

**THE IMPACT OF PIRLS (2001) AND TIMSS (2003)
IN LOW- AND MIDDLE-INCOME COUNTRIES**

**AN EVALUATION OF THE VALUE OF WORLD BANK SUPPORT FOR
INTERNATIONAL SURVEYS OF READING LITERACY (PIRLS) AND
MATHEMATICS AND SCIENCE (TIMSS)**

**Alison Gilmore
Educational Consultant, New Zealand**

JANUARY 2005

EXECUTIVE SUMMARY

1. This report outlines the impact of the 2001 Progress in Reading Literacy Study (PIRLS) and the 2003 Third International Mathematics and Science Survey (TIMSS) on the education system of 24 low- and middle-income countries that participated in these international projects.
2. All of these countries have received World Bank funds, paid through the International Association for the Evaluation of Educational Achievement (IEA), the organizer of the projects.
3. The information for this evaluation was obtained through attending and observing at a four-day meeting for each of PIRLS and TIMSS; interviews with the National Research Coordinator (NRC) of each World Bank-funded country; questionnaires sent to the NRC and a nominated senior education official (SEO) of each country; and questionnaire and telephone interviews with World Bank Officers (WBOs).
4. The international achievement tests of PIRLS and TIMSS were valid and reliable measures of student achievement in reading literacy, and mathematics and science, respectively.
5. The international findings, particularly the international rankings in achievement and trends in achievement over time, are highly valued by policy-makers and educationalists. The findings contribute a great deal to a better understanding of education within the countries, especially in relation to student achievement levels, curriculum emphases, teaching methods and educational resources.
6. The findings provide the impetus for reforms and changes in the reading, mathematics and science curricula; approaches to teaching and assessment strategies; and national assessment and research programs to monitor student achievement.

7. The quality of the training provided by the IEA Secretariat and consortium was very highly regarded and the organization of the projects was described as ‘superb’. The training was simultaneously supportive of newly participating countries, encouraging of the growing skills and knowledge of second-time participants and utilized to advantage the expertise of longer-term participants.
8. Participation in the projects has made very positive and substantial contributions to the professional development of NRCs and, therefore, to expanding the human capacity in these countries, many of which had no previous tradition of assessment and no reliable data on their students’ achievement levels. NRCs developed many new technical skills in assessment, sampling, test development, questionnaire development, data management, quality control, secondary analyses, report writing, and organizational, which have in turn been extensively used within their respective countries.
9. The financial assistance provided by the World Bank was critical to the countries being able to participate, and continued funding is critical for participation in future studies.
10. There is clear evidence of individuals and educational systems (countries) accumulating considerable expertise through participating in a *series* of IEA studies. The expertise extends to developing professional capability and independence in national assessment and evaluation initiatives, and to the use of evidence of student achievement and the contexts for learning to inform and evaluate national educational reforms and initiatives.
11. The benefits of the investment made by the World Bank into the PIRLS and TIMSS projects for these countries are many, substantial, and multi-faceted. Continued investment would further enhance these benefits for existing participating countries, and extend them to other low- and middle-income countries that have yet to have the opportunity to participate.

RECOMMENDATIONS

In light of the evidence presented in this report, I recommend that:

1. *The World Bank continues to support IEA in its efforts to assist low- and middle-income countries to participate in its international surveys over the longer term.*

It is to the advantage of the World Bank and other international agencies, and to the educational policy-makers of participating countries, to have access to high-quality data on student achievement and the educational system, standardized across countries. Such information is critical in informing policy-makers about the quality of their educational system, monitoring the impact of any educational reforms, and pointing direction for future educational development. It stimulates educational debate at governmental level, amongst educationalists and within the general public. In addition, the evidence clearly demonstrates that professional capacity among researchers and teachers is accumulated over long-term participation in IEA studies. An investment with a longer time frame is required to capitalize on the development work that has taken place to date.

2. *IEA be supported to encourage more low- and middle-income countries to participate in their surveys.*

Greater participation by countries in areas, such as, Africa, South-East Asia, and South America, would allow useful regional/neighboring comparisons in addition to the current global comparisons. This would enable countries with similar regional characteristics to have a more valid set of countries with which to compare their educational systems and students' achievements. Further, it has the potential to enhance regional collaboration and initiatives in educational development.

3. *IEA continues to emphasize the training in their projects.*

Participation in the IEA studies contributed significantly to building professional capacity in assessment and evaluation among researchers, teachers, curriculum and assessment specialists within participating countries. The World Bank should seriously consider supporting any initiatives which would enhance IEA's capacity to develop its training and development activities.

4. *IEA expand its training to 'novice' and/or low- and middle-income countries.*

Supplementary training sessions in (i) aspects of assessment and large-scale evaluation would strengthen the emerging capacity of participating countries as they develop their own national assessment programs; and (ii) the area of secondary data analysis would assist participating countries to optimize the usefulness of the full range of IEA information at a national level.

CONTENTS

	<i>Page</i>
Executive Summary	2
Recommendations	4
Background	8
Purpose of this Evaluation	11
Procedure for Collecting the Data	12
Completeness of the Data Collected	14
Participation in Previous IEA Studies	16
Format of this Report	17
Validity of the PIRLS and TIMSS Projects for Participating Countries	18
Results	20
The Impacts of Participating in PIRLS and TIMSS	20
Professional Development and Capability Building	36
The Importance of Participating in IEA Studies and World Bank Funding	45
Summary and Conclusions	48
References	52
Appendices	
1 Description of PIRLS 2001 and TIMSS 2003	53
2 Overview of TIMSS 2003 Project Schedule	55
3 Countries Receiving Financial Assistance to Participate in PIRLS 2001 and/or TIMSS 2003	57
4 Terms of Reference for Independent Evaluation of PIRLS 2001 and TIMSS 2003	58
5 Questionnaires	61
6 IEA Secretariat Requests for Information	70
7 Countries from which NRC, SEO, and WBO Questionnaires were Received	71

LIST OF TABLES

	<i>Page</i>	
Table 1	Number of responses from different data collection methods	14
Table 2	Positions held by NRCs in their respective countries	15
Table 3	Number of NRCs rating the level of match between IEA tests and the content objectives of the national curriculum in schools	18
Table 4	Number of NRCs reporting the types of coverage of IEA findings in the media for PIRLS and TIMSS	22
Table 5	Number of different types of publications relating to PIRLS and TIMSS since 1999	23
Table 6	Number of NRCs rating the relative importance of topics in the international reports for PIRLS and <i>anticipated</i> importance for TIMSS	25
Table 7	Number of SEOs rating the relative importance of topics in the international reports for PIRLS and TIMSS	27
Table 8	Number of NRCs rating how much PIRLS and TIMSS contributed to a greater understanding of education in their country	29
Table 9	Number of SEOs rating how much PIRLS and TIMSS contributed to a greater understanding of education in their country	30
Table 10	Most significant impacts of countries' participation in PIRLS and/or TIMSS	31
Table 11	Examples of capacity building received through participation in PIRLS and TIMSS	42

LIST OF FIGURES

Figure 1	NRCs' ratings of the special or on-the-job training received during PIRLS and TIMSS	40
Figure 2	NRCs' ratings of the quality of the organization of PIRLS and TIMSS	43

BACKGROUND

The *International Association for the Evaluation of Educational Achievement* (IEA) conducts international comparative studies designed to provide policy-makers, educators, researchers and practitioners with information about educational achievement and learning contexts. In contrast to other international comparative studies, such as those of the Organization for Economic Co-operation and Development (OECD), the IEA studies are curriculum-based.

The IEA website (<http://www.iea.nl/>) provides the following mission statement and brief description of the two projects that are the focus of this evaluation:

IEA is an independent, international cooperative of national research institutions and governmental research agencies. Through its comparative research and assessment projects, IEA aims to:

- Provide international benchmarks that may assist policy-makers in identifying the comparative strengths and weaknesses of their educational systems;
- Provide high-quality data that will increase policy-makers' understanding of key school- and non-school-based factors that influence teaching and learning;
- Provide high-quality data which will serve as a resource for identifying areas of concern and action, and for preparing and evaluating educational reforms; and
- Develop and improve educational systems' capacity to engage in national strategies for educational monitoring and improvement.

Since its inception in 1958, the IEA has conducted more than 23 research studies of cross-national achievement. The regular cycle of studies encompasses learning in basic school subjects. Examples are the Trends in Mathematics and Science Study (TIMSS 1995, TIMSS-R 1999, TIMSS 2003) and the Progress in International Reading Literacy Studies (PIRLS 2001, PIRLS 2006). IEA projects also include studies of particular interest to IEA members, such as, the TIMSS-R Video Study of Classroom Practices, Civic Education, Information Technology in Education, and Pre-primary Education.

...The studies contribute to a deep understanding of educational processes within individual countries, and across a broad international context. In addition, the cycle of studies provides countries with an opportunity to measure progress in educational achievement in mathematics, science and reading comprehension.

The cycle of studies also enables monitoring of changes in the implementation of educational policy and identification of new issues relevant to reform efforts.

Two recent studies are the focus of this evaluation: the *Progress in International Reading Literacy Study 2001* (PIRLS), and the *Trends in Mathematics and Science Study 2003* (TIMSS).

PIRLS 2001 was the first in a five-year cycle of assessment that measures trends in children's reading literacy achievement and policy and practices related to literacy. PIRLS examined three aspects of reading literacy: processes of comprehension, purposes for reading, and reading literacy behavior and attitudes. TIMSS 2003 is the third in a four-year-cycle of assessment designed to measure trends in students' mathematics and science achievement, including analytical, problem-solving, and inquiry skills and capabilities.

In both studies, student, teacher, and school questionnaires gather information about home and school factors associated with the development of reading literacy (PIRLS) and the context for learning mathematics and science (TIMSS), so as to provide a rich context for interpreting the achievement results and to track changes in instructional practices. In PIRLS, information is also gathered from parent questionnaires. In total, 36 countries participated in PIRLS and 53 countries participated in TIMSS. Fuller descriptions of both studies are provided in Appendix 1.

All participating countries are expected to appoint their own National Study Center and a National Research Coordinator (NRC), as well as a National Committee that is expert in the curriculum domain, policy-making and the technical design and implementation of the study. The Committee must be available for consultation throughout the study.

The projects are managed by the International Study Center, located at Boston College, United States. Other members of the consortium are the IEA Secretariat, the IEA Data Processing Center (Hamburg), Statistics Canada, the Educational Testing Service, USA, and (for PIRLS) the National Foundation for Educational Research in England and Wales. The overview of the project schedule for TIMSS, presented in Appendix 2,

identifies the ways in which NRCs participate in, and contribute to, the consortium in all aspects of the study: framework design; item and questionnaire development; trialing of instruments; sampling of students; collection of achievement and contextual data; marking; data entry; primary and secondary analyses; and report writing.

Each participating country is also required to cover the costs of the study at the national level (including the costs that will allow their National Research Coordinator to attend study meetings) and to contribute to the costs of co-coordinating the study internationally.

Through the Development Grant Facility (DGF) from the World Bank, IEA has been able to support 24 low- and middle-income countries to participate in one or both of the projects (15 in PIRLS and 21 in TIMSS; 12 in both) (see Appendix 3).

PURPOSE OF THIS EVALUATION

The purpose of this evaluation is to determine:

1. The impacts of participating in the IEA studies on the educational development of countries that have received World Bank assistance, including improvements in pedagogical practices;
2. The extent to which professional capability in assessment practices has been built; and
3. The importance of World Bank funding to these low- and middle-income countries for participating in these studies.

The design of the evaluation has been modeled to some extent on a similar evaluation commissioned by IEA in 2002 in relation to TIMSS-R (Elley, 2002). The full terms of reference for the evaluation are given in Appendix 4.

PROCEDURE FOR COLLECTING THE DATA

Data to inform the evaluation were collected from a range of sources, as follows.

ATTENDANCE AT NRC MEETINGS

I attended two meetings of the national research co-coordinators (NRCs) for each project during 2004. The first was the second PIRLS 2006 meeting in Bratislava, 1–5 March; the second was the eighth TIMSS 2003 meeting in Santiago, 21–25 June.

I was able to participate in, and observe, the planning and workshop sessions over each set of four days and to speak formally and informally to a large number of participants, including World Bank-funded countries, other participating countries, the IEA Secretariat, members of the International Study Center (ISC) of Boston College, the IEA Data Processing Center of Hamburg, Germany, and Statistics Canada of Ottawa.

