

# **PIRLS and TIMSS 2011**

## **Technical Report for Ireland**

**Eemer Eivers and Aidan Clerkin**

**© Educational Research Centre**

Copyright © 2012, Educational Research Centre

Cataloguing-in-Publication Data

Eivers, Eemer

PIRLS and TIMSS 2011: Technical Report for Ireland  
/ Eemer Eivers and Aidan Clerkin.

Dublin: Educational Research Centre.

ii, 18 p.; 30cm

Includes bibliographical references.

1. Reading (Primary) – Ireland – Evaluation
2. Mathematics (Primary) – Ireland – Evaluation
3. Science (Primary) – Ireland – Evaluation
4. Academic achievement
5. Educational tests and measurements

2012

**I Clerkin, Aidan**

**371.262-dc23**

# Table of Contents

List of acronyms and abbreviations .....	iii
Acknowledgements .....	ii
<b>1: Introduction .....</b>	<b>1</b>
<b>2: Survey procedures .....</b>	<b>5</b>
<b>3: Adaptation and translation .....</b>	<b>14</b>
<b>Forthcoming sections .....</b>	<b>16</b>
<b>References .....</b>	<b>18</b>

## List of acronyms and abbreviations

<b>DEIS</b>	Delivering Equality of Opportunity in Schools
<b>ERC</b>	Educational Research Centre
<b>IEA</b>	International Association for the Evaluation of Educational Achievement
<b>NAIMS</b>	National Assessments of Mathematics and English Reading in Irish-Medium Schools
<b>PIRLS</b>	Progress in International Reading Literacy Study
<b>TIMSS</b>	Trends in International Maths and Science Study

## Acknowledgements

The Educational Research Centre wishes to acknowledge the support of the National Advisory Committee which was appointed by the Minister of Education and Skills to assist the Centre in implementing PIRLS and TIMSS. The members of the Committee are: Carmel Nic Airt (An Foras Pátrúnachta), Dónal Ó hAiniféin, replaced by Máirín Ní Chéileachair (Gaelscoileanna), Mark Candon (CPSMA), Deirbhile Nic Craith (INTO), John Curran (IPPN) (replaced by Aedín Ní Thuathail from October 2011), Arlene Forster (NCCA), Áine Lynch (NPC–P), and Ciara O’Donnell (PDST) (replaced by Mary Manley in October 2011). The Department of Education and Skills is represented by Margaret Kelly (replaced by Breda Naughton), Pádraig Mac Fhlannchadha (Chair until July 2011) and Caitríona Ní Bhriain (Chair from August 2011).

Thanks are also due to staff at the ERC, including Gerry Shiel and Peter Archer (Director), each of whom acted as a National Research Coordinator for the field trial, and to Mary Lewis, who managed the PIRLS scoring. Many thanks to Joanne Kiniry and Rose Fish, both of whom worked as research assistants on PIRLS and TIMSS, and to David Millar, who advised on sampling. Thanks also to Mary Rohan, Paula Chute, John Coyle, Caoimhe Máirtín, and Hilary Walshe for their assistance and support. Finally, we thank the school principals, teachers, pupils and parents who participated in the study.

# 1: Introduction

---

This chapter provides an introduction to the Technical Report for the implementation of PIRLS and TIMSS in Ireland in 2011. The report is targeted at an academic or technical audience, and does not present the results of PIRLS and TIMSS. Readers who are interested in the findings of PIRLS and TIMSS are referred to Mullis, Martin, Foy & Drucker (2012b) (reading), Mullis, Martin, Foy & Arora (2012a) (mathematics) and Martin, Mullis, Foy, & Stanco (2012) (science) for the main international reports, and to Eivers & Clerkin (2012) for the Irish results. This chapter has two main sections. The first summarises the purpose and design of PIRLS and TIMSS, and the second outlines the management and organisation of the study.

## Purpose and design of PIRLS and TIMSS

PIRLS (Progress in International Reading Literacy Study) and TIMSS (Trends in Mathematics and Science Study) are large international comparisons of achievement, run under the auspices of the International Association for the Evaluation of Educational Achievement (IEA). PIRLS operates in 5-year cycles and TIMSS in 4-year cycles. In 2011, the cycles of PIRLS and TIMSS coincided and Ireland participated in both studies.

International assessments allow the objective measurement of performance at system-level, and comparisons across countries. In much the same way as National Assessments, large international comparisons of achievement (such as PIRLS and TIMSS at primary level and PISA at post-primary) have many functions, including informing policy, monitoring standards, identifying correlates of achievement, introducing realistic standards, promoting accountability, increasing public awareness, and informing political debate (Greaney & Kellaghan, 1996).

