIGNIFICANTLY HIGHER THAN THE CONSORTIUM	
NATION	AVERAGE
SINGAPORE	643

NATIONS WITH AVERAGE SCORES NOT SIGNIFICANTLY DIFFERENT FROM THE CONSORTIUM	
NATION	AVERAGE
KOREA	607
JAPAN	605
HONG KONG	588
CONSORTIUM	587
BELGIUM-FLEMISH °	565
CZECH REPUBLIC	564
SLOVAK REPUBLIC	547

INTERNATIONAL AVERAGE = 513

SOURCE: Beaton et al. (1996) *Mathematics achievement in the middle school years*. Table. 1.1
Boston College: Chestnut Hill, MA.

NOTES:

1. Nations not meeting international guidelines are shown in parentheses.
2. Nations in which more than 10 percent of the population was excluded from testing are shown with a *. Latvia is designated LSS because only Latvian-speaking schools were tested, which represents less than 65 percent of the population.
3. Nations in which a participation rate of 75 percent of the schools and students combined was achieved only after replacements for refusals were substituted are shown with a °.
4. The international average is the average of the national averages of the 41 nations.
5. The country average for Sweden may appear to be out of place; however, statistically, its placement is correct.
6. The standard error for the Consortium scores is 11.8.

NATIONS WITH AVERAGE SCORES SIGNIFICANTLY LOWER THAN THE CONSORTIUM	
NATION	AVERAGE
SWITZERLAND °	545
(NETHERLANDS)	541
(SLOVENIA)	541
(BULGARIA)	540
(AUSTRIA)	539
FRANCE	538
HUNGARY	537
RUSSIAN FEDERATION	535
(AUSTRALIA)	530
IRELAND	527
CANADA	527
(BELGIUM-FRENCH)	526
SWEDEN	519
(THAILAND)	522
(ISRAEL) *	522
(GERMANY) °	509
NEW ZEALAND	508
ENGLAND °°	506
NORWAY	503
(DENMARK)	502
UNITED STATES °	500
(SCOTLAND)	498
LATVIA (LSS) °	493
SPAIN	487
ICELAND	487
(GREECE)	484
(ROMANIA)	482
LITHUANIA *	477
CYPRUS	474
PORTUGAL	454
IRAN, ISLAMIC REPUBLIC	428
(KUWAIT)	392
(COLOMBIA)	385
(SOUTH AFRICA)	354

FIGURE 2:

NATIONS' AVERAGE SCIENCE PERFORMANCE COMPARED TO THE CONSORTIUM

NATIONS WITH AVERAGE SCORES SIGNIFICANTLY HIGHER THAN THE CONSORTIUM	
NATION	AVERAGE
NONE	

NATIONS WITH AVERAGE SCORES NOT SIGNIFICANTLY DIFFERENT FROM THE CONSORTIUM	
NATION	AVERAGE
SINGAPORE	607
CONSORTIUM	584
CZECH REPUBLIC	574
JAPAN	571
KOREA	565
(BULGARIA)	565
(NETHERLANDS)	560
(SLOVENIA)	560
(AUSTRIA)	558

INTERNATIONAL AVERAGE = 516

SOURCE: Beaton et al. (1996) *Science achievement in the middle school years*. Table 1.1 Boston College: Chestnut Hill, MA.

NOTES:

1. Nations not meeting international guidelines are shown in parentheses.
2. Nations in which more than 10 percent of the population was excluded from testing are shown with a *. Latvia is designated LSS because only Latvian-speaking schools were tested, which represents less than 65 percent of the population.
3. Nations in which a participation rate of 75 percent of the schools and students combined was achieved only after replacements for refusals were substituted are shown with a °.
4. The international average is the average of the national averages of the 41 nations.
5. The country average for Scotland (or Spain) may appear to be out of place; however, statistically, its placement is correct.
6. The standard error for the Consortium scores is 8.7.