INTERVIEWS WITH NRCS, SEOS AND WBOS

I interviewed the National Research Coordinators (NRCs) of all World Bank-funded countries who attended the meetings. The NRCs included eight for PIRLS and 17 for TIMSS. The focus of the interviews was the impact of the international surveys on educational policies and practices in their respective countries, as well as on the development of assessment capability and their own professional development.

In addition, through the interviews, I was able to explore the impact of international surveys of educational achievement and progress more broadly where countries had been involved in other international studies (for example, previous IEA studies of reading, mathematics and science; and OECD studies of the Progress of International Student Achievement (PISA)).

I also interviewed three Senior Education Officials (SEOs), including a senior chief inspector of the PIRLS host country, and conducted telephone interviews with three

World Bank Officers (WBOs).

QUESTIONNAIRES

Questionnaires were adapted from those used by Elley (2002) in his evaluation of the impact of TIMSS-R. Questionnaires were sent electronically to the NRCs of all World Bank-funded countries. To gain an independent view of the impact of the project in the countries, questionnaires were also sent to a SEO in each country, nominated by the country's NRC. (See Appendix 5 for a copy of the questionnaires.)

The PIRLS questionnaires for NRCs and SEOs were distributed following the February NRC meeting. The TIMSS NRC questionnaires were distributed in two parts. The first part was distributed in June, following the Chile meeting, and the second part, along with the questionnaires for the SEOs, in January 2005, following the press release.

Questionnaires were also sent to 14 WBOs who are project managers within the participating countries in January, after the press release.

INTERVIEWS WITH IEA SECRETARIAT AND CONSORTIUM

To gain appropriate background context for undertaking the evaluation, I conducted several interviews with Dr Hans Wagemaker, Executive Director of IEA, and other members of the IEA Secretariat (Barbara Malak and Jur Hartenberg). I also interviewed members of the ISC, the DPC and Statistics Canada.

OTHER DATA

Additional data were gained from email responses made by World Bank-funded countries to two IEA requests for information concerning:

- i. any reports and publications relating to PIRLS and TIMSS;
- ii. any contribution of PIRLS and/or TIMSS to capacity-building in the respective countries; and
- iii. any reactions to these countries' press conference on TIMSS 2003 (if they had held one) by the media, policy-makers or others. (see Appendix 6 for the requests).

These responses provided very useful supplementary data to those that I collected.

COMPLETENESS OF THE DATA COLLECTED

The findings in this report are based on the questionnaire responses, email comments and interview data from NRCs, SEOs, and WBOs. Table 1 summarizes the data collected for PIRLS and TIMSS from these sources. Also see Appendix 7 for a list of the countries represented in each type of data. All countries were represented in some capacity in the evaluation data collected.

Table 1: Number of responses from different data collection methods

Source of Data	PIRLS			TIMSS		
	NRC	SEO	WBO	NRC	SEO	WBO
Questionnaires	9	7	4	14	6	
Interviews	8	3	1	18	-	
Email comments	1					
IEA request 1	9			13		
IEA request 2				8		

This response rate was achieved after several follow-up requests for individuals to provide the completed questionnaires. Clearly, the most substantive data were received from the NRCs. However, responses from SEOs and WBOs (from whom independent views were sought) were largely consistent with the views expressed by NRCs. Therefore, as the evaluator, I have confidence that the findings reported in this evaluation are valid and accurate reflections of the situations that exist in the participating countries.

NRCs who completed the questionnaires were generally senior researchers and held positions such as directors of educational research or examinations units, senior officers in their Ministry or Institute of Education, or academic members of a university (Table 2).

Table 2: Positions held by NRCs in their respective countries

	PIRLS	TIMSS
University department	2	4
Educational research institute	1	3
Evaluation/assessment division in the Ministry of Education	8	13
Total	11	20

The response rate from SEOs was relatively low and may be explained, in part, by their lack of English language skills, which made it impossible, or very difficult, for them to respond in writing. This source of difficulty was alluded to in the interviews I had with the SEOs in Bratislava, and in comments in interviews made by NRCs about the relative lack of English language-speaking or -writing colleagues in their home countries. The SEOs who did respond included a senior chief inspector of primary education, a national expert in primary education, a national curriculum expert, and five directors of curriculum in Ministries of Education. Four did not indicate the title of their position.

Written responses were received from eight WBOs and interview responses from a further three. The remainder were overseas or unavailable for interview when I attempted to make contact, did not consider the designated country to be receiving World Bank funding for this project, or had not been in the participating country for several months and therefore could not comment on the impact of TIMSS.

The evaluation of the impact of the TIMSS 2003 international report (and any national reports) is somewhat hampered by the fact that the report was released only on 14 December 2004. There has been little time for people to react to the reports since then and the time of writing this report. Comments about the impact of TIMSS 2003, therefore, has become conflated with the impact of the previous TIMSS-R survey of 1999 and TIMSS 1995.

PARTICIPATION IN PREVIOUS IEA STUDIES

Of the 14 countries participating in PIRLS, only Slovenia had been previously involved, with the IEA literacy survey of 1991, although it was not a parallel to PIRLS 2001. For the 21 countries participating in TIMSS 2003, there was a much more diverse range of experiences with previous IEA studies. Nine countries were first-time participants in TIMSS (Armenia, Botswana, Ghana, Hungary, Indonesia, Jordan, Moldova, and Tunisia); three had previously participated in TIMSS-R 1999 (Romania, Russian Federation and South Africa); while the remaining seven had also participated in the 1995 and 1999 studies (Bulgaria, Latvia, Lithuania, Morocco, Philippines, Slovak Republic and Slovenia).

FORMAT OF THIS REPORT

The findings of the evaluation are reported in relation to the three key issues set out above. Separate analyses of the PIRLS and TIMSS questionnaire and interview data revealed overwhelmingly similar patterns and, therefore, are reported together. Findings that are particular to one of the studies are highlighted as appropriate.

In addition to the quantitative data collected, I have used quotes from participants in the evaluation to provide the flavor and examples of the wide range of impacts and the commonality of these across countries. I selected the quotes from the written responses received from across all participating countries, which means they reflect a cross-section of the nature of comments from the group as a whole. Data reported in tables have been derived from the written responses to the questionnaires or from email comments to IEA requests for information.

VALIDITY OF THE PIRLS AND TIMSS PROJECTS FOR PARTICIPATING COUNTRIES

As a precursor to evaluating the impact of PIRLS and TIMSS, it is essential to establish the extent to which the projects themselves are considered to be valid for, or relevant to, the educational curricula of each participating country.

As stated by Elley (2002), if international surveys like IEA's are to influence policy and practices within participating countries, then it is important that the tests are seen to be relevant to the country's national curricula. Generally, the PIRLS and TIMSS tests and the content objectives of the official and implemented curricula matched 'very well' or 'quite well' in all countries except one, with the coverage rated as greater than about 90% or 75%, respectively (Table 3).

Table 3: Number of NRCs rating the level of match between the IEA tests and the content objectives of the national curriculum in the schools

Level of Match	PIRLS	TIMSS Maths	TIMSS Science
Very well (covered > 90% of objectives)	4	8	6
Quite well (covered > 75% of objectives)	5	6	8
Not very well (covered < 75% of objectives)	1	-	-
TOTAL	10	14	14

Variations in the match were generally explained by modest differences in emphases in the countries' national curricula, and where the match was less than 'very good', the tests actually assisted countries in identifying areas in which curriculum changes would be desirable. For example, two respondents explained that:

“... reading instructional goals focus primarily on techniques of reading ... and comprises only lower levels of comprehension and does not go deeper into higher

levels of the process of comprehension as stated in PIRLS. . . . [T]he PIRLS international test revealed the necessity to make some inevitable changes in the content objectives in this aspect.” (*Slovakia*)

“Chemistry was not taught up to Grade 10.” (*Indonesia*)

These findings suggest that the tests employed in the IEA projects possessed high validity, and where they provided a less than 90% match with national curricula, the tests were beneficial in highlighting areas of the curriculum that required review given contemporary international contexts. These findings reinforce Elley’s (2002) findings.

RESULTS

The findings are presented in three broad sections relating to the focuses of the evaluation:

1. The significant impacts of participating in the IEA studies.
2. The extent and nature of professional capacity that has been built in assessment practices.
3. The importance of World Bank funding to these low- and middle-income countries.

An additional section draws out a number of key issues where additional support might be provided to maximize (or optimize) the purposes of IEA studies and the funding provided by the World Bank.

1. THE IMPACTS OF PARTICIPATING IN PIRLS AND TIMSS

The impacts of countries' participation in the IEA studies are reported in relation to:

- The nature of and extent to which the findings were publicized and disseminated;
- The importance of the reports' findings for policy-makers;
- The use made of the findings by politicians, policy-makers, educationalists, and researchers; and
- The most significant impacts or lessons learned.

Publication and Dissemination of Findings

Press Releases and National Reports

An international press release, organized by the IEA Secretariat and consortium, officially 'launches' the findings of each IEA study. For PIRLS, this was in April 2003. For TIMSS, it was December 2004. The international press release was accompanied by official national-level press releases and briefings of SEOs, politicians, researchers, etc.

In addition to releasing press statements of the international results for PIRLS, all countries but one (Czech Republic) had prepared a national report summarizing national

levels of achievement in relation to other participating countries, and trends within their own country (where applicable). All NRCs indicated that SEOs had read the reports and six out of the nine indicated that the Minister of Education had also read the full report or a summary of it. Only one indicated that the report had not been read by the Minister; two indicated that they did not know if the Minister had read it. The SEOs and WBOs confirmed these statements. It is also pertinent to note here that the NRCs reported that summary reports and basic information are frequently provided to schools and placed on institutional websites for the public.

The eight NRCs who responded since the press release of TIMSS reported that a national report, or a summary of it, had been prepared. In five countries it had already been read by SEOs, and in four countries by the Minister of Education. In the remaining countries, plans were in place for similar briefings.

Media Coverage

The NRCs reported the use of a range of media coverage of PIRLS findings. For the majority, coverage was described as ‘some’ rather than ‘extensive’, and was most commonly evident in newspapers, magazines, on special radio programs, and in teacher publications. Although, in contrast, only two NRCs reported any parliamentary debate on the findings, there were eight countries in which TV programs provided at least some coverage (Table 4).

Public Discussion

Public discussion of the findings of the studies has been promoted in a range of forums within about half the countries. Examples cited included debate amongst researchers, conferences, and discussions with teachers. In addition, NRCs often referred to holding briefing discussions with politicians and senior educationalists, policy-makers, curriculum experts, and researchers. For example, one respondent wrote:

“The summary report was presented to the Permanent Secretary, Deputy Permanent Secretaries and Heads of Departments of Education. All senior staff

members in the Examinations, Research and Testing Division were taken through the summary report.” (*Botswana*)

Another wrote:

“For now, the following activities have taken place. There was a press conference on 21 December 2004. There was also a presentation of the main results at the National Seminar of Educational Research on 6 January 2005. It is expected that by the end of January, a presentation of the main results will be organized to the members of the Educational Commission at the Parliament.” (*Bulgaria*)

The TIMSS NRC from Slovenia wrote:

“TIMSS is very popular in Slovenia. Everybody is talking about it: parents, teachers, policy-makers. They know what it is, what the results are.”

Again, SEOs reported the same pattern of publication and dissemination activities.

Table 4: Number of NRCs reporting the types of coverage of IEA findings in the media for PIRLS and TIMSS*

	Extensive		Some		Little		None	
Newspapers	2	2	4	4	1	-	-	-
Parliamentary debate	-	-	1	2	-	1	5	1
Magazine articles	1	1	3	2	2	-	1	2
Special radio programs	1	-	5	2	1	2	-	1
TV programs	-	3	3	-	2	1	2	2
Teacher publications	1	1	4	1	2	-	-	3
Academic journals	1	1	2	1	3	1	-	4

Notes:

N of respondents: PIRLS = 7, TIMSS = 7.

*It is premature for substantive publications and media coverage/debate for TIMSS yet, as the press release was December 14, followed by Christmas–New Year holidays and closure of parliament.