Ireland has a long history of National Assessments at primary level. However, in contrast to post-primary level, participation in international assessments at primary level has been very limited. The present study (2011) was the first time that Ireland had taken part in TIMSS since 1995. Ireland participated in the IEA's 1991 Reading Literacy Study – widely regarded as the precursor to PIRLS – but prior to 2011 had never participated in PIRLS. Figure 1.1 summarises some of the main characteristics of PIRLS and TIMSS. Readers may also refer to the main international reports on the studies for more details (Martin et al., 2012; Mullis et al., 2012a; Mullis et al., 2012b), which are available at <http://timssandpirls.bc.edu/>.

---

**NOTE**

The target grades for PIRLS and TIMSS were “Fourth and Eighth grade”. These are equivalent to Ireland’s Fourth class in primary school and Second Year in post-primary school. Ireland opted to participate in the Fourth grade (i.e., Fourth class) component only.

---

Figure 1.1: Summary characteristics of PIRLS and TIMSS 2011

<b>Sample size</b>	<p>In Ireland, 4825 Fourth class pupils (enrolled in 151 schools) were selected to participate in PIRLS and TIMSS. Achievement data were collected for just over 4500 pupils.</p> <p>Internationally, 63 countries took part in TIMSS (at either Fourth or Eighth grade, or both), 50 took part in PIRLS, and 34 took part in both assessments at Fourth grade. At Fourth grade, approximately 300,000 pupils took part in PIRLS and 290,000 took part in TIMSS.</p>
<b>Assessment content</b>	<p>PIRLS examined pupils' reading comprehension, using two main dimensions that are involved in reading texts. These are reading purposes (either for literary experience or to acquire and use information) and processes (focussing on and retrieving explicitly stated information; making straightforward inferences; interpreting and integrating ideas and information; and, examining and evaluating content, language, and textual elements).</p> <p>TIMSS assessed mathematical and scientific skills, also using two dimensions – cognitive processes and content areas. Cognitive processes assessed were knowing, applying, and reasoning. Content areas for mathematics were number, geometric shapes and measures, and data display. Content areas for science were life science, physical science, and earth science.</p>
<b>Test format</b>	<p>Pupils were assessed using a paper-and-pencil test.</p> <p>PIRLS: 13 different test booklets.</p> <p>TIMSS: 14 different test booklets. In each booklet, one half assessed science and one half assessed mathematics.</p> <p>Within any given class group, pupils were pre-assigned one of the test booklets. This minimised opportunity for pupils to copy, and allowed broader coverage of content and processes.</p>
<b>Test length</b>	<p>PIRLS: The total administration time was approximately 90 minutes, divided into two 40-minute sections.</p> <p>TIMSS: The total administration time was approximately 85 minutes, divided into two 36-minute sections.</p>
<b>Contextual information</b>	<p>Questionnaires were completed by pupils, parents, class teachers and school principals.</p>

## Management of PIRLS and TIMSS 2011

An IEA project, the implementation of PIRLS and TIMSS is managed at an international level by the PIRLS and TIMSS International Study Center, based in Boston College. Each participating country also has a National Research Centre, which manages implementation at a national level. In Ireland, the Educational Research Centre (ERC) was responsible for the overall implementation and management of both PIRLS and TIMSS, on behalf of the Department of Education and Skills.

The ERC was supported by a National Advisory Committee, drawn from the education partners. It advised on policy priority areas, reporting plans, and the broad assessment framework. Current membership of the committee is as shown in Table 1.1.

Table 1.1: Membership and institutional affiliation of the National Advisory Committee for PIRLS and TIMSS

<b>National Advisory Committee (2012)</b>	
An Foras Patrúnachta	Carmel Nic Airt
Catholic Primary School Management Association	Mark Candon
Department of Education and Skills	Caitríona Ní Bhriain Breda Naughton
Educational Research Centre	Eemer Eivers Gerry Shiel Aidan Clerkin
Gaelscoileanna	Máirín Ní Chéileachair
Irish National Teachers' Organisation	Deirbhile Nic Craith
Irish Primary Principals' Network	Aedín Ní Thuathail
National Parents Council – Primary	Áine Lynch
National Council for Curriculum and Assessment	Arlene Forster
Professional Development Service for Teachers	Mary Manley

Internationally, PIRLS and TIMSS item development is guided by subject expert groups, and specialist questionnaire development groups. Sampling is overseen by staff from Statistics Canada (who liaised with David Millar from the ERC in the selection of the sample for Ireland), data quality and data processing issues are overseen by the IEA's Data Processing Centre, and translation and adaptation by the IEA Secretariat.