NATIONS WITH AVERAGE SCORES SIGNIFICANTLY LOWER THAN THE CONSORTIUM	
NATION	AVERAGE
HUNGARY	554
ENGLAND **	552
BELGIUM-FLEMISH	550
(AUSTRALIA)	545
SLOVAK REPUBLIC	544
RUSSIAN FEDERATION	538
IRELAND	538
SWEDEN	535
UNITED STATES °	534
(GERMANY) **	531
CANADA	531
NORWAY	527
NEW ZEALAND	525
(THAILAND)	525
(ISRAEL) *	524
HONG KONG	522
SWITZERLAND °	522
(SCOTLAND)	517
SPAIN	517
FRANCE	498
(GREECE)	497
ICELAND	494
(ROMANIA)	486
LATVIA (LSS) °	485
PORTUGAL	480
(DENMARK)	478
LITHUANIA *	478
(BELGIUM-FRENCH)	471
IRAN, ISLAMIC REPUBLIC	470
CYPRUS	463
(KUWAIT)	430
(COLOMBIA)	411
(SOUTH AFRICA)	326

HOW DO THE CONSORTIUM'S BEST STUDENTS COMPARE WITH OTHERS' BEST?

One of the Consortium's goals is to determine how well its students perform relative to the best students in the world. The Consortium decided to ask themselves a question: If an international talent search were to select the top ten percent of all students in the 41 TIMSS countries and the Consortium combined, what percentage of Consortium students would be included?

In mathematics (see figure 3), 26 percent of Consortium eighth graders would be selected in the international talent search, as would 45 percent of all Singaporean students and 32 percent of Japanese students.

In science (see figure 4), 23 percent of Consortium eighth graders would be selected. This figure is second only to Singapore, which would have 31 percent of its students selected.

If the international talent search were to establish a standard of the top half of all students in the 41 TIMSS countries and the Consortium, 79 percent of eighth graders in the Consortium would be selected in mathematics, compared with 94 percent of Singaporeans and 83 percent of Japanese. In science, 75 percent of Consortium students would be selected, second only to Singapore with 82 percent of its students selected.

FIGURE 3:

PERCENT OF STUDENTS FROM SELECTED
NATIONS SCORING AMONG THE TOP 10
PERCENT OF EIGHTH GRADERS IN THE 41
TIMSS COUNTRIES IN MATHEMATICS

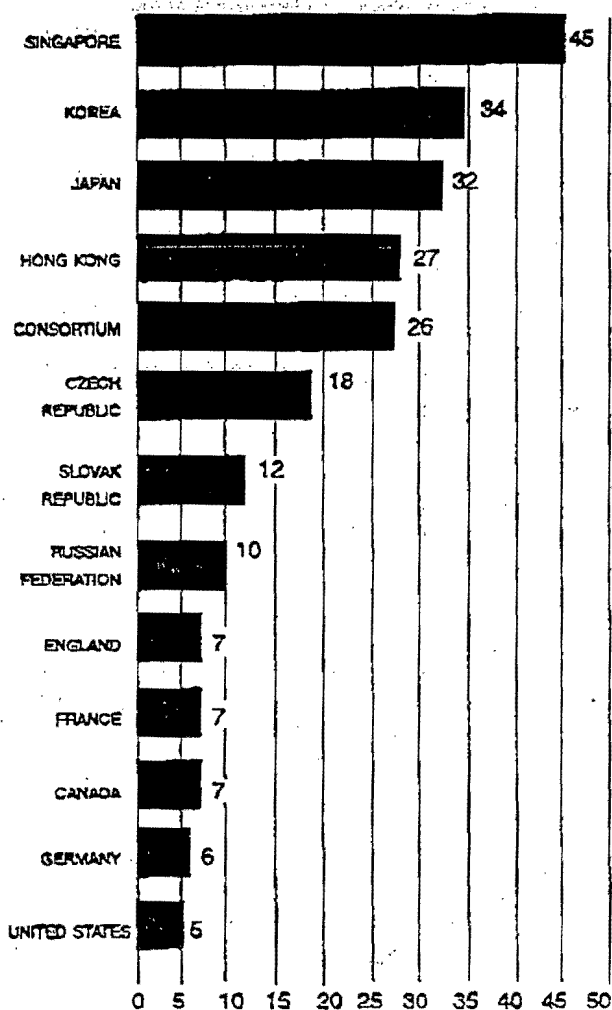
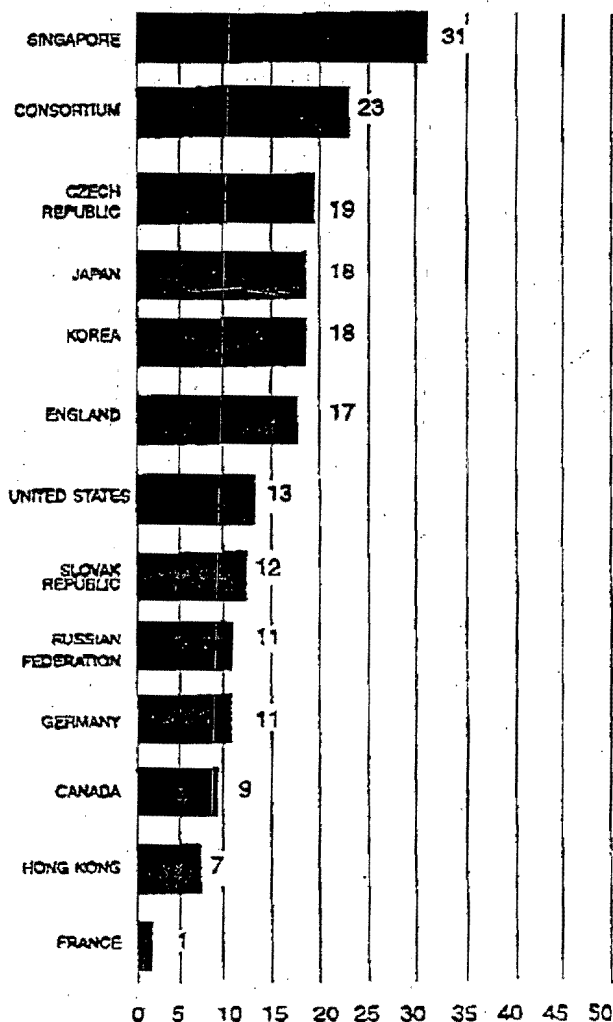