Range of Publication Activities

Additional data collected by the IEA Secretariat provided substantial further detail of publications and dissemination since 1999. A wide range of publication activities were reported by the nine NRCs for PIRLS and the 12 NRCs for TIMSS, both in terms of the range of media employed (press releases, summary national reports, newspaper articles, briefings, teacher lectures/seminars, research publications, postgraduate student research dissertations, international and national conferences, and IEA resource materials), but also in the level of activity within each country. For example, Latvia reported (with full citations) 17 academic presentations or publications relating to PIRLS and 21 relating to TIMSS. The Slovak Republic reported 15 and eight, respectively. Serbia, a first-time participant in PIRLS, reported a total of six publications; Russia two for PIRLS and six for TIMSS; and Bulgaria nine for TIMSS. Table 5 provides a summary of these data.

Table 5: Number of different types of publications relating to PIRLS and TIMSS since 1999

Type of Publication	N
National reports/press releases	31
Conference presentations	28
Publications (journal articles, conference proceedings)	80
Internal reports	13
Postgraduate student research reports/dissertations	24
Newspaper articles/TV interviews	29
Teacher professional development	5*

Notes:

The categories of publications are best estimates of those cited by the NRCs. Fourteen countries are represented.

* This is an underestimate.

In all countries, except three, the findings were being widely disseminated to teachers and the public. However, in the three countries reporting that dissemination was not widespread, dissemination appeared to be determined by politicians and the relative

‘success’ of their students in the international rankings. For instance, the WBO in Romania commented that “the Minister at the time was not happy with the findings [of PIRLS] and didn’t agree with a broad distribution of the report”. However, at the same time, s/he considered it very important that Romania participate in the IEA studies because “although the report didn’t have the expected impact, Romanian experts [have] got used to international evaluations”. Extensive dissemination of the TIMSS findings are planned for February 2005. In Morocco, the WBO felt that he was the main source of transferring information about PIRLS to senior sector officials, and “[the findings] certainly helped in my policy dialogue with government”. The WBO for Russia commented that “. . . unfortunately, it is still not in the tradition of Russian education policy-makers to inform the teachers and public about the results of international comparative surveys.” However, again, the findings were deemed of considerable interest and importance to education officers and policy-makers.

Importance of the Reports’ Findings for Policy-makers

The international reports provide extensive sets of findings, including international rankings of countries, student achievement in particular content areas, students’ attitudes, and contextual features of countries’ schooling and curriculum.

Interest in Report Findings

NRCs were asked to rate the level of interest shown by policy-makers in the different types of findings reported in the international and national reports. These included the international ranking of their students, along with how their students achieved in particular content areas, students’ attitudes, and contextual features of schooling in their country (Table 6). For five out of the eight countries responding to the PIRLS questionnaire, the information about trends over time was not applicable, given that this was the first time they had participated. The corresponding figure for TIMSS was six out of 14. However, for those for whom it was relevant, the trend data was of considerable interest. Amongst the other findings that were of interest were

- benchmarking with other [regional] countries;
- differences in student achievement related to language of instruction;
- the group of students for whom the language of the test was not their mother tongue;

- the reading achievement of minority groups;
- the relationship between background and contextual factors;
- reconciling the PIRLS findings with those of PISA;
- the kinds of information their students can read and understand, and those that they cannot;
- trends in the new curricula standards;
- teacher characteristics and attitudes;
- differences between genders and types of schools; and
- regional differences.

Table 6: Number of NRCs rating the relative importance of topics in the international reports for PIRLS (P) and *anticipated* importance for TIMSS (T)

	Much Interest		Considerable Interest		Some Interest		No Interest	
	P	T	P	T	P	T	P	T
International ranking	9	13 (7)	-	-	-	-	-	-
Trends over time*	3	1 (4)	1	1	-	-	-	-(1)
Content areas	6	6 (2)	2	7 (1)	-	-(1)	1	-(4)
Student attitudes	3	3 (1)	5	10 (2)	-	-(2)	1	-
School context	2	3 (1)	3	10 (1)	1	-(3)	2	-
Other	4	4 (4)	-	-	-	-	-	-

Notes:

N of NRCs: PIRLS = 9, TIMSS = 14 (anticipated) and 7.

NRCs for TIMSS were asked this question in advance of the press release. The seven responses received after the press release are presented in brackets and indicate the slightly less positive pattern of interest, although it is somewhat premature to gauge this trend accurately.

Comparison with Other Countries

Most ‘regions’ (e.g., Arab states, Eastern European countries, Western European countries) felt that there was a sufficient number of ‘like’ countries with which to compare themselves regionally, in addition to the global comparisons afforded by the data from all countries. However, an appropriate group of countries against which to benchmark or compare students’ achievement was of concern for some countries,

particularly those in Africa, South America, and South East Asia, where the number of participating countries was relatively small. The WBO for Colombia indicated that this was particularly problematic for senior politicians and educationalists in that country. In this case, it would be unlikely for Colombia to continue to participate in IEA studies. On the other hand, all other countries suggested that encouraging more neighboring countries to participate in IEA studies would increase the benefits they already gained from participation.

The relevance of global comparisons was still paramount for some. For example, Botswana was particularly interested in comparisons with the most successful country in TIMSS— Singapore. It was stated by the NRC:

“The Heads of Departments [of the Ministry of Education] were very excited by the report . . . They were not worried by the fact that Botswana was one of the last countries. Instead, they focused on Singapore, emphasizing that it is by comparing Botswana students with the best country that efforts to improve learning achievement will be intensified.”

Some ‘regions’ were taking independent, collective action in relation to educational issues in their region and were using IEA studies to provide the indicators of any changes (see Aggarwala, 2004, for the regional initiatives in the Arab countries). Examples of comments from respondents that reflect this action follow:

“ . . . [the policy-makers] are fully aware that the new concept, objective and instructional goals in reading instruction should be introduced as the outcome of PIRLS results. More attention should be paid to teaching methods and education resources as well as strategies of attracting students and changing their attitudes.”
(Slovakia)

“PIRLS offers us excellent data on reading that must be further analyzed. The Ministry of Education has been financing two second[ary] analyses studies . . . one project is child oriented: what the child understands when he/she reads something and how understanding of the text she/he has read relates to school achievement. The other project deals with practices of schools: namely, how are schools which

achieved higher reading scores different from [schools with] low reading scores.”
(*Slovenia*)

“[PIRLS] contributes to change[s in] the way of testing language skills. . . . Before only grammar knowledge was tested.” *Slovenia*

“Since the content standards (and the corresponding curriculum) were developed without any empirical data, it is expected that some revision of the standards will take place soon. TIMSS findings will be very much taken into account for the math standards revision.” (*Bulgaria*)

“TIMSS 2003 is considered as the evaluation of the implementation of the school reform (change from 8- to 9-year compulsory elementary school and major changes in curricula). Comparisons of all findings . . . between old and reformed school systems gain much attention from policy-makers.” (*Slovenia*)

SEOs responding to the questionnaires reported similar levels of interest by policy-makers in different aspects of the national reports. International rankings and student attitudes appeared to be of greatest interest (Table 7).

Table 7: Number of SEOs rating the relative importance of topics in the international reports for PIRLS (P) and TIMSS (T)

	Much Interest		Considerable Interest		Some Interest		N/A	
	P	T	P	T	P	T	P	T
International ranking	5	4	1	-		-	-	-
Trends over time	3	3	-	1	2	-	2	-
Content areas	-	2	5	1	1	1	-	-
Student attitudes	3	-	2	3	1	1	-	-
School context	-	1	2	3	4	-	-	-

Note: N of SEOs: PIRLS = 6, TIMSS = 4.

Increasing Understandings of the Educational System

The extent to which PIRLS and TIMSS contributed to a greater understanding of education in their country was indicated by NRCs and SEOs (Tables 8 and 9). The majority felt that PIRLS and TIMSS contributed ‘a great deal’ to a greater understanding of education in their country, particularly knowing students’ achievement levels, the curriculum emphases, and education resources. NRC comments reflecting these viewpoints include:

“TIMSS is clearly showing where our school system reform is going in the middle of its implementation.” (*Slovenia*)

“The findings have been implemented in academic standards of math, chemistry, geography, physics and biology. Currently, the most important challenge is the effort to change the teaching methods and education resources according to [the] findings of TIMSS.” (*Bulgaria*)

“The international databases are the major sources for further investigations of our national education system, attitudes and outcomes. The Ministry for Education supports the use of [TIMSS] data in many fields of educational research and is also financing secondary analysis projects carried out at our national educational research institute.” (*Slovenia, PIRLS*)

At the time the NRCs completed the questionnaires, it was still somewhat premature for any changes to have been made in the curriculum for reading literacy, and even less so for mathematics and science, although initiatives were being planned, or changes had been made in response to the findings of previous studies of reading literacy in 1991, and TIMSS (1995 and 1999). Examples cited were in relation to:

- *The curriculum*—establishing the development of reading comprehension skills as a priority; curriculum development, such as balancing narrative and information texts; establishing an expert group/commission for literacy development to make changes in mother tongue curriculum, especially for the reading area.
- *Changes in teaching methods*—using a variety of texts consistent with PIRLS texts.

- *Workshops and seminars with teachers*: to disseminate PIRLS results; introduce new strategies for teaching reading; training in item and test development.
- *Assessment practices*—developing tests of reading comprehension and using marking schemes; emphasis on monitoring student progress as the main purpose of assessment instead of summative assessment; use of the PIRLS reader for assessment.

Table 8: Number of NRCs rating how much PIRLS and TIMSS contributed to a greater understanding of education in their country

	A Great Deal		A Little		Not Much	
	P	T	P	T	P	T
Student achievement levels	8	10	1	-	-	-
Student attitudes	5	5	4	5	-	-
Curriculum emphases	8	8	-	2	1	-
Teaching methods	4	7	4	-	1	3
Education resources	6	6	2	4	1	-
Other						

Notes:

N of NRCs: PIRLS = 9, TIMSS = 10.

The responses for TIMSS refer more to the TIMSS-R (1999) because the TIMSS 2003 results were only released in December 2004.

Three respondents wrote that for their country:

“. . . more attention has been given to the issue [of reading literacy]. Reading comprehension and literacy in the form presented in the PIRLS study were not generally known except for a few experts. The stimulation factors of family surrounding and early literacy activities and positive attitudes have become more widely known.” (*Slovakia*)

“The Board of Education is developing new curriculum for reading literacy based on the results and findings of the PIRLS international and national reports.” (*Turkey*)

Table 9: Number of SEOs rating how much PIRLS and TIMSS contributed to a greater understanding of education in their country

	A Great Deal		A Little		Not Much	
	P	T	P	T	P	T
Student achievement levels	6	3	-	-	-	-
Student attitudes	4	1	1	2	1	-
Curriculum emphases	5	2	1	1	-	-
Teaching methods	4	2	2	-	-	1
Education resources	3	3	1	-	2	-

Note: N of SEOs: PIRLS = 6, TIMSS = 4.

The Most Significant Lessons Learned

All NRCs, SEOs and WBOs, except one, rated the projects as being ‘extremely important’ or ‘very important’ for their country. The exception was Colombia, where it was considered by the WBO that regional South American comparisons would be more useful, particularly in light of the relatively poor performance of Colombia’s students internationally.

NRCs and SEOs were asked to identify the most significant impacts for their country, of their involvement in the project(s). The impacts are wide-ranging and encompass many benefits already identified in earlier sections. A summary of the 97 impacts identified in NRCs’ responses to the IEA Secretariat question is presented in Table 10 and represent *examples* of the impacts experienced, and indicate the relative frequency of those impacts rather than an absolute list of impacts.

It is clearly evident from Table 10 that the impacts are substantive, wide-ranging and multi-faceted. The flavor of the most significant impacts is reflected in the following examples of comments from NRCs in their questionnaires.