## ***Introduction***

## 2: Survey procedures

---

This chapter describes the main survey procedures for PIRLS and TIMSS, including the sampling design, field trial, and the selection of schools and classes for participation. Information regarding survey administration and response rates for each instrument administered as part of the survey is also provided. The procedures outlined adhere to the guidelines governing the implementation of PIRLS and TIMSS in all participating countries. Full details of the methods and procedures underpinning both projects are available from the online technical reports (<http://timssandpirls.bc.edu/methods/index.html>).

This chapter is divided into four sections, the first of which deals with the field trial. The second section describes the selection of the sample and participation rates, the third describes the administration of the surveys, and the final section describes response rates.

### Field trial

A field trial was carried out in April 2010 in order to test sample questions and review and refine test administration procedures in an Irish context. The sample of schools was selected by Statistics Canada and the IEA Data Processing Centre (DPC). All primary schools that were expected to have Fourth class pupils were included in the sampling frame. Schools were stratified by gender, size and DEIS status.

### Sample

Ireland's participation in PIRLS and TIMSS was not confirmed until very shortly before the field trial (which was, in itself, slightly delayed to facilitate Ireland's late participation). The very limited time available meant that there was insufficient time to translate TIMSS materials into Irish. As such, Irish-medium schools were excluded from the field trial sample. Also excluded were schools participating in three concurrent research studies (NAIMS, the standardisation of the Triail Ghaeilge in ordinary schools, and the DEIS evaluation) and those with fewer than five pupils in Fourth class.

From the remaining pool of schools, 40 were selected, along with 38 matched first- and second- replacement schools (there were no suitable replacement schools for two of the 40 selected schools). Of the 40 originally selected schools, 35 agreed to take part. Each of the five refusing schools had a pre-assigned replacement school, and these were then invited to take part. Four of the five replacement schools agreed to take part, resulting in the participation of 39 schools with a total of 1379 pupils.

## Administration

Four PIRLS booklets and six TIMSS booklets were field-trialled. Tests were administered by a member of the school staff other than the regular class teacher of the class being assessed. There was a five-day official test window<sup>1</sup> – 19<sup>th</sup> to 23<sup>rd</sup> April, 2010 – during which the PIRLS test was administered on one morning and TIMSS on another. To avoid any test-ordering effects, half of the participating schools were asked to administer the PIRLS test first, and half to administer the TIMSS test first. Questionnaires were also provided to pupils, parents, Fourth class teachers and school principals. As part of a Quality Monitoring programme, test administration was observed by ERC staff in four schools. Observers reported good compliance with instructions and testing procedure generally.

## Response rates

Response rates (Table 2.1) were all above 85%, with the lowest response rate for Teacher Questionnaires (85%) and the highest for School Questionnaires (95%). Just over 94% of pupils completed a PIRLS / TIMSS test.

Table 2.1. Response rates for PIRLS and TIMSS field trial, 2010

Instrument	No. of pupils = 1379	
	N	%
TIMSS test	1300	94.3
PIRLS test	1297	94.1
Pupil questionnaire	1228	89.1
Parent questionnaire	1185	85.9
	No. of classes = 61	
Teacher questionnaire	52	85.2
	No. of schools = 39	
School questionnaire	37	94.9

## Outcomes

The outcomes of the field trial were used to refine and improve testing and administrative procedures for the main study. To address the lower response rates from parents and teachers, all questionnaires were sent out well in advance of test materials, and class teachers were asked to have all questionnaires completed no later than the test dates. In addition, while the field trial test administrators were responsible for administering both tests and pupil questionnaires, these tasks were divided between class teachers and test administrators for the main study.

Administrative burden was further reduced by modifying and reducing the number of forms used to document pupil participation. Manuals were modified and simplified to reflect this division of labour and to better suit the Irish context. Scoring

<sup>1</sup> Given the very short time between agreeing to participate and test administration, some schools were unable to administer the tests during the official test window. In such circumstances it was considered more appropriate to facilitate the schools than to replace them.

procedures and the training of coders to score the tests were also streamlined and modified based on difficulties encountered during the field trial.

## Sample selection for the main study

This section describes the target population, sample design and achieved sample for TIMSS and PIRLS in Ireland in 2011.