FIGURE 4:

PERCENT OF STUDENTS FROM SELECTED
NATIONS SCORING AMONG THE TOP 10
PERCENT OF EIGHTH GRADERS IN THE 41
TIMSS COUNTRIES IN SCIENCE



SOURCE: Beaton et al. (1996) *Mathematics achievement in the middle school years*, Table 1.1 Boston College: Chestnut Hill, MA. and Beaton et al. (1995) *Science achievement in the middle school years*, Table 1.1 Boston College: Chestnut Hill, MA.

IS THERE A DIFFERENCE BETWEEN THE PERFOR- MANCE OF BOYS AND GIRLS?

In the U.S. and in other countries, policy makers have worked to ensure that mathematics and science courses are more accessible to girls and to encourage gender equity in these subjects. The same is true of the Consortium. According to the TIMSS report, the U.S. is one of 11 TIMSS nations in which there is no significant gender gap in eighth grade mathematics and science achievement. Figure 5 shows that in the Consortium schools eighth grade girls scored slightly higher than boys in both subject areas, but that the difference was not statistically significant.

CONTEXTUAL VARIABLES

The Consortium is examining contextual variables that relate to four key areas:

- the content and rigor of our curriculum;
- the quality of our instruction;
- the preparation of our teaching staff; and
- the performance expectations of our students, parents, educators, and Board members.

The following data and informal analyses provide insights that could account for our high performance in mathematics and science.

FIGURE 5

ACHIEVEMENT SCORES FOR GIRLS AND BOYS*

	<u>Mathematics</u>	<u>Science</u>
Girls	590	587
Boys	582	581

*No statistically significant difference between boys and girls

WHO SETS CURRICULUM STANDARDS IN THE CONSORTIUM DISTRICTS?

Curriculum standards in the Consortium districts are established locally and guided by the state goals for learning. Each Consortium district maintains a curriculum core revision process to improve the core academic subject areas. Consistently, our districts review current research regarding new directions and best instructional practices and they consciously attempt to incorporate them into the local curricular programs.

Regarding the amount of influence teachers have over the topics and content taught in their schools, 87 percent of the Consortium teachers reported that they had a great deal of influence. Nationally, 62 percent of the teachers sampled reported that they have a great deal of influence.

With respect to control over the selection of textbooks and other instructional materials, 68 percent of the Consortium teachers reported that they have an influence. Nationally, 57 percent of the teachers sampled reported that have control over the selection of textbooks and instructional materials.