Educational System/Curriculum

- “Latvia got an assessment of its educational system and much information for possible improvement.” (*Latvia*)
- “[Gained] experience in assessment and information about the efficiency of our educational system.” (*Bulgaria*)
- “[W]ith participation since 1991 and through to 2006, Slovenia will have evidence of the effects of educational reforms (extending the length of compulsory primary education) introduced to improve the acquisition of literacy’ (*Slovenia*)
- “Increasing the frequency of practical work and experiments in science lab . . . introducing science [as a] subject in Grade 1, effective in 2003; increased usage of computers in science labs.” (*Malaysia*)

Table 10: Most significant impacts of countries’ participation in PIRLS and/or TIMSS

Impact	<i>N</i>
Changes to (innovations in) curriculum, teaching methods, teaching resources, assessment practices	20
Obtaining evidence of their educational system (in relation to other countries)	19
Developing expertise (capacity) in assessment and large-scale surveys	12
Use of the findings for implementing and evaluating educational reforms	10
Introduction of a national assessment/evaluation system	9
Changes to teacher training and education	7
Experience gained from taking part in an international research project	5
Raising educationalists’ (teachers’ and policy-makers’) awareness of the need for educational reform and for evaluating it	6
Wide publicity of the findings	2
Basis for arguing for additional financial support for educational reform	2
Establishing dedicated national assessment/curriculum development groups	5

Assessment Policies and Practices

- “. . . strengthening the methods used in assessing students at [the] school level by using school-based assessment system.” (*Malaysia*)
- “There is a lot of pressure to change— exam and assessment system—and to increase national budget allocated to education.” (*Indonesia*)

Teacher Training and Professional Development

- “[B]esides the training received and wide publicity, there were extensive seminars organized all over the country for the primary school teachers and educational officers from municipalities on the PIRLS results. For the first time, it allowed teachers to get in close contact with the international study, to be able to analyze its results from various angles and to have hands-on training in defining reading comprehension processes. So this was a direct influence on the teaching methods, as well as content of reading materials for primary school students (especially informational materials). Every school received the national Report that explained the philosophy, framework, procedures and results of PIRLS 2001. We cannot measure that impact directly, but believe it to be substantial.”(*Lithuania*)

Developing Capacity in the Methodologies of Large-scale Assessment to be used in Countries’ own National Assessment

- “[T]his project provided us with the testing, sampling methodology and new practices for the preparing the national exams.” (*Slovakia*)
- “Macedonia for the first time with TIMSS 1999 has empirical data for mathematics and science achievement at the end of grade 8, and authorities and teachers understand that [our] results are lower than we believed, and that social background and teaching methods have [a] significant influence on level of achievement. TIMSS help a lot the experts in the Assessment unit in developing skills and understanding the processes in large scale assessment before we start with our first national assessment in grade 4 (in year 1999–2000). (*Macedonia*)

Raising the Awareness of other Educationalists in their Country of the Value of National- and International-Level Evidence of Student Achievement

- “The change of attitude of some educational officers toward the assessment. They have realized how important it is to have a national assessment program.” (*Bulgaria*)
- “The attitudes of policy-makers are changing. Before the PIRLS findings were released there was no financial support for national costs. Since the results, the Ministry has supported by printing the reports, running workshops and covering the national costs for three international projects.” (*Slovakia*)

Accumulated Benefits

As indicated in an earlier section, for nine countries TIMSS 2003 is the first IEA study they have participated in. Three other countries had participated in TIMSS-R (1999). Seven countries had participated in both 1995 and 1999. It was clear from my interviews and the questionnaire responses that those countries which had a longer history had accumulated more benefits than those with a shorter history. Not only were there previous data with which to determine and monitor trends in their students' achievement and any changes to educational practices, but there was increased awareness of the importance of gathering internationally comparative evidence about their educational systems, greater depth and breadth of capability in assessment within their country and, therefore, greater potential to make valid and significant use of the findings for informing educational practices and policies. This is illustrated in the following comment from the NRC of Bulgaria about the most significant impacts of their country's participation in TIMSS:

“[1] Participation in all three TIMSS studies influenced a great deal on designing and evaluating extensive school and curriculum reform in our country. [2] TIMSS caused considerable change in the attitude policy-makers exhibit towards continuous evaluation of any intervention into educational system and processes. [3] The importance of international comparative research has been highly exposed in media, political debates and public discussion. [4] TIMSS studies have a significant role in the national evaluation of curriculum reform and are now considered as part of the national evaluation system.”

Multi-faceted Benefits

The benefits of each country's involvement in the international projects were multi-faceted. The following accounts from two countries reflect the breadth of the experience reflective of many other countries.

ROMANIA

“There was no access to data about the achievement levels of large representative sample of students till TIMSS surveys were applied in Romania's schools. In the absence of any information about the relative performance of a cross-section of students, people elevate the importance of minor indicators for mass schooling, for example, the success of Romania's top students in international Olympiad competitions.

The net effect of disappointing findings was to serve like ‘a wake-up call’ after the TIMSS-R results confirmed. In such a context, policy-makers could be easier convinced about the necessity of curriculum change and to pursue a more consistent reform of teaching methods.

TIMSS findings gave rise to a considerable amount of curriculum reform. Several new topics were added to the mathematics curriculum as a result of TIMSS, including ‘statistics and probability’, ‘data analysis and representation’. An increased emphasis was given to problem solving and a reduced one to deriving formal proofs. An integrated science curriculum was approved for grades 3 and 4. In sciences most of these changes were related to more emphasis on practical investigations, re-location of topics, and more stress on scientific inquiry.

New Teachers' Guides for Science (grade 3–4) and Chemistry and new textbooks for students, in both Math and Science, were written based on TIMSS experience—one textbook for Science (grade 4), three textbooks for Physics (grade 6, 7, 8), three for Biology (grade 5, 7, 8), one for Chemistry (grade 9) and few for Math (grade 1–9). All of them are used in schools following the changes, which occurred after the release of TIMSS results.

Another area in which the impact can be seen is in teacher training. Two of TIMSS team members have conducted seminars for teachers. The released items made available to teachers, together with the international ranking and scoring guide for each constructed-response item, should provide teachers with new opportunities for emphasizing different aspects of student learning during their lessons.

Further changes provoked or stimulated by TIMSS were those related to assessment. The assessment strategies used in TIMSS were quite unfamiliar for Romania. There were some attempts to conduct surveys based on empirical samples and some changes in assessment instruments used— more diverse format, performance assessment tasks, developing scoring guide.

As a consequence of our experience, mentioned briefly, is that TIMSS is best used to initiate educational changes using both ways: top-down, by designing new curricula and bottom-up involving teachers.

The IEA projects—TIMSS and PIRLS—are the only surveys based on representative samples taking place in Romania. They provide real information about mass schooling, which could guide the educational reform.”

MOLDOVA

“ a) The possibility to take part in an international research. b) Developing capacities of implementation of this international research. c) The possibility to compare the results of the national system with the results of the countries participating in the project. d) The possibility to use the results in the implementation of the future reforms.”

These views were supported by statements from SEOs. One SEO wrote:

“After ten years we finally got complex information about the reading level of our pupils. We haven’t been able to so do such complex research on our own since IEA’s 1991 Reading Literacy Study, because we couldn’t afford it financially. Now, we can

conclude that we didn't make enough changes after IEA's Reading Literacy Study in 1991. We planned a lot of changes but we couldn't afford all of them financially and the results in 2001 unfortunately evidenced that. We hope that when our Commission for Literacy Development will prepare proposals for changes on PIRLS data we will be able to implement them as soon as possible." (*Slovenia*)

In his opening address to the PIRLS meeting in Bratislava, the Minister of Education of Slovakia identified what I consider emerged as a critically important reason for many countries to be involved in international studies of educational achievement. He said:

"These [international studies] are opportunities for us policy-makers but also educational practitioners to *give us motivation to look for explanations of students' achievements.*" (my emphases)

His next words exemplified the situation for other many World Bank-funded countries:

"As the tradition in Slovakia has not been long in large-scale student assessment comparative studies, we [very much appreciate] the know-how, the methodology and professional training offered to our researchers. We are gaining experience for the co-operation with expert research institutions from all over the world that we can use and implement in the system of national monitors of students' achievements that are being prepared and carried out in Slovakia at the moment. We are using the overall experience, adapting it to the needs of other similar projects on the national level in the system of national testing and monitoring at all levels of schooling."

2. PROFESSIONAL DEVELOPMENT AND CAPABILITY BUILDING

Boston College, Statistics Canada and the IEA Data Processing Center play key roles in the management of IEA studies. However, it is a central intention of IEA that the projects are as participatory as possible and are executed in ways that maximize the training opportunities for the NRCs and their staff.

Who Participated?

While at least one person worked more than half-time or full-time on the project, most countries had two to three people working at least half-time. In addition, and depending on the phase of the project, many more were working from time to time. There was the potential, therefore, for disseminating training beyond just the sphere of the NRCs. Respondents described the staffing of the project as including (to give an example from one country):

“... five [members forming] a permanent nucleus; 15–50 people [on the] preparation of materials for sending to schools, verification, answer coding, data entering; over 300 people [conducting] the testing in schools— test administrators, school administrators, school inspectors, other officials from the educational system and local public administrations.” (*Moldova*)

Therefore, large numbers of research workers and educators in most countries had an opportunity to learn about the aims and procedures of the project, and to contribute to the implementation of the projects.

All NRCs are involved in the conceptualization and development process in a variety of ways. Hans Wagemaker, Director of IEA, set out, in email correspondence with me, some of the key steps in the IEA projects and a brief description of NRC involvement. He added that, because there is considerable diversity among the NRCs, IEA assumes no or little knowledge of IEA processes, and to ensure rigor and comparability, IEA provides training to all NRCs, irrespective of which country they represent and what experience they might have. Indeed, it was apparent from my observations at the PIRLS and TIMSS meetings and conversations with participants, that many key IEA experts, for example, those working at Boston College or the IEA Data Processing Center, have developed their expertise from their original involvement as NRCs in previous IEA projects.

Training Provided by IEA Secretariat and Consortium

The training provided for NRCs (and sometimes other colleagues) and the extent and nature of the participation of NRCs in designing and developing the projects are outlined

in the following steps immediately below (adapted from Hans Wagemaker's email). (Refer also to Appendix 2, which sets out the details of the project schedule for TIMSS and outlines the frequency and nature of professional activities that are involved.)

Development of the assessment framework

All NRCs are introduced to the concept of having an assessment framework and how and what it should specify. Separate expert panels are convened for the purpose of developing draft cognitive and questionnaire frameworks in which specifications of the domain, content and processes that are to be reported. The panels include NRCs from participating countries. All NRCs are involved in ratifying the draft framework, which is revised following the pilot test. This process takes place over a series of NRC meetings and in-country discussions with national reference groups.

Sampling

All NRCs are provided with the training, software and other resources to draw nationally representative samples which meet their country needs and which conform to the requirements of an international study.

Item development

Items for the tests are provided by NRCs at an item-writing workshop. Submitted items go through several review processes, including a subject matter expert group (led by Boston College and including NRCs) and the more general review by all NRCs. This is a major task for NRCs, and they are asked to involve their local staff and experts in this review process.

Translation and translation verification

NRCs are provided with manuals and training with respect to what cultural adaptations are permitted, and are responsible for the initial translations, and responding to the suggestions from Translation Verifiers.

Piloting

NRCs carry out the pilot tests and are involved in the review and preparation of manuals etc.

Data entry, data management, data cleaning

NRCs are trained to use IEA's data-entry software and introduced to all aspects of data management and data quality control. In addition to the regular NRC meeting, a database training session is held which focuses specifically on the preparation of national code books and using the data entry and cleaning software. NRCs are responsible for ensuring that all cleaning steps at the national level are implemented and for resolving data anomalies.

Scoring training

As up to a third of IEA test items require some form of extended response, all NRCs and their scoring managers spend approximately one week learning to score actual responses to test items and how to develop scoring rubrics. NRCs are also introduced

to the Reliability Scoring requirement for the study and trained how to manage and conduct this process.

Quality control

NRCs are introduced to IEA's quality control requirements for the test administration process. Independent Quality Control monitors from within each country are also employed and trained by IEA to conduct an independent quality control review of the administration process.

Reporting

All NRCs are involved in a series of meetings to identify what material is to be reported at the international level. They participate in the review process of all international reports and are trained in the process of preparing their national reports.