### Target population

The target population for PIRLS and TIMSS (as defined by the IEA) is all pupils in fourth grade. In Ireland, the target population was defined as all pupils likely to be enrolled in Fourth class in March/April 2011. Extrapolating from the Department of Education and Skills database for Third class enrolments in 2009/10, the estimated national target population was almost 62,000 pupils (Table 2.2). However, all countries are permitted to exclude certain categories of schools and pupils, for reasons such as geographical inaccessibility, very small school size (four or fewer in the target grade), schools following a non-standard curriculum or dealing exclusively with pupils likely to be excluded, or (at pupil level) pupils who have a functional or intellectual disability, or who are not proficient in the test language. Such exclusions are permitted, provided that the exclusions do not exceed 5% of the national target population.

In the sample for the PIRLS and TIMSS main study in Ireland, pupils *not* in mainstream classes (i.e., those in special schools, or special classes within ordinary schools) were excluded from the sampling frame, as were the 0.7% estimated to be enrolled in private primary schools. Thus, from the estimated target population of 61,995, a total of 59,780 (or 96.4%) were included in the defined target population. For practical reasons, many countries opt to also exclude schools where the Fourth grade enrolment is four or fewer (what the IEA define as ‘extremely small schools’). This was not feasible in Ireland, as an unusually high proportion of schools fall into this category, and excluding them would have raised the national exclusion rate over the 5% cut-point. Instead, as will be outlined in the next section, such schools formed an explicit stratum in the sampling frame.

Table 2.2. National target population, estimated and defined, for PIRLS and TIMSS 2011

	No. of pupils	%
<b>Estimated target population</b>	<b>61,995</b>	<b>100</b>
<b>School level exclusions</b>		
Private schools	428	0.7
Special schools	566	0.9
<b>Within school exclusions</b>		
Special classes in ordinary schools	1221	2.0
<b>Defined target population</b>	<b>59,780</b>	<b>96.4</b>

## Sample design

The same pupils were selected for both TIMSS and PIRLS. A stratified two-stage cluster sample design was used, implementation of which was carried out in consultation with Statistics Canada and the DPC. This involved:

- Selecting a sample of schools from all eligible schools
- Selection of *up to* two classes in each school.

For the first stage, the sample was explicitly stratified by size, based on the number of pupils likely to be in Fourth class at the time of testing (March/April 2011), estimated from Third class enrolment in 2009/10. Schools were grouped into four categories, based on expected Fourth class enrolment: 1-4, 5-20, 21-34 and 35 or more pupils. Table 2.3 details the number of schools and pupils in each explicit stratum in the national defined target population and in the sample of selected schools (before replacement schools were included).

Table 2.3. Numbers of eligible and selected schools and pupils by explicit stratum, based on DES database for Third class enrolments in 2009/10.

Explicit stratum	National defined target population			Selected schools		
	N schools	N pupils	% pupils	N schools	N pupils	% pupils
1-4 pupils	424	1177	2.0	2	5	0.1
5-20 pupils	1557	17495	29.3	45	513	11.4
21-34 pupils	597	16091	26.9	41	1117	24.8
35+ pupils	428	25007	41.8	64	2871	63.7
<b>Total</b>	<b>3160</b>	<b>59780</b>	<b>100</b>	<b>152</b>	<b>4506</b>	<b>100</b>

Schools were also arranged (implicitly stratified) by socioeconomic status (DEIS band), language of instruction (schools in a Gaeltacht, Scoileanna Lán-Ghaeilge, Ordinary Schools) and gender mix as a way of ensuring proportional allocation of pupils across these variables. Table 2.4 shows the number of sampled schools in each implicit and explicit stratum. School selection involved a random start and fixed interval procedure.

Table 2.4. Number of originally sampled schools by explicit and implicit stratum.

N pupils	SES			Language of instruction			Gender mix		
	DEIS 1	DEIS 2	Rural SSP	SLG	Gaeltacht school	Ordinary English	All girls*	All boys	Mixed
1-4	0	0	0	0	0	2	0	0	2
5-20	2	1	6	2	2	41	4	2	39
21-34	3	3	1	6	0	35	5	5	31
35+	7	6	1	3	0	61	11	11	42
<b>TOTAL</b>	<b>12</b>	<b>10</b>	<b>8</b>	<b>11</b>	<b>2</b>	<b>139</b>	<b>20</b>	<b>18</b>	<b>114</b>

\* 7 of the 20 all girls' schools had mixed junior levels, but were all girls for senior classes including Fourth class.

First- and second-replacement schools were selected at the same time as sampled schools, using the same processes and criteria. Thus, if required, a replacement school had similar characteristics to the school it was replacing.