The Consortium has initiated a process for curriculum analysis that is not yet complete. However, in its absence, informal survey data indicate the Consortium curricula are generally anchored to the National Council of Teachers of Mathematics' standards and the Benchmarks for Science Literacy.

WHAT PERCENTAGE OF CONSORTIUM STUDENTS TAKE ALGEBRA AND/OR GEOMETRY IN EIGHTH GRADE?

The national report indicates that the typical U.S. eighth grade mathematics program includes more arithmetic topics and fewer algebra and geometry topics. Furthermore, it states that the typical U.S. eighth grade curriculum is equivalent with the seventh grade curriculum in both Germany and Japan. In a national sample of U.S. eighth graders, 19 percent report they are taking algebra. In the Consortium schools, approximately 50 percent of the students are enrolled in either algebra or geometry. This finding reinforces our view that when there are higher expectations students do succeed. We believe it accounts for our performance in the international assessment.

WHAT ROLE DOES PROFESSIONAL DEVELOPMENT PLAY IN CONSORTIUM EFFORTS TO IMPROVE INSTRUCTIONAL PRACTICES?

Professional development is a critical component of the Consortium's improvement efforts. Teacher learning networks have been created to fulfill the professional development function in the Consortium. These networks are described in detail in Chapter 3.

Within each Consortium district, emphasis is placed on training staff in both curricular and instructional practices. One example is the University of Chicago School Mathematics Program, which is used in many of the Consortium districts. The unique nature of this program demands extensive staff training and it is based on the NCTM standards.

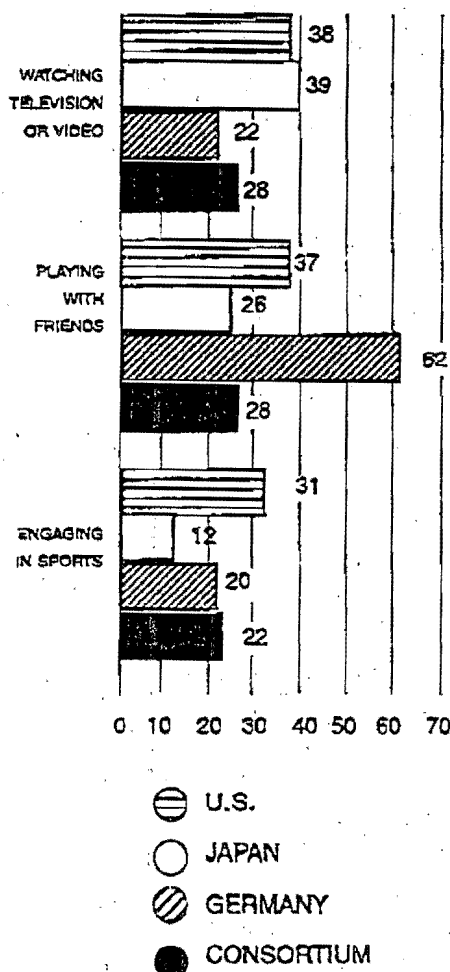
WHAT DO STUDENTS DO AFTER SCHOOL?

In the international study, students in the U.S., Germany, and Japan reported spending considerable time watching television. Consortium students also reported watching television, but to a lesser degree than students in Japan and the U.S. (see Figure 6). Consortium students spend less time playing with friends after school than other U.S. and German students, but about the same amount of time as Japanese students. Consortium students ~~are~~ also spend less time engaged in after school sports than the larger U.S. sample, but about the same amount of time as Japanese and German students.

With regard to the Consortium students' television watching, 35 percent of them watch news or documentaries on a daily basis, 52 percent watch popular music, 47 percent watch sports, and 31 percent watch cartoons. The high percentage of news watching was unexpected.

Consortium students also spend time reading. Forty-five percent of the eighth grade students report reading a book or magazine every day.

FIGURE 6:
PERCENT OF EIGHTH GRADERS SPENDING
THREE OR MORE HOURS IN VARIOUS AFTER-
SCHOOL ACTIVITIES ON A NORMAL
SCHOOL DAY



SOURCE: Third International Mathematics and Science Study: Unpublished Tabulations, U.S. German and Japanese Surveys, Westat, 1996.

WHAT DO STUDENTS NEED TO DO WELL IN MATHEMATICS AND SCIENCE AT SCHOOL?