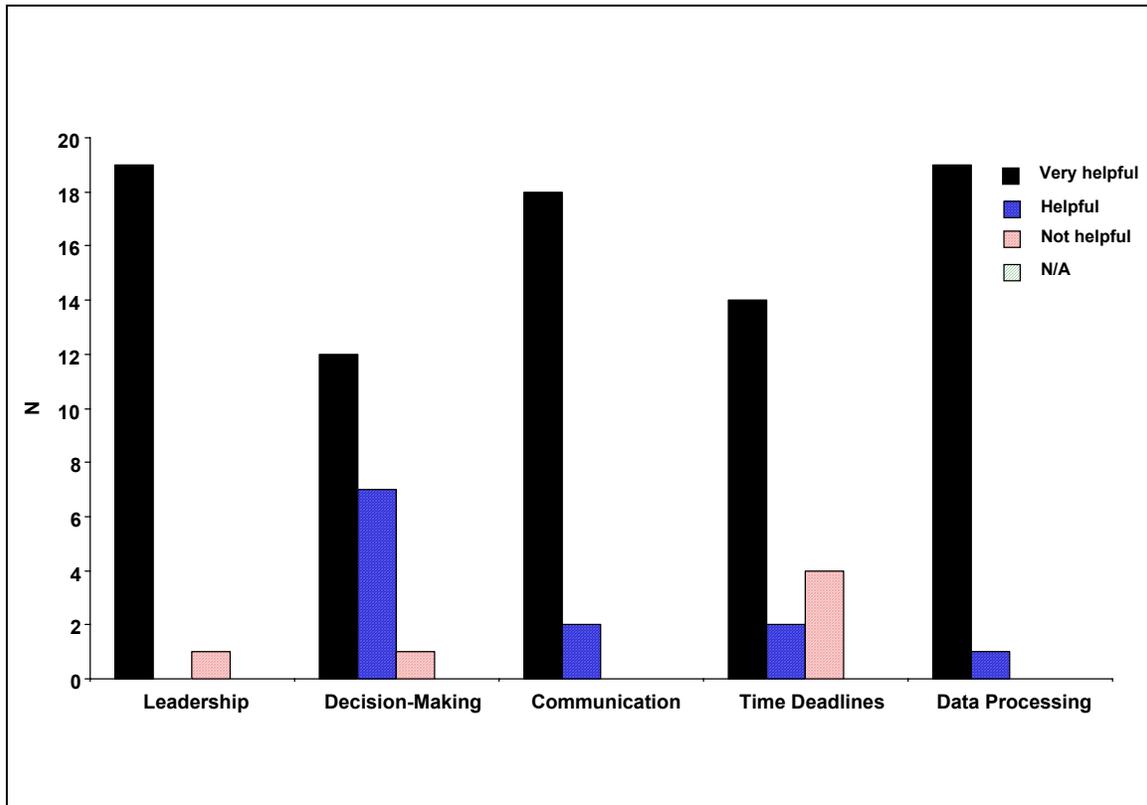
Database training

At the conclusion of a project, several seminars are run which focus on the secondary analysis of national data. NRCs are assisted in identifying the issues which are most relevant for their country and are then assisted and trained how to use the IEA data to answer the questions posed.

While for many of these steps, NRCs are the primary focus of the training, many countries send more than one representative, and in the case of specialized training sessions they send other representatives, such as the local data manager or subject-matter experts.

A number of questions were asked of the NRCs to determine the extent to which participation in the projects had contributed to developing their own personal professional expertise in a range of areas, including assessment, conducting large-scale evaluation surveys, item writing, etc, and to the expertise of their colleagues.

NRCs were asked to rate the special or on-the-job training that they had received during the projects (Figure 1). Without exception, all NRCs reported that the training in sampling, test development, questionnaire development, data management, and quality control were 'very helpful' or 'helpful'. Included amongst the 'other' category were: training for the administration of the survey and scoring sessions; carrying out comparative research; secondary data analysis training; experience in evaluation research; and network building and individual discussions with international staff on national needs.

Figure 1: NRCs' ratings of the special or on-the-job training received during PIRLS and TIMSS*

Note: * Data for PIRLS and TIMSS combined.

The NRCs also identified a range of particular skills or knowledge that they had learned or expanded through their participation in the projects:

- selecting passages for tests, developing items related to the comprehension process, developing scoring schemes and using them (PIRLS);
- test and questionnaire development;
- management of large-scale international studies from long-term planning to implementation of study results;
- new forms of research and methodology;
- gaining expertise from more experienced colleagues;
- the necessity of international cooperation and communication strategies;
- comparative analysis;
- knowledge of test and questionnaire development, sample processes, study management and data analysis, Item Response Theory (IRT); and
- organizational skills regarding work with people in the field.

Three respondents expressed the comprehensiveness of their professional development from participating in an IEA study:

“Management of such large-scale international studies from long-term planning to implementation of study results, new forms of research and methodology, experience in all aspects of study in international context, gaining the expertise from more experienced colleagues, necessity of international cooperation and communication strategies, need to introduce statistical skills and knowledge, awareness of life-long learning in the new areas (in our part of the world) of pedagogical research and many other useful things from personal and institutional point of view.” (*Slovakia*)

“Everything I do now as a researcher is connected to the PIRLS and PIRLS results (running second[ary] analyses projects).” (*Slovenia*)

“All skills needed for conducting an international study, such as, test development, questionnaire construction, sampling, test administration, scoring free response items, data entry, data analysis and writing a research report.” (*Jordan*)

The IEA secretariat also asked NRCs for information about any contribution PIRLS or TIMSS had made to capacity building in their country. The responses corroborate the importance and extensiveness of the training received. Examples included participation in experts groups, database training seminars, teacher training and postgraduate research studies, use of IEA publications (technical standards), use of IEA released items and/or procedures and manuals for nations assessments and assuring their quality.

A summary of the responses in Table 11 reveals the breadth of the training that NRCs received directly from IEA, and the extent to which NRCs are instrumental in disseminating their acquired expertise as well as making the IEA resources and procedures accessible to others in their home country. It was commented:

“To summarize, the national expertise obtained thanks to the Moroccan participation in the TIMSS 1999 and 2003, and in PIRLS 2001, was of great usefulness to the

conception, realization, and exploitation of the results of our national assessments. . . . It has enabled us to acquire a model which will constitute, from now on, a reference frame for all the bodies in charge of national, regional, and local assessments. This participation has also allowed us to spread an assessment culture making of assessment not only as a mechanism of sanction, but mainly as an efficient mechanism of the improvement of our educational system.” (*Morocco*)

“As a conclusion I would state that due to the support of [the] IEA Secretariat we succeeded in creating a state of spirit which didn’t exist before in Romania.” (*Romania*)

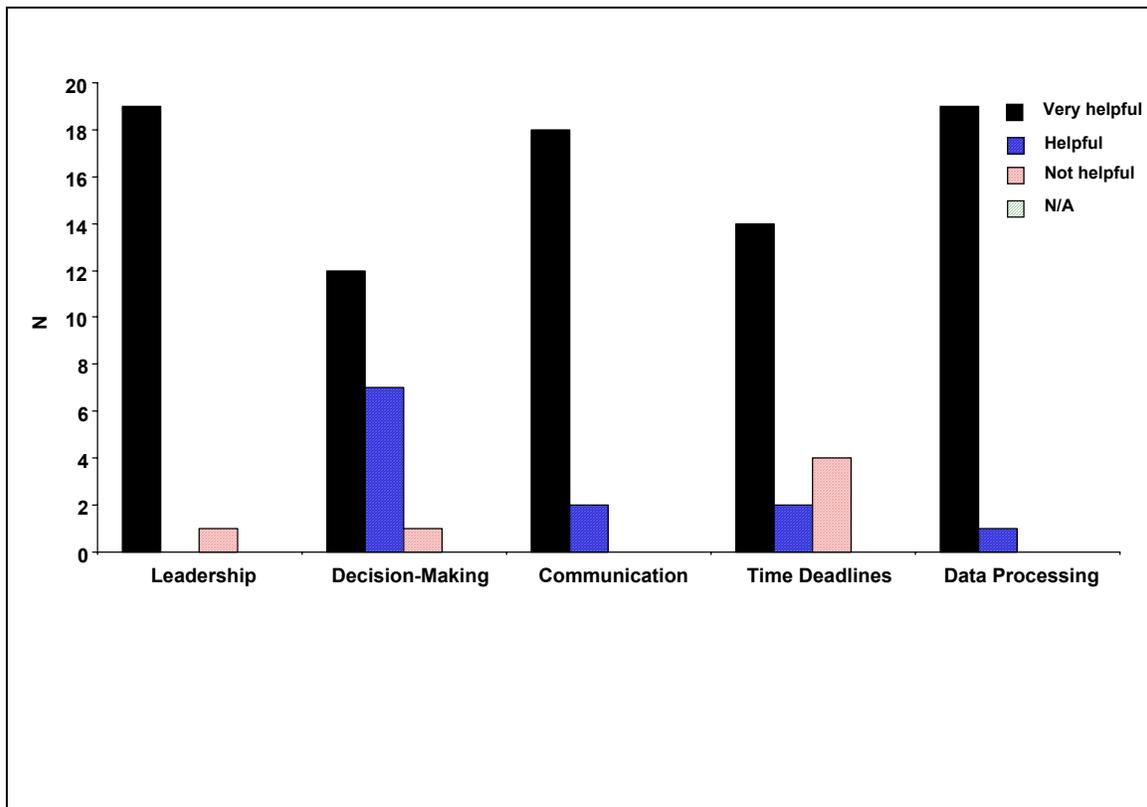
Table 11: Examples of capacity building received through participation in PIRLS and TIMSS

Nature of training	<i>N</i>
Participation in experts groups (subject mater, questionnaires...)	12
Specific training seminars (database, scoring reliability, quality control)	21
Training of teachers, postgraduate students	8*
Use of IEA publications (technical standards, frameworks, achievement standards)	18
Use of IEA-released items	8
Use of IEA procedures/manuals for preparing national assessments and assuring their quality	13

Note: Fourteen countries are represented.

*This is a severe underestimate given other data gathered. It is clear from interviews and the questionnaire responses that the involvement of teachers in professional development related to assessment generally and based on PIRLS and TIMSS directly is very extensive. In addition, many postgraduate students are undertaking secondary analyses of PIRLS and TIMSS data for research degrees, and advanced assessment courses utilizing IEA methodologies and resources.

NRCs considered that all aspects of the professional development/training they received were ‘excellent’ or ‘very good’, particularly leadership, decision-making, communication, and data processing (Figure 2). Singled out for special praise was the support and involvement of NRCs in contributing to decision-making during the design and development of the IEA studies.

Figure 2: NRCs' ratings of the quality of the organization of PIRLS and TIMSS*

Note: * Data for PIRLS and TIMSS combined.

Two quotes capture the experience of NRCs that I spoke to, and reflected what I observed at the meetings:

“I would like to express thanks to all involved institutions and staff for the assistance provided in cases of need, for very good management and cooperation in all related areas. The friendly and family-like personal atmosphere in IEA and PIRLS headquarters and NRC meetings helped to overcome the obstacles or insufficient experience in the new area. The organization has always been very professional.”
(PIRLS) (*Slovakia*)

“The IEA, DCP, ICS, Boston Statistics teams are hard working, collegiate and productive. It is amazing how easy [easily] they managed to consolidate good fellowship within the NRC team, ensuring an atmosphere of productive work, being able to maintain peculiar relationships with the representatives of each country.”
(TIMSS) (*Moldova*)

Of concern to a minority of NRCs were the time deadlines for translations being very hard to meet (rectified in PIRLS 2006 by separating translating from editing), and the need for flexibility in sampling decisions in country-specific situations.

One of the participants from South Africa provided an interesting anecdotal comment about the professional training provided through the PIRLS and TIMSS projects in comparison with a two-and-a-half-week training workshop for developing countries in Africa. While the latter was valuable, involvement in the IEA projects was considered to be more valuable because the motivation of participants was deemed greater through being involved in an actual project rather than practicing on hypothetical ones.

All NRCs continue to work on other assessment-related projects, such as mother-tongue national assessments, national literacy and mathematical problem-solving tests at three year levels; developing and improving final exams at the end of secondary school; running secondary analysis projects on PIRLS and TIMSS data; evaluation studies; teaching educational measurement, evaluation and test/questionnaire design; test development at the national level, and in such areas as scholastic aptitude, university selection and psychological tests; and national testing in math and native language. Other staff who had a reasonably substantive involvement in PIRLS (>50%) were similarly involved in a range of assessment-related activities, such as data entry, cleaning and analysis; administration of surveys; and pre-service teacher education.

Five PIRLS and nine TIMSS NRCs (representing about half of the respondents to the questionnaires) reported that they or their colleagues in the project team had changed roles. All but one of them was continuing to use the training 'often' or 'quite often' in their new roles. Examples cited included: conducting a national assessment study every two years; participating in other international studies, such as PISA, ROSE (Relevance of Science Education); assessing Grade 10 students' attitudes towards science; membership of national committees for national assessment, and measuring and assuring quality in education; research and evaluation of school reform; teacher training seminars on national assessments; and as an international World Bank consultant on student assessment.