The second stage of sampling involved selection of classes. Each participating school indicated the number of Fourth classes in the school. Where there were three or more Fourth class groups in a school, two were randomly selected by the ERC for inclusion. In smaller schools, all Fourth class groups were automatically selected.

### Achieved sample

One hundred and fifty-two schools were invited to participate in the studies. One school had closed and was therefore ineligible, meaning that it could not be replaced, and is not considered in the calculation of response rates. Three schools declined to participate and were replaced, leaving 151 schools and a school participation rate of 98.0% of initially sampled schools and 100% with replacements. Within the 151 participating schools, 221 Fourth class groups were selected to take part in the assessments. All selected classes participated, giving a class-level participation of 100%.

The selected classes had a total enrolment of 4834 Fourth class pupils at the time the information was initially collected from schools (January and February 2011). By the time testing was conducted (March and early April), 24 pupils had left the selected classes and 15 had joined. Thus, the final sample size was 4825 pupils, of whom 46 pupils (about 1%) were excluded from both assessments (Table 2.5).

Schools teaching through Irish were given a choice of English or Irish language versions of the TIMSS booklets and questionnaires. As PIRLS is considered to be a test of *English* reading, all PIRLS tests were conducted in English. Five of the 10 Irish-medium schools that were sampled chose to administer the TIMSS tests in Irish, and five chose to administer TIMSS through English. In total, 150 pupils completed the TIMSS assessment through Irish, representing 3.3% of completed tests (see Table 2.6).

Pupil-level exclusions included those who, according to school staff, had a functional or intellectual disability which would prevent them from participating in the tests. Non-native language speakers with limited proficiency in the language of assessment (English/Irish) were also excluded. Two pupils were also excluded because their parents refused consent to allow them to participate.

Table 2.5. Pupil-level exclusions for PIRLS and TIMSS 2011

	No. of pupils = 4825	
	N	%
Functional disabilities	6	0.1
Intellectual disabilities	20	0.4
Non-native language speakers	18	0.4
Parental refusal	2	<.1
<b>Total</b>	<b>46</b>	<b>0.95</b>

### Administration procedures

Test and questionnaire administration was coordinated in each school by a designated school coordinator who liaised with other school staff members involved in the study and with ERC staff. Coordinators were sent a School Coordinator Manual outlining the key schedule points, main tasks and responsibilities of the role – for example,

## Survey Procedures

ensuring that all relevant materials were received, checked, distributed to relevant parties, and returned to the ERC.

At the beginning of March 2011 schools were sent all questionnaire instruments, including a School Questionnaire (for the principal to complete), a Teacher Questionnaire for teachers of each selected class, and a Pupil Questionnaire and Parent Questionnaire (called the *Learning to Read Survey*) for each pupil taking part. Parent Questionnaires were distributed to parents in advance of testing and collected before the final testing day. Typically, Pupil Questionnaires were completed after testing on one of the allocated test days. However, a small number of schools opted to administer questionnaires on other suitable days close to the test dates.

PIRLS and TIMSS testing was conducted over two mornings, chosen by the school, between March 21st and April 8th 2011. Pre-labelled test booklets and manuals for class teachers and for test administrators were sent to schools a week in advance of this testing period. For PIRLS, each pupil was randomly assigned one of 13 test booklets, and, for TIMSS, one of 14 test booklets. All test sessions were administered by a school staff member who was not the pupils' regular class teacher.

Each of the PIRLS and TIMSS tests are divided into two parts and were administered with a break no longer than 30 minutes between parts. PIRLS tests allowed for 40 minutes per part, while TIMSS tests required 36 minutes per part. All school books, papers and electronic devices, including calculators, were put away during testing.

In order to minimise and control for ordering effects, half of the schools were instructed to administer TIMSS first and half to administer PIRLS first. Test order was determined by Statistics Canada and the DPC following random assignment. Of the 151 schools participating, nine did not adhere to pre-assigned test order. One school administered TIMSS first when they should have conducted PIRLS first, while eight schools that should have administered TIMSS first, did PIRLS first. In addition, in one of these eight schools, the administration procedures were not fully adhered to for the TIMSS assessment. As a result, PIRLS but not TIMSS data for this school were included in the Irish dataset.<sup>2</sup>

## Quality monitoring programmes

Two levels of quality control monitoring – national and international – were implemented. The International Programme was managed by the IEA and the TIMSS and PIRLS International Study Centre. Three International Quality Control Monitors (IQCMs) were appointed for Ireland and they observed test administration in 15 schools. In each selected school, both the PIRLS and the TIMSS sessions were monitored, meaning that a total of 30 sessions were observed as part of the programme. The outcomes of the IQCMs' activities are reported in the PIRLS and TIMSS technical documentation (<http://timssandpirls.bc.edu/methods/index.html>).