To determine whether or not students believe that it takes work to do well in mathematics and science, we asked the following two questions:

- What do you need to do well in mathematics?
- What do you need to do well in science?

Eighty-nine percent of Consortium students reported that it takes hard work and studying at home to do well in both mathematics and science. This perception indicates that our students realize they have to work diligently if they wish to learn at higher levels.

Consortium students also demonstrate an understanding of how important present learning is to a person's future success, and the demonstrate intrinsic motivation by tying their self-esteem to success in their studies. Ninety-six and ninety-one percent of the students respectively reported that they need to do well in mathematics and science to get into the high school or the university they prefer. Eighty-three and eighty percent of the students respectively report that they need to do well in mathematics and science to please themselves.

CHAPTER 3

THE CONSORTIUM'S NEXT STEPS: TEACHER LEARNING NETWORKS

In this technologically complex world, mathematics and science can no longer be exclusive subjects taken only by a few high achieving students. Rather, educators must find new ways for all students to achieve mathematics and science literacy and to excel at world-class levels. It is with this purpose in mind that the Consortium has formed teacher learning networks and an instructional support network.

WHAT IS A LEARNING NETWORK?

Our *teacher learning networks* (TLNs) are groups of educators from the Consortium school districts who have defined themselves according to their focus on one of the following areas of mathematics and science: curriculum standards, models of instruction, assessment, and technology. Approximately 75 teachers are currently involved in the learning network activities. In addition, the *instructional support network* (ISN) is a group of curriculum and instructional directors who provide technical support for the TLNs. Their activities include gathering and assisting in the interpretation of data and assessing the systemic functioning of the networks.

WHAT WILL THE LEARNING NETWORKS ACCOMPLISH?

Our goals are as follows:

- Establish greater understanding of international standards for student performance and use the TIMSS and other data to examine current pedagogy, curriculum, and assessment practices.
- Engage teachers and administrative staff in conceptualizing teaching and learning in mathematics, science, and the use of technology to be consistent with current and emerging research and best practice.
- Develop assessment practices that are consistent with the Consortium's goals for improving students' achievement in mathematics and science.

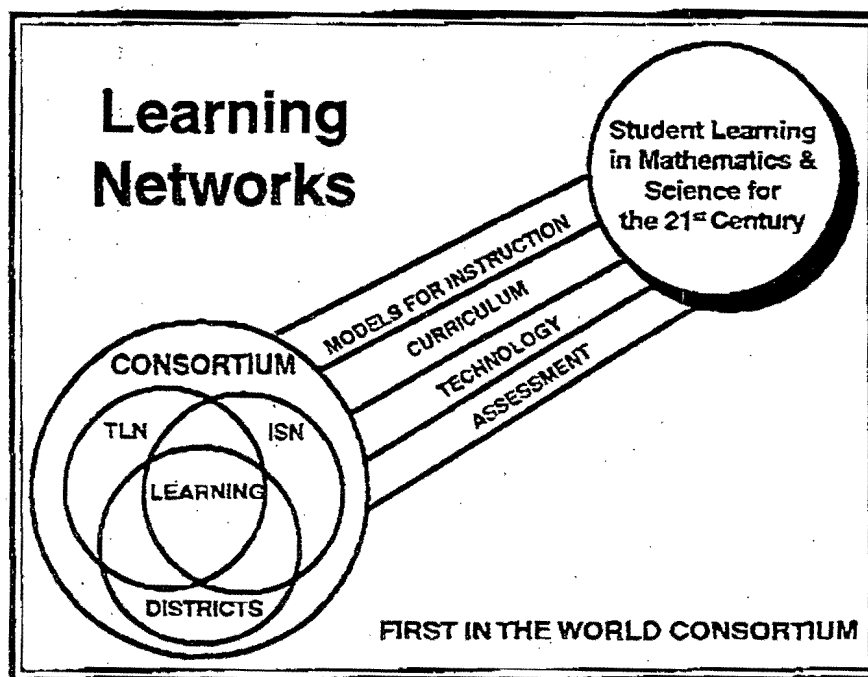
WHAT DO THE NETWORKS DO?

The first set of learning networks have two major responsibilities. First, they are organizing themselves to promote their own learning. Second, they are planning for the expansion of these networks into larger, more inclusive learning communities.