It was clear from my observations at the NRC meetings, that a strong, supportive learning network operated amongst the NRCs and the IEA Secretariat and consortium which enabled all NRCs to participate at appropriate levels, learn from the expertise of other colleagues and, thereby, improve their professional capabilities.

3. THE IMPORTANCE OF PARTICIPATING IN IEA STUDIES AND WORLD BANK FUNDING

Participation in IEA Studies

There was almost unanimous agreement from NRCs, SEOs and WBOs that it was either ‘extremely’ or ‘very important’ for the country they represented to have participated in the IEA studies and to participate in future studies. The only dissenting view was expressed by the WBO for Colombia. As stated earlier, the current international mix of countries did not provide the most appropriate comparisons for that country.

The importance of participating in IEA studies relates to multiple positive impacts reported by NRCs and SEOs in an earlier section and is recognized at governmental level through the allocation of funding to support this work, the establishment of dedicated research/assessment institutions, the increased investment and focus on educational reforms, and evaluating the impact of them. Comments reflecting these include:

“The Minister is following this [PIRLS and TIMSS] very carefully. The Government has asked for assistance to improve their capacity to analyze the TIMSS data and to organize a local conference on the issue. They are interested in following up the on the trends which will be possible with PIRLS.” (WBO, *Tunisia*)

“The TIMSS press release in Jordan was good. The Minister and the Ministry of Education were happy with the results because of the good achievement in science . . . compared with TIMSS ’99. The media covered the event well. Jordan will use the results of TIMSS 2003 as baseline data for a new reform project named Education Reform for a Knowledge Economy.” (*Jordan*)

“It gives reliable information about the mathematics and science education.” (SEO, *Bulgaria*)

“Benchmarking with other countries gives insights on the quality of learning and teaching of science and mathematics in the Philippines.” (*Philippines*)

“Bulgaria is joining the European Union in 2007. It is very important for us to meet the European educational standards. The European educational indicators were developed using TIMSS data. The only way to compare Bulgarian education on mathematics and science with other countries and to bring the national educational requirements and standards to the European level is to participate in TIMSS.” (*Bulgaria*)

This importance attributed to international comparative studies is reflected in the comments of all the NRCs who responded to the questionnaires. They indicated that their respective countries plan to undertake international assessments of achievement in the future either with IEA (nine PIRLS, 11 TIMSS), with other agencies, such as OECD, (three PIRLS, seven TIMSS), or on their own (six PIRLS, eight TIMSS). The NRC from Slovenia stated:

“Our new Minister for Education is highly interested in participating in TIMSS 2007 as well as PIRLS and TEDS. It seems from reaction to TIMSS 2003, findings and results from IEA studies will be directly used to change/improve policies in education in Slovenia.”

Interestingly, as countries realize the value of the information provided by international comparative studies of achievement and learning contexts of the type provided by IEA, and embark upon educational reforms, their commitment to, and the importance of, the international studies also increases, as does the imperative to evaluate the effectiveness of the reforms. However, countries are very strategic about choosing the particular

international studies which will be most appropriate and informative for their evaluation needs. For example:

“[Future participation in TIMSS] will have to be, at the earliest, in TIMSS 2011. Participation in TIMSS 2007 may not yield improvement in achievement, since the country is still putting in place major interventions in the school system. It will take many years, at least five years, to put interventions in the majority of the schools, given the large system and the poor economy, and see the effect of such interventions on student achievement.” (*Philippines*)

Most countries have also instituted procedures for evaluating their students nationally.

Meeting the Costs

For countries to participate in the projects, they must meet both local costs and international costs. The countries in this evaluation received variable amounts of financial support, with most countries being able to meet their local costs (eight countries also required additional support for their local costs). World Bank support was essential for covering the international costs of all countries.

NRCs and SEOs were unanimous in their view that the country they represented would not have been able to participate in the projects without financial support from the World Bank, and considered it unlikely that their country would be able to fund the full costs of participating in the next study.

SUMMARY AND CONCLUSIONS

This report has detailed the impact of PIRLS 2001 and TIMSS 2003 on 24 low- and middle-income countries that received financial assistance from the World Bank in order to participate. All countries reported that they would not have been able to participate without the support of the World Bank. Similar accounts of the impacts of a country's involvement in PIRLS and/or TIMSS were reported by NRCs, SEOs and WBOs (although the response rates from the latter two groups were small). My observations, together with formal and informal interviews at the PIRLS and TIMSS meetings, were consistent with the written responses to the questionnaire, and confirmed for me several key impacts of participants' involvement in these international studies.

This evaluation has shown the following main findings:

- The tests used to measure reading literacy (PIRLS) and mathematics and science achievement (TIMSS) were generally valid and fair assessments of the abilities of the national samples of their students in grades 4 and 8. Therefore, they were able to provide useful and reliable information about student achievement to policy-makers in those countries.
- Many educationalists (National Research Coordinators (NRCs), researchers, data entry personnel and analysts, teachers, advisors) in each country were involved in implementing the projects in their respective countries.
- In all countries except one national reports had been prepared and distributed for PIRLS. Many countries were still to prepare a national report for TIMSS. In the majority of countries, the reports had been read by Senior Education Officials (SEOs) and were sometimes the subject of parliamentary comment or debate and public discussion. The findings generally had been widely distributed to teachers. The PIRLS and TIMSS assessment tasks had been published and made available to practitioners and used for teacher training in assessment.

- Newspapers and radios publicized the findings widely at the time of the PIRLS release in December 2003. Plans for similar dissemination of TIMSS findings are scheduled for February 2005.
- It was too soon since the release of the findings, particularly for those countries participating in TIMSS, for countries to have made any changes to the reading, mathematics and science curricula, but the majority of NRCs expected that changes would be made in the future. Indeed, NRCs reported being involved reasonably frequently in such discussions in relation to PIRLS and TIMSS-R (1999).
- Of particular interest to policy-makers were their country's international ranking and trends of their students' achievement over time (from previous international projects). Also of considerable interest were differences between countries in the content areas, student attitudes and school contextual factors. Most NRCs cited examples of educational initiatives, and secondary investigations which followed analysis of their national data.
- PIRLS and TIMSS had contributed a great deal to a better understanding of education by policy-makers, politicians, educationalists and researchers, in their country, especially in relation to student achievement levels, curriculum emphases, teaching methods and educational resources.
- The NRCs rated the PIRLS and TIMSS projects as extremely helpful for the special training they provided in sampling, test development, questionnaire development, data management, quality control, secondary analyses and organizational skills. Through the implementation of the projects within their countries, the NRCs were able to disseminate that training to others.
- The organization (leadership, decision-making, communication, time deadlines and data processing) of PIRLS and TIMSS was rated very highly by NRCs, and was frequently described as 'superb'. The particular value of the training was seen as practical, having immediate application, and being supported with supervision.
- NRCs developed new technical skills and greater conceptual understanding of educational matters during the project(s) and were still using these skills in conducting national or international surveys. Therefore, the training they received was instrumental in enabling them to sustain the ability to conduct research that would benefit their educational system.

- All countries are involved in developing their own national assessment systems, frequently using the IEA projects as models.
- All NRCs, SEOs and World Bank Officers (WBOs) expressed the view that it was either ‘extremely important’ or ‘very important’ for their country to participate in IEA studies.
- All NRCs were very clear that their country would not have been able to participate in PIRLS and/or TIMSS without the financial assistance provided by the World Bank to cover the international fees. Any future participation would depend on continued financial assistance.
- The benefits for NRCs and their respective countries were multi-faceted. They ranged across benefits for the educational system, curriculum review and delivery, assessment policies and practices, teacher training and professional development, developing capacity in the methodologies of large-scale assessment to be used in countries’ own national assessment systems, and raising public and educational policy-makers’ awareness of the value of international and national evidence of student achievement.
- The benefits to be gained from participating in international projects like PIRLS and TIMSS are accentuated when a country is able to participate in a project over a series of cycles. The countries that described the most substantive benefits were those that could chart changes in educational achievement over a period of three cycles, for example, TIMSS 1995, 1999, and 2003.
- Those countries that were compiling a ‘portfolio’ of international student achievement data from a range of projects (for example, IEA PIRLS, TIMSS and OECD’s PISA) also described substantive cross-curricula benefits.

It is evident that the general impact of participating in PIRLS and/or TIMSS has been substantial, multi-faceted, and positive. The potential benefits for first-time participating countries will be heightened further with their continued participation in such international studies.

It is also evident that many of the educational reforms would not have occurred without the impetus of international comparisons.

I consider that World Bank aid to these countries has been instrumental in raising awareness amongst politicians, policy-makers and educationalists of the importance of evidence of student outcomes and educational contexts to evaluate the quality of their educational system and in initiating substantial educational improvements. In my opinion, World Bank aid has been extremely worthwhile and a very sound financial investment.

References

Elley, W. B. (2002). *Evaluating the Impact of TIMSS-R (1999) in Low- and Middle Income Countries: An independent report on the value of World Bank support for an international survey of achievement in mathematics and science*. Report to the IEA (Amsterdam) and the World Bank (Washington, USA)

IEA website, accessed 11 January 2005: <http://www.iea.nl/>

Aggarwala, N. K. (2004). *Evaluation Report: Quality assessment of primary and middle education in mathematics and science (TIMSS) (RAB/01/005/A/01/31)*. Report to the United Nations Development Programme and the United Nations Office for Project Services, New York, USA.

APPENDIX 1: DESCRIPTION OF PIRLS 2001 AND TIMSS 2003

PROGRESS IN INTERNATIONAL READING LITERACY STUDY 2001 (PIRLS) 1999–2003

PIRLS 2001 was the first in a five-year cycle of assessment that measures trends in children's reading literacy achievement and policy and practices related to literacy. PIRLS examines three aspects of reading literacy: processes of comprehension, purposes for reading, and reading literacy behavior and attitudes. The first two aspects form the basis of the written test of reading comprehension. The PIRLS framework calls on students to demonstrate their understanding of a wide variety of texts classified under two major purposes of reading—acquiring and using information and gaining literary experience. Within these purposes, students are asked to engage in a full repertoire of reading skills and strategies, including focusing on and retrieving specific information, making straightforward inferences, interpreting and integrating ideas, and examining or evaluating text features. The third aspect, behavior and attitudes, is addressed by the student questionnaire. This and the parent, teacher, and school questionnaires gather information about home and school factors associated with the development of reading literacy, as well as about the larger context in which children live and learn. In addition, the countries that participated in the 1991 IEA Reading Literacy Study had the option to administer the 1991 test again to provide trends in their students' reading literacy achievement over the period 1991–2001.

Target Population

The target grade was the upper of the two adjacent grades with the most nine-year-olds. In most participating countries this is Grade 4. At this grade level, formal reading instruction is generally completed and transition from *learning to read* to *reading to learn* is taking place.

Participating countries

Argentina, Belize, Bulgaria, Canada (Ontario and Québec), Colombia, Cyprus, Czech Republic, England, France, Germany, Greece, Hong Kong (SAR), Hungary, Iceland, Iran, Israel, Italy, Kuwait, Latvia, Lithuania, Macedonia, Moldova, Morocco, Netherlands, New Zealand, Norway, Romania, Russian Federation, Scotland, Singapore, Slovak Republic, Slovenia, Sweden, Turkey, United States.

Nine countries participated in the 1991–2001 Trends Study: Greece, Hungary, Iceland, Italy, New Zealand, Singapore, Slovenia, Sweden, and United States.

Schedule

The PIRLS 2001 data were collected in May–April (Northern Hemisphere) and October–November (Southern Hemisphere) 2001. The International Reports were released in April 2003, and the International Database and the User Guide in September 2003.

Management

The PIRLS 2001 management consortium was led by the International Study Center at Boston College and the IEA Secretariat, and included also the IEA Data Processing Center, Statistics Canada, the Educational Testing Service, and the National Foundation for Educational Research in England and Wales. Co-directors of the study were Drs Michael Martin and Ina Mullis.

Funding

Funds for the international coordination of PIRLS were provided by participating countries, the National Center of Education Statistics of the United States Department of Education, and the World Bank.