---

<sup>2</sup> Because one Irish school is included in the PIRLS, but not TIMSS, dataset, there are marginal differences in the *N*s and percentages reported for Ireland's School and Teacher Questionnaire responses. For example, the international dataset for PIRLS indicates that 151 Irish schools took part, of whom 145 returned a School Questionnaire, while the TIMSS dataset reports 150 and 144, respectively.

The international programme was complemented by a National Quality Control Monitor (NQCM) programme, managed by the ERC. Nine NQCMs observed test administration in 15 schools. Each monitor observed both PIRLS and TIMSS in the selected schools and conducted a short interview with the school coordinator afterwards. The remainder of this section describes briefly the main results of the NQCM observations and interviews with school coordinators.

Of the 15 coordinators interviewed by NQCMs, 10 were school principals, two were support teachers, two were the class teacher of one of the participating classes, and one was described as ‘other’. All 15 agreed that they would be willing to act as coordinator again, should their school be selected in the future. Thirteen (86.7%) reported that the testing went ‘very well, with no problems’ in their school, while two coordinators described the testing as ‘satisfactory, with few problems’. None expressed dissatisfaction. Twelve (80.0%) indicated that attitudes to participation in PIRLS and TIMSS among staff members in their school was broadly positive, three (20%) reported a neutral attitude, and none reported a negative attitude. Of the 12 (80%) who indicated that they had contacted the ERC with a query at some point during the study, all expressed satisfaction with the responsiveness of ERC staff. Fourteen expressed satisfaction with the School Coordinator manual, while one coordinator felt that it needed to be improved.

As well as interviewing School Coordinators, NQCMs monitored test sessions and adherence to internationally-agreed procedures. Generally, they reported high quality test administration. For example, in all sessions observed, the test administrator correctly distributed the booklets and recorded participation on the Pupil Tracking Form, and all pupils complied with the instructions to stop work when the allocated test time had elapsed. In 11 of 15 cases, the test administrator followed the test script with no deviations, while the remaining 4 (26.7%) deviated from script in a minor manner, in order to make small additions or clarifications for pupils. NQCMs described pupil behaviour as ‘extremely’ orderly and cooperative for 13 (86.7%) PIRLS sessions and 14 (93.3%) TIMSS sessions. The other sessions were rated as ‘moderately’ orderly and cooperative. No sessions were rated as either ‘somewhat’ or ‘hardly’ cooperative. NQCMs rated the overall quality of test sessions as ‘very good’ or ‘excellent’ in 93.3% of cases for both the PIRLS and TIMSS administrations.

## Participation and response rates

The TIMSS and PIRLS International Study Center specifies certain minimum cut-points in relation to sampling, at national, school, class and pupil level. Specifically, sample size should exceed 4000 pupils, exclusions (school- and pupil-level) should not exceed 5%, and over 85% of schools, 95% of classes, and 85% of pupils should participate. As indicated earlier (in *Achieved Sample*), participation rates at the school- and class-level were 100%, and the pupil-level exclusion rate was below 5%. However, in addition to a school agreeing to *participate* in the study, it is also important that there is a high *response rate* to the various test and questionnaire materials sent to individuals within a participating school. In Ireland, there were very high response rates for most instruments, particularly for teacher and school questionnaires (Table 2.6).

The highest response rate was for the Teacher Questionnaire (over 99%), followed by the School Questionnaire (96%). Response rates for the test materials was approximately 94% for both tests, and 95% for the Pupil Questionnaire. The lowest

## Survey Procedures

response rate was for the Parent Questionnaire, but at 94%, it nonetheless comfortably exceeded minimum requirements.

Table 2.6. Response rates for PIRLS and TIMSS 2011

Instrument	No. of pupils = 4825	
	N	%
TIMSS test	4560	94.5
PIRLS test	4524	93.8
Pupil questionnaire	4568	94.7
Parent questionnaire	4524	93.8
	No. of classes = 221	
Teacher questionnaire	220	99.5
	No. of schools = 151	
School questionnaire	145	96.0

Response rates by booklet for each of the tests are shown in Tables 2.7 and 2.8. Response rates ranged from 92%-97% for PIRLS and 92%-96% for TIMSS. Thus, there is no significant evidence of bias in the percentage of pupils taking a particular booklet. The PIRLS Reader is a special case, as the number of pupils assigned the Reader was roughly three times the number assigned any other booklet. Unlike other booklets, the Reader was a standalone booklet, and none of the material in the Reader appeared in other booklets. That aside, the percentage of pupils assigned the Reader who completed the test is broadly similar to those assigned other booklets.