Toward this end, they are focusing on the following research questions:

- To what extent are teachers' classroom practices consistent with their stated beliefs about learning and teaching?
 - To what extent are teachers' classroom practices consistent with current and emerging research and best practice?
- How do teachers bring consistency between their classroom practice and current and emerging research and best practice?
 - a) What are the implications of the emerging field of brain/cognitive psychology research for our delivery of instruction?
 - b) What are the implications of technology for our delivery of instruction?

The graphic below indicates how the teacher learning networks and the instructional support network will approach their dual purpose of learning and expansion.



As members reflect on and respond to the issues within the network goals, they will be piloting specific focused experiments in their own classrooms. These experiments will be designed to determine whether the ideas derived from research or theory are appropriate for the particular teacher working with her/his particular students. A portion of each meeting will be devoted to sharing the results of these directed experiments.

Network participants will then form networks within their own districts in which people can discuss issues raised by the TLNs. While the Consortium may offer professional development across the 20 districts, it remains the responsibility of individual districts to determine how these new understandings about mathematics and science learning/teaching are implemented in individual classrooms.

CHAPTER 4

CONCLUSION

This report has presented highlights from initial analyses of the eighth grade Consortium students' performance on the TIMSS. The achievement findings serve to benchmark the Consortium with our international counterparts. At this point, other findings only serve as a snapshot of the overall picture of the Consortium's practices and expectations. This preliminary report merely scratches the surface of this enormous database. Looking for insights into factors associated with student performance will provide answers for the Consortium's success as well as point to those specific areas where improvement is needed and desired.

We are, however, not satisfied to rest on these scores. We believe that we can—and must—do better. Achievement and learning must continue to improve for all children. Our task is to ensure that all students are motivated to achieve at world-class levels and that what the Consortium learns from this experience is shared with other school districts throughout this nation. By engaging in reflective inquiry about the TIMSS data with school and community leaders throughout the world, we can improve education for all children as we move into the 21st century.

eight — In summary, the Consortium can point to three key conclusions to date. First, the *First in the World Consortium* grade students perform at a world-class level on all measures of achievement in mathematics and science. Second, a higher percentage of the eighth graders take algebra and geometry than is typical in the U.S. Finally, Consortium districts hold high expectations for students and teachers and recognize these expectations as a necessary factor for success. Coupled with these high expectations, students and teachers alike believe and demonstrate that considerable effort must be expended to meet these expectations.

APPENDIX 1
ORIGINAL LETTER OF AGREEMENT

to be included

ACKNOWLEDGMENTS

The TIMSS data and the work of the learning networks described in the report represent a small part of the *First in the World Consortium*. In the weeks and months ahead we will add more people to our networks, add more specific information to our database, and perform numerous analyses of this data. It seems fitting at this point, however, to acknowledge some of the people who have contributed to the work of the Consortium over the past two years.

The Boards of Education from each of the Consortium districts believed in the vision of 20 superintendents and authorized funding for our students to take the TIMSS. The North Central Regional Educational Laboratory, under the leadership of Dr. Jeri Nowakowski, provided technical support and facilitated meetings of the learning networks. Illinois Superintendent of Schools Joseph Spagnola supported our efforts to correlate TIMSS test items with state assessment items so that we can monitor our progress at yearly intervals and provide valuable information to improve the Illinois Goals Assessment Program (IGAP) in the future. Secretary Riley and the Department of Education staff, Congressman John Porter, and members of the White House team have cleared political obstacles from our path. Maggie McNeely of the Student Achievement Institute has provided hours of consultation to the Consortium, including assistance in the writing of this report. Elaine Aumiller has formatted and organized this document for publication and worked tirelessly to complete it. Numerous staff and community members—past and present—have created a culture for success through their example of hard work and their high expectations for student achievement.

Most particularly, the *First in the World Consortium* wishes to acknowledge the leadership of its president, Paul Kimmelman. Without Paul's commitment to children, his belief in the public schools, and his hours of hard work, this Consortium would not exist.

I believe that the most important thing you can do is to have high expectations for students—to make them believe they can learn, to tell them they're going to have to learn really difficult challenging things, to assess whether they're learning or not, and to hold them accountable as well as to reward them.

President Bill Clinton
in a speech given in March 1996
at the Education Summit