TRENDS IN MATHEMATICS AND SCIENCE STUDY 2003 (TIMSS)**2001–2005**

TIMSS (the earlier acronym for the Third International Mathematics and Science Study) is designed to measure trends in students' mathematics and science achievement. TIMSS 2003 is the third in a four-year cycle of assessment. TIMSS tests contain questions requiring students to select appropriate responses or to solve problems and answer questions in an open-ended format. From 2003 on, TIMSS is gradually placing more emphasis on questions and tasks that offer better insight into the analytical, problem-solving, and inquiry skills and capabilities of students. In addition, students, teachers, and school principals in each participating country will be asked to complete questionnaires concerning the context for learning mathematics and science, so as to provide a resource for interpreting the achievement results and to track changes in instructional practices.

Target population

TIMSS 2003 is assessing the mathematics and science achievement of children in two target populations. These populations correspond to the upper grades of the TIMSS 1995 Population 1 and Population 2 target definitions. Generally, these are the fourth and eighth grades.

Participating countries

Argentina, Armenia, Australia, Bahrain, Belgium (Flemish), Botswana, Bulgaria, Canada (Ontario and Québec), Chile, Chinese Taipei, Cyprus, Egypt, England, Estonia, Ghana, Hong Kong (SAR), Hungary, Indonesia, Iran, Israel, Italy, Japan, Jordan, Korea, Latvia, Lebanon, Lithuania, Macedonia, Malaysia, Moldova, Morocco, Netherlands, New Zealand, Norway, Palestinian Autonomy, Philippines, Romania, Russian Federation, Saudi Arabia, Scotland, Serbia, Singapore, Slovak Republic, Slovenia, South Africa, Sweden, Syria, Tunisia, United States, Yemen. The Basque Country (Spain) and Indiana State (United States) also participated in the TIMSS 2003 data collection.

Schedule

The TIMSS study first took place in 1995, and then in 1999. The data collection for the present study was conducted in October–December 2002 (Southern Hemisphere) and March–June 2003 (Northern Hemisphere). The International Reports were released on 14 December 2004 at the TIMSS International Center; the International Database and User Guide will be available in June 2005.

Management

The International Study Center is located at Boston College, United States. The study Co-directors are Drs Michael Martin and Ina Mullis. Other members of the TIMSS consortium are the IEA Secretariat and the IEA Data Processing Center, Statistics Canada, and the Educational Testing Service.

Funding

The participating countries are providing funding for TIMSS 2003, with special donations from the United States National Center for Education Statistics and National Science Foundation, from the World Bank, and from the United Nations Development Programmed. The annual contribution of each country to the costs of coordinating TIMSS internationally is US\$40,000 per year for one grade level and US\$60,000 per year for two grade levels for three years.

APPENDIX 2: OVERVIEW OF TIMSS 2003 PROJECT SCHEDULE

From Aggarwala (2004), Annex C, pp. 44–46.

Year 2000

August - October	NRC recommendations for updating TIMSS Frameworks
November 1 to 3	First TIMSS 2003 Expert Panel meeting to update TIMSS Assessment Frameworks and Specifications
November–December	Draft TIMSS Assessment Frameworks and Specifications

Year 2001

January– February	Expert Panel reviews draft TIMSS Assessment Frameworks and Specifications
February 25 to 28	First TIMSS 2003 NRC Meeting (Hamburg, Germany)
March–April	Revise TIMSS Assessment Frameworks and Specifications
May 2 to 4	Second Expert Panel meeting for TIMSS Assessment Frameworks and Specifications (Amsterdam, the Netherlands)
June 17 to 20	Second TIMSS 2003 NRC Meeting (Montreal, Canada)
July 13	Phase I of item writing (250 grade 8 and 200 grade 4 items per subject)
July 31	Phase II of item writing (extra 250 grade 8 and 200 grade 4 items per subject)
July–August	Prepare, review, and revise draft of TIMSS Assessment Frameworks and Specifications
September 17–20	Science and Mathematics Item Task Force (Boston, U.S.A)
September	Publish TIMSS Assessment Frameworks and Specifications
October 15–19	Science and Mathematics Item Review Committee (SMIRC) (Portsmouth, N.H., U.S.A)
October 22–25	Questionnaire Item Review Committee (QIRC) (Washington, D.C., USA)
December 9–14	Third TIMSS 2003 NRC Meeting (Madrid, Spain)

Year 2002

January 4	Field test item blocks and background questionnaires sent to countries for translation and verification
February 17–20	Data entry training for field test (Hamburg)
March 17–22	Fourth TIMSS 2003 NRC Meeting (Gent, Belgium)
March–April	Field test
April 1–May 31	Field test data sent to DPC
July 9–12	QIRC (Amsterdam, the Netherlands)
July 15–18	SMIRC (Oslo, Norway)
July 29–August 2	Fifth TIMSS 2003 NRC meeting (Tunis, Tunisia)
October–November	Main data collection for Southern Hemisphere
November 3–7	Southern Hemisphere scoring training (Wellington, New Zealand)

Year 2003

March–June	Main data collection for Northern Hemisphere
March	Sixth TIMSS 2003 NRC meeting (with scoring training for Northern Hemisphere) (Bucharest, Romania)
July–December	Data processing and review
November 9–14	Seventh TIMSS 2003 NRC meeting (Cape Town, South Africa) –

	review data summaries, report outlines, and draft exhibits for reports.
December 1	TCMA materials distributed to NRCs
December 31	NRCs send all background changes to DPC
<i>Year 2004</i>	
January 20–22	Sampling Adjudication Meeting, Boston
January 30	DPC distributes all background almanacs to NRCs ISC posts revised chapter 4 exhibits to web for NRCs to review student background data
February 13	NRCs send all changes to background data to DPC NRCs send TCMA spreadsheet to ISC
March 15	ISC posts updated exhibits in chapters 5-8 to web for NRCs to review background data
March 31	ISC completes scaling of achievement data
April 1	NRCs send all changes to background data to DPC
April 27–30	Scale Anchoring Meeting, Boston
May 10–14	IEA Research Conference, Cyprus
June 10	DPC distributes achievement and background almanacs to NRCs ISC posts draft reports (exhibits and text) to web for NRCs to review prior to 8th NRC meeting
June 20–25	Eighth NRC meeting (Santiago, Chile) – final review of draft TIMSS 2003 international exhibits for international reports in mathematics and science
July 9	NRCs send all final data changes to DPC
July 30	ISC posts released item sets to web
August 20	DPC distributes final almanacs and data files with data for all countries to NRCs
November 23	ISC mails out international reports, technical report, and press packet to NRCs
December 14	Press release international reports
<i>Year 2005</i>	
February	<i>International database training, held in conjunction with 1st TIMSS 2007 NRC meeting</i>
March	<i>International database and user guide published</i>

APPENDIX 3: COUNTRIES RECEIVING FINANCIAL ASSISTANCE TO PARTICIPATE IN PIRLS 2001 AND/OR TIMSS 2003

Country	PIRLS 2001	TIMSS 2003
Armenia		<input type="checkbox"/>
Botswana		<input type="checkbox"/>
Bulgaria	<input type="checkbox"/>	<input type="checkbox"/>
Colombia	<input type="checkbox"/>	
Czech Republic	<input type="checkbox"/>	
Ghana		<input type="checkbox"/>
Hungary	<input type="checkbox"/>	<input type="checkbox"/>
Indonesia	<input type="checkbox"/>	<input type="checkbox"/>
Jordan		<input type="checkbox"/>
Latvia	<input type="checkbox"/>	<input type="checkbox"/>
Lithuania	<input type="checkbox"/>	<input type="checkbox"/>
Macedonia	<input type="checkbox"/>	<input type="checkbox"/>
Malaysia		<input type="checkbox"/>
Moldova	<input type="checkbox"/>	<input type="checkbox"/>
Morocco	<input type="checkbox"/>	<input type="checkbox"/>
Philippines		<input type="checkbox"/>
Romania	<input type="checkbox"/>	<input type="checkbox"/>
Russian Federation	<input type="checkbox"/>	<input type="checkbox"/>
Serbia		<input type="checkbox"/>
Slovak Republic	<input type="checkbox"/>	<input type="checkbox"/>
Slovenia	<input type="checkbox"/>	<input type="checkbox"/>
South Africa		<input type="checkbox"/>
Tunisia		<input type="checkbox"/>
Turkey	<input type="checkbox"/>	
TOTAL	15	21

APPENDIX 4: TERMS OF REFERENCE FOR INDEPENDENT EVALUATION OF PIRLS 2001 AND TIMSS 2003

The World Bank has given support to 20 developing and lower middle income countries to help them carry out TIMSS and/or PIRLS¹ and there is a need to assess the impact this has had on the education systems of these countries and to evaluate the importance of DGF funding for participating countries.

The following issues should be addressed:

Relevance

Country issues:

1. How relevant are PIRLS and TIMSS for policy making?
2. Did the test items (in the view of the Ministry of Education) represent a reasonable sample of the (i) official curriculum and (ii) the curriculum actually delivered in schools?
3. How relevant is the final report for policy makers?
4. Is there any evidence that policy makers have (i) read the reports, and/or (ii) disseminated the results?
5. How relevant was the cross-country data reported in TIMSS-R for policy making?

World Bank issues:

- How relevant are the IEA studies in terms of deepening the understanding of education within the country?
- How relevant are the IEA studies for the development of assessment capacity with the participating countries.
- Have the Bank teams for participating countries used the PIRLS and TIMSS data in their work, and if so, in what ways?

Efficacy (Use of Results)

- Have educational policies/practices been altered primarily as a result of participating in the IEA studies (e.g., in relation to curriculum content, teacher professional development, more involvement in international bodies working in education)?
- Is there evidence that TIMSS and PIRLS results have been made public within the country, and if so, in what ways (e.g., have they been featured in (i) parliamentary debates, (ii) newspaper editorials, (iii) radio programs, (iv) TV programs)?
- How has the Bank used the results for its own policy making (e.g., in sector strategies, training programs, project development)?

¹ PIRLS 2001: Bulgaria, Colombia, Czech Republic, Hungary, Indonesia, Latvia, Lithuania, Macedonia, Moldova, Morocco, Romania, Russian Federation, Slovak Republic, Slovenia

TIMSS 2003: Armenia, Botswana, Bulgaria, Ghana, Hungary, Indonesia, Jordan, Latvia, Lithuania, Macedonia, Malaysia, Moldova, Morocco, Philippines, Romania, Russian Federation, Slovak Republic, Slovenia, South Africa, Tunisia

Efficiency

- To what extent has the DFG funding to IEA been used efficiently to enable poor and low income countries to participate in the IEA studies and to facilitate beneficial outcomes?

Sustainability

Capacity development

- Has capacity in assessment been developed in the participating countries?
- Do the TIMSS and PIRLS teams contribute to work on national assessment issues?
- Are members of the team using their skills in related areas (e.g., developing diagnostic tests, curriculum and assessment support resources)?

Sustainability

- What is the evidence that the TIMSS and PIRLS initiatives are sustainable independently by the participating countries?
- Is the institution/team that carried out the assessment still functioning as an assessment unit?
- Is there a line item budget for educational assessment?
- How many of the national core team continues to work in educational assessment?
- Is the team developing or carrying out national assessment?

Institutional Development Impact

Direct impact

- Has the country created an institution to carry out future assessments (if none existed previously)? If, so, is that institution independent or within government?
- Have the test development, scoring and reporting processes used in an existing assessment institution improved?
- How has the assessment affected practices in the national curriculum unit?

Indirect impact

- To what extent are those who previously worked on TIMSS-R/PIRLS (and who are no longer working on national/international assessment) using the TIMSS/PIRLS-inspired assessment skills in their new institutions?

Grantees' Performance

Participating countries as grantees

- How did the Grantee use DGF funds (e.g. training, traveling, test development, resources)?
- Did the Grantee complete each implementation stage on time?
- Did the Grantee actively encourage wide-scale release of the results?
- Did the Grantee make good overall use of the results?