Only 46 pupils were excluded from taking the test (0.95% of 4825 pupils). Thus, the discrepancies between the number of booklets attempted (4560 for TIMSS and 4524 for PIRLS) and the overall number of pupils selected to participate can largely be attributed to absenteeism on the day of the tests.

Table 2.7. Response rates for PIRLS 2011, by test booklet

PIRLS booklet	N booklets assigned	N completed*	%
1	320	296	92.5
2	319	301	94.4
3	318	297	93.4
4	322	312	96.7
5	320	309	96.7
6	320	303	94.7
7	321	304	94.7
8	316	290	92.1
9	321	298	93.1
10	322	299	92.9
11	318	296	93.1
12	320	297	92.8
Reader	988	922	93.3
TOTAL	4825	4524	93.8

\* At least part of the booklet was attempted.

Table 2.8. Response rates for TIMSS 2011, by test booklet

TIMSS booklet	N booklets assigned	N completed*	%
1	342	323	94.4
2	347	328	94.5
3	347	332	95.7
4	343	316	92.1
5	343	319	93.0
6	346	329	95.1
7	345	330	95.7
8	345	327	94.8
9	345	322	93.3
10	347	330	95.1
11	345	333	96.5
12	342	317	92.7
13	345	328	95.1
14	343	326	95.0
TOTAL	4825	4560	94.5

\* At least part of the booklet was attempted.

## 3: Adaptation and translation

---

The PIRLS and TIMSS tests and background questionnaires were common to all participating countries, and provided to each National Research Centre by the International Study Center at Boston College. However, varying levels of adaptation were necessary so that the generic, international versions of the materials could be administered to students within participating countries. The ERC was responsible for adapting the international materials for administration in Ireland.

Upon receipt of the international versions of the test and administration materials, cultural adaptations were made by the ERC. Once these adaptations were approved by the IEA Secretariat, and the adaptation process largely completed, work began on the Irish translation of all materials other than the PIRLS test booklets<sup>3</sup>. This chapter contains two main sections, the first of which provides a broad outline of the process of, and reasons for, culturally adapting materials. The second section summarises the translation procedures for the Irish language materials.

### Cultural adaptation

Two main types of cultural adaptation were implemented. First, all instruments (the TIMSS and PIRLS test booklets, and the questionnaires for pupils, teachers, schools and parents) were reviewed for cultural suitability. The international versions of the survey materials, which were written in American English, were examined for instances where the language used might be unfamiliar to an Irish audience, or were otherwise deemed to be culturally inappropriate. The types of change made on this basis included:

- Spelling (e.g., *color* to *colour*).
- Specific vocabulary (e.g., *sidewalk* to *footpath*).
- Unfamiliar contexts (e.g., children *selling boxes of cookies* as a method of fundraising, changed to *selling raffle tickets*).
- Personal names. In most cases, names were unchanged from the source version, to reflect the cultural diversity of Irish classrooms. However, in a few cases, a name was changed because the name in the source text was likely to be so unfamiliar that pupils might not know the gender of the person referred to, or might consider it not to be a real name.

The second type of adaptation referred to a small number of terms in the background questionnaires, which each country was required to adapt to their national equivalent. Terms to be adapted were flagged with insertion point markers. For examples, <*fourth-grade*> was adapted as *Fourth class* in Irish materials and <*ISCED Level 3*> was replaced with the term *Leaving Certificate*.

---

<sup>3</sup> In Ireland, PIRLS was considered to be a test of *English* reading only.

Each instrument was examined by at least three members of ERC staff, who suggested amendments as necessary and decided on the most suitable alternative, taking into consideration the requirement not to add or omit any information in choosing a new word or phrase. When amendments for each instrument were agreed by national staff, the nationally-adapted versions were sent to the IEA Secretariat for content verification, along with a National Adaptation Form (NAF) for questionnaires and for PIRLS and TIMSS test materials. The NAF is an Excel file that contains the complete translation, adaptation, and verification history of each set of national instruments. NAFs therefore provide a record of each country's final instruments. They are used by International Quality Control Monitors (to ensure that what has been agreed has been implemented) and are referred to when adding each country's data to the international database. The NAF was completed and reviewed at various stages of the instrument preparation process.<sup>4</sup> ERC staff completed the first version of the NAF during cultural adaptations, an amended version was returned by the international verifier, and an updated version returned by the ERC, including comments from the verifiers and the ERC.

Once textual adaptations were approved by the IEA Secretariat, the national and international versions of test booklets and questionnaires were compared, to ensure that the presentation and layout of each item corresponded exactly with the original presentation. Headings, line spacing, length of lines, and placement of graphics were among the factors considered at this point. Each instrument was examined again by ERC staff for discrepancies in layout, and adjusted as necessary. This second iteration of national adaptation was sent to the International Study Center, with accompanying NAFs, for feedback and layout verification. As was the case in all participating countries, no materials were printed until the final layout was verified and approved by the International Study Center.

The procedures described here for Ireland were replicated in each participating country. This two-step process – content verification and layout verification – is designed to ensure comparability of administration as far as possible in each country. Moreover, as the process is part of the field trial as well as the main study, participating countries have two opportunities to maximise comparability and minimise error.

## **Translation to Irish**

Translation into Irish began once content verification had been completed. As PIRLS is considered to be a test of English reading, the PIRLS test booklets were not translated. Irish-language versions were created for all other materials – the TIMSS tests and background questionnaires for pupil, parent, school, and teacher – to be made available to Irish-medium schools.

The nationally adapted (rather than international) version of each instrument was translated by a translator who was also familiar with the Irish primary school curriculum. The returned translations were checked by ERC staff for faithfulness to

---

<sup>4</sup> A NAF must be completed for each language in which instruments are delivered. Thus, a NAF for the Irish version of the materials was also prepared, albeit at a later stage.

## **Survey Procedures**

the tone and content of the original items (i.e., to ensure that no information was added or lost in the Irish-language versions, and that context remained the same).

Once translations were agreed between the ERC and the translator, the translated materials, with supporting documentation, were sent for translation verification. The IEA Secretariat provided an independent translator, who checked the quality of the translation and recommended minor amendments to vocabulary and phrasing. As was the case with the cultural adaptations in the English language version, NAFs were completed by the ERC and translator, added to by the IEA, and amended and agreed upon by the ERC and IEA.

After translation verification, the Irish-language instruments were assembled and the layout was checked by ERC staff. Subsequent to this, all Irish-language instruments were sent to the International Study Center for layout verification. There were no problems with the translated versions. The translation and verification of the TIMSS test items and the questionnaires was completed approximately two months after finalising the English-language versions.

As well as the international test materials and questionnaires, administration manuals, prepared by the ERC, were given to class teachers and co-ordinators in all participating schools. These manuals contained a step-by-step timeline of tasks required during the weeks and months before the administration of the surveys, as well as detailed guidelines on what to do on the day of testing, in line with international procedures. Irish-language versions of these manuals were also produced by a professional translator and ERC staff. These were distributed to participating Irish-medium schools (whether they had chosen to administer the TIMSS tests through Irish or through English).

## Forthcoming sections

---

This report was finalised on December 4<sup>th</sup>, 2012, in preparation for the December 11<sup>th</sup> launch of the main Irish national report on the outcomes of PIRLS and TIMSS 2011 (Eivers & Clerkin, 2012). At that time, the International Study Center had not released information about a number of internationally-monitored quality control measures. These included:

- inter-rater reliability checks (to ensure that human raters within a country scored constructed-response items in the same way), and
- cross-country reliability checks (to ensure that different countries' raters scored constructed-response items in the same way), and
- an international quality monitoring programme that involved observation of testing sessions and interviews with school staff by designated International Quality Control Monitors.

When data are made available by the IEA for all participating countries, this Technical Report will be expanded and updated to describe Ireland's performance on these quality control measures.

## References

- Eivers, E. & Clerkin, A. (2012). *PIRLS and TIMSS 2011: Reading, Mathematics and Science Outcomes for Ireland*. Dublin: Educational Research Centre.
- Greaney, V., & Kellaghan, T. (1996). *Monitoring the learning outcomes of education systems*. Washington DC: World Bank.
- Martin, M., Mullis, I., Foy, P., & Stanco, G. (2012). *TIMSS 2011 international results in science*. Chestnut Hill, MA: TIMSS & PIRLS International Study Center, Boston College.
- Mullis, I., Martin, M., Foy, P., & Arora, A. (2012a). *TIMSS 2011 international results in mathematics*. Chestnut Hill, MA: TIMSS & PIRLS International Study Center, Boston College.
- Mullis, I., Martin, M., Foy, P., & Drucker, K. (2012b). *PIRLS 2011 international results in reading*. Chestnut Hill, MA: TIMSS & PIRLS International Study Center, Boston College.