Performance of donors and intermediary organizations

- What is the view of IEA on the extent to which there was timely release of DGF funds?
- Significance of DGF funding, use of TIMSS/PIRLS by the World Bank (including brown bags, seminars and HD week)

Collection of evidence/data for the evaluation

The key stakeholders in this evaluation are: the participating countries, IEA, and the World Bank. The evaluation seeks to gain the perspective of each group of the impact and importance of the DGF funds for the IEA studies. The above aspects of the evaluation (relevance, efficacy, efficiency, sustainability, impact and performance) will be informed by the following sources of information/evidence:

- Attendance and interviews with participant country representatives at two scheduled IEA meetings in: (i) Bratislava, March 1-5 2004, and (ii) Chile, June 14 – 18 2003;
- Interviews (telephone?) with policy makers in participating
- Interviews with Dr Hans Wagemaker and IEA officers;
- Written responses to questionnaires and follow-up requests for data via email and and/or during IEA meetings;
- Interviews (telephone?) with representatives of the World Bank

The evaluation report will include:

Executive Summary

Evaluation Methodology

The Key Findings

Conclusions and Lessons Learned

Recommendations

APPENDIX 5: QUESTIONNAIRES

EVALUATION OF THE IMPACT OF PIRLS (2001) FOR COUNTRIES RECEIVING SUPPORT FROM THE WORLD BANK

QUESTIONNAIRE FOR NATIONAL RESEARCH COORDINATORS

To: National Research Coordinator
PIRLS

From: Alison Gilmore
Educational Consultant

I have been contracted by IEA to study the **impact of PIRLS (2001)** on education policy and practice in a group of countries that received funding assistance from the World Bank. Your views are a key source of information in this project. Therefore, I would be very grateful if you would attempt to respond to each of the following questions. Feel free to add any comments where appropriate, or at the end. Your individual responses will be **confidential**.

INTRODUCTION

- Please give your **name** and **official title**:
- How many people** (professionals) worked on the implementation of PIRLS in your country:

Full-time?	(Over 90% of their time)	_____
Over half-time?	(50 – 90% of their time)	_____
Part-time?	(10 – 50% of their time)	_____

RELEVANCE OF PIRLS

- How well did the PIRLS international test match the content objectives of your **official national curriculum**? (mark with an x)

<i>Very well</i>	(Covered over 90% of objectives)
<i>Quite well</i>	(Covered over 75% of objectives)
<i>Not very well</i>	(Covered less than 75% of objectives)

Comment:
- How well did the PIRLS test match the content objectives of your **national curriculum**, as implemented in the schools?

<i>Very well</i>	(Covered over 90% of objectives)
<i>Quite well</i>	(Covered over 75% of objectives)
<i>Not very well</i>	(Covered less than 75% of objectives)

Comment:

3. Was a **National Report** prepared for your PIRLS findings? (Yes/No)
4. To the best of your knowledge, did **Senior Education Officials** read the National Report, or summaries of it? (Yes/No)
5. Did the **Minister of Education** read the Report (or summaries?) (Yes/No)
6. What aspects of the **findings** included in your National Report (or other summary of findings) on PIRLS were of most interest to policy makers?

	<i>Of much interest</i>	<i>Of considerable interest</i>	<i>Of some interest</i>	<i>Of no interest</i>
International rankings				
Trends over time				
Content area differences				
Student attitudes				
Differences in context				
Other:				

Comment:

7. To what extent do you think PIRLS contributed to a **greater understanding** of education in your country?

	<i>A great deal</i>	<i>A little</i>	<i>Not much</i>
Student achievement levels			
Student attitudes			
Curriculum emphases			
Teaching methods			
Education resources			
Other:			

Comment:

USE OF RESULTS

1. How much **coverage** was there of PIRLS findings in these media?

	<i>Extensive</i>	<i>Some</i>	<i>Little</i>	<i>None</i>
Newspapers				
Parliamentary debate				
Magazine articles				
Special radio programs				
TV programs				
Teacher publications				
Academic journals				

3. Did the PIRLS project promote any public discussion about the curriculum for reading literacy? (Yes/No)
E.g.
4. Did the PIRLS project promote any **change** in the curriculum for reading literacy? (Yes/No)
E.g.:
5. Are there likely to be more curriculum changes **in the future**, because of PIRLS findings? (Yes/No)
Egg:
6. To what extent have you, or your team, been involved in **discussions** of curricular reform?
Often Quite often Seldom Never Not applicable
7. Can you list any **other changes** that have been implemented, or proposed, as a direct or indirect result of PIRLS findings?
In teaching method:
In teacher training:
In assessment:
Other policies:

HUMAN RESOURCES AND SUSTAINABILITY

1. How would you rate the **special or on-the-job training** that you and (your PIRLS team) received during PIRLS?

	<i>Very helpful</i>	<i>Helpful</i>	<i>Not helpful</i>	<i>Not applicable</i>
Sampling				
Test development				
Questionnaire development				
Data management				
Quality control				
Other:				

2. What particular **skills or knowledge** have you learned, or expanded, through your participation in PIRLS?

3. How would you rate the **overall quality** of the organization of PIRLS?

	<i>Excellent</i>	<i>Very good</i>	<i>Adequate</i>	<i>Not adequate</i>
Leadership				
Decision-Making				
Communication				
Time Deadlines				
Data Processing				
Other:				

Comment on Organization: (Special praise or problems?):

4. Are you still working on projects that involve **assessments**, such as examinations, national assessments, test development, advice on evaluation, etc? (Yes/No)

Please state:

5. What roles are **other professional staff** who worked on PIRLS, for more than 50% of their time, carrying out now?

6. If you, or someone in your PIRLS team, have **changed roles**, to what extent are they using the training they received from PIRLS?

Often Quite often Seldom Never Not applicable

7. Does your country plan to make any **national assessments** of achievement in future?

With IEA? (Yes/No)

With others?

On your own?

Comment:

8. Approximately what percentage of the costs of implementing PIRLS was contributed by your **Government, and/or Institution?**

Local Costs?

International Costs?

9. Approximately what percentage of the costs was provided by a contribution from the **World Bank?**

Local Costs?

International Costs?

10. Do you think your country would have participated in PIRLS without financial support from the **World Bank?** (Yes/No)

11. Do you think that your country will fund the full costs of participating in the **next PIRLS** study?
(Yes/No)

12. Considering the time, effort and resources that were used in PIRLS, **how important** do you think the project was for your country?

<i>Extremely</i>	<i>Very</i>	<i>Quite</i>	<i>Not</i>
<i>important</i>	<i>important</i>	<i>important</i>	<i>important</i>

IMPACT OF PIRLS

1. What have been the **most significant impacts** of your country's participation in PIRLS?

Thank you!

Please e-mail this questionnaire to alison.gilmore@canterbury.ac.nz

**EVALUATION OF THE IMPACT OF PIRLS (2001) FOR COUNTRIES RECEIVING SUPPORT
FROM THE WORLD BANK**

QUESTIONNAIRE FOR WORLD BANK OFFICERS

To: World Bank Officer

From: Alison Gilmore, Educational Consultant

INTRODUCTION

I have been contracted by IEA to study the **impact of PIRLS (2001)** on education policy and practice in a group of countries that have received funding assistance from the World Bank (WB). Your views are a key source of information in this project. Therefore, I would be very grateful if you would respond to each of the following questions. Feel free to add any comments where appropriate, or at the end. Your individual responses will be **confidential**.

What are the IEA studies?

The International Association of the Evaluation of Educational Achievement (IEA) conducts international surveys of educational achievement, namely the 2001 Progress in Reading Literacy Study (PIRLS) and the 2003 Third International Mathematics and Science Study (TIMSS). In total, 36 and 53 countries have participated in these projects, respectively. Through the Development Grant Facility (DGF) from the World Bank, IEA has been able to support twenty low- and middle-income countries to participate in one or both of the surveys.

PIRLS 2001 was completed in December 2003 with the press releases of the international findings and national reports. (TIMSS 2003 is due to be completed in December 2004 with similar press releases.)

This questionnaire relates to the impact of PIRLS. (A questionnaire of the impact of TIMSS will follow early in 2005, after the international press release of findings in December 2004.

8. Your name:

2. WB Country in which you work:

RELEVANCE OF PIRLS

8. Was a **National Report** prepared for your WB country's PIRLS findings? (Yes/No/Don't know)
9. To the best of your knowledge, did **Senior Education Officials** read the National Report, or summaries of it? (Yes/No/Don't know)
10. Did the **Minister of Education** read the Report (or summaries?) (Yes/No/Don't know)
11. What aspects of the **findings** included in your WB country's National Report (or other summary of findings) on PIRLS were of most interest to education officials, policy makers, teachers or the public?

	<i>Of much interest</i>	<i>Of considerable interest</i>	<i>Of some interest</i>	<i>Of no interest</i>	<i>Don't know</i>
International rankings					
Trends over time					
Content area differences					
Student attitudes					
Differences in context					
Other:					

Comment:

12. To what extent do you think PIRLS contributed to a **greater understanding** of education in your WB country?

	<i>A great deal</i>	<i>A little</i>	<i>Not much</i>	<i>Don't know</i>
Student achievement levels				
Student attitudes				
Curriculum emphases				
Teaching methods				
Education resources				
Other:				

Comment:

USE OF RESULTS

1. How much **coverage** was there of PIRLS findings in these media?

	<i>Extensive</i>	<i>Some</i>	<i>Little</i>	<i>None</i>	<i>Don't know</i>
Newspapers					
Parliamentary debate					
Magazine articles					
Special radio programs					
TV programs					
Teacher publications					
Academic journals					

9. Did the PIRLS project promote any public discussion about the curriculum for reading literacy?
(Yes/No/Don't know)

E.g.

10. How important do you think it was for your WB country to have participated in PIRLS (2001)?

<i>Very important</i>	<i>Quite important</i>	<i>Not important</i>	<i>Don't know</i>

Comments:

4. How important do you think it will be for your WB country to participate in future PIRLS (or IEA) surveys?

<i>Very important</i>	<i>Quite important</i>	<i>Not important</i>	<i>Don't know</i>

Comments:

Please add any other comments that may inform the World bank about the impact of their funding your WB country to participate in this IEA study.

Thank you!

Please e-mail this questionnaire to alison.gilmore@canterbury.ac.nz

APPENDIX 6: IEA SECRETARIAT REQUESTS FOR INFORMATION

REQUEST ONE

- (1) List of the reports and other publications related to TIMSS (starting TIMSS 1999) published in the country (with the bibliographical references if possible);
- (2) Information about any contribution of TIMSS to the capacity building in your country, such as:
 - (a) participation of person(s) from the country in the TIMSS experts groups (subject matter, questionnaires);
 - (b) participation in the TIMSS database training seminars and its results (secondary data analysis and dissertations /publications, usage of the training seminars and materials for further training, for example of students);
 - (c) usage of the IEA publications (for example, technical standards) in the country (please tell us if any of them were translated into your national language);
 - (d) usage of the TIMSS released items in the country (in national assessments, in schools, by individual teachers);
 - (e) usage of the IEA TIMSS procedures/manuals for preparing national assessments and assuring their quality;
 - (f) anything else?

REQUEST TWO

If you had already your press conference on TIMSS 2003, please let us know how it was received. What was media reaction (if any)? How the results were received by the policy makers? Any other reactions?

APPENDIX 7: COUNTRIES FROM WHICH NRC, SEO, AND WBO QUESTIONNAIRES WERE RECEIVED

PIRLS QUESTIONNAIRES /INTERVIEWS

NRC Bulgaria, Hungary, Latvia, Lithuania, Macedonia, Moldova, Romania, Slovak Republic, Slovenia/ Bulgaria, Latvia, Lithuania, Macedonia, Romania, Russia, Slovak Republic, Slovenia

SEO Bulgaria, Macedonia, Slovak Republic (3), Slovenia, Turkey/ Slovak Republic (3)

WBO Russia, Morocco, Romania, Tunisia/Colombia

IEA 1 Bulgaria, Czech Republic, Latvia, Macedonia, Moldova, Morocco, Russia, Slovak Republic, Slovenia

TIMSS QUESTIONNAIRES

NRC Armenia, Botswana, Bulgaria, Indonesia, Jordan, Latvia, Macedonia, Malaysia, Moldova, Philippines, Romania, Serbia, Slovak Republic, Slovenia/Armenia, Botswana, Bulgaria, Ghana, Indonesia, Jordan, Latvia, Lithuania, Macedonia, Malaysia, Morocco, Philippines, Romania, Serbia, Slovak Republic, Slovenia, South Africa, Tunisia

SEO Armenia, Botswana, Bulgaria, Jordan, Slovak Republic, Slovenia

WBO Romania, Tunisia, Philippines/Malaysia

IEA 1 Armenia, Bulgaria, Jordan, Latvia, Macedonia, Moldova, Morocco, Romania, Russia, Serbia, Slovak Republic, Slovenia, South Africa

IEA 2 Botswana, Bulgaria, Jordan, Macedonia, Russia, Serbia, Slovenia, South Africa