

Chapter 6



TIMSS 2007 Survey Operations Procedures

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6.1 Overview

Operationally, TIMSS represents a considerable challenge, and conducting TIMSS 2007 was an ambitious enterprise in each participating country. The contribution that the National Research Coordinators (NRCs) made was crucial to successful assessment administration. In order to assist the NRCs and synchronize activities, internationally standardized survey operations procedures were developed through a collaborative effort between the TIMSS & PIRLS International Study Center, IEA Secretariat, IEA Data Processing and Research Center (DPC), and Statistics Canada. The TIMSS operations were designed to be flexible enough to meet the needs of individual participants, while meeting the high quality standards of IEA. Other IEA studies, the Progress in International Reading Literacy Study (PIRLS) and previous cycles of the TIMSS study, in particular, were used as initial references and the survey operations were refined based on the TIMSS 2007 field test experience.

Guidelines on survey operations procedures for each stage of the assessment, such as contacting schools and sampling classes, preparing materials for data collection, administering the assessment, scoring the assessment, and creating the data files were provided to NRCs. Procedures for quality control and attaining feedback on survey activities also were provided.

6.2 The Role of the National Research Coordinators

In each country and benchmark participant, a research center, under the direction of the NRC, was responsible for the implementation of TIMSS in that country. The NRC was the contact person for all those involved

in TIMSS within the country, as well as the representative of the country at the international level. The NRC was responsible for the national decisions regarding TIMSS and, if necessary, implemented and adapted all the internationally agreed-upon procedures for the national context, with guidance from TIMSS and experts from within the country.

6.3 Documentation and Software

The TIMSS 2007 Survey Operations Procedures were disseminated to the NRCs in six units, each accompanied by additional materials, including more specialized manuals and software packages, as necessary. The units and materials were organized and distributed chronologically according to different stages of the study.

The six units and accompanying manuals and software are listed below.

- *Unit 1, Parts 1 and 2: Conducting the TIMSS 2007 Field Test* (TIMSS & PIRLS International Study Center, 2005b)
- *Unit 2: Contacting Schools and Sampling Classes for TIMSS 2007 Assessment* (TIMSS & PIRLS International Study Center, 2006e)
- *Unit 3: Preparing Materials for the TIMSS 2007 Data Collection* (TIMSS & PIRLS International Study Center, 2006f)
- *Unit 4: Administering the TIMSS 2007 Assessment* (TIMSS & PIRLS International Study Center, 2006g)
- *Unit 5: Scoring the TIMSS 2007 Assessment* (TIMSS & PIRLS International Study Center, 2006h)
- *Unit 6: Creating the TIMSS Data Files* (TIMSS & PIRLS International Study Center, 2006i)
- *School Sampling Manual* (TIMSS & PIRLS International Study Center, 2005a) defined the TIMSS 2007 target populations and sampling goals and described the procedures for the sampling of schools.
- *School Coordinator Manual* (TIMSS & PIRLS International Study Center, 2006c) described the role and responsibilities of the School Coordinator as a main contact person within each participating school. The responsibilities included assisting the national center in the identification of classes, teachers, and students; administering

the test and background questionnaires; and keeping test materials secure and confidential at all times while they are in the school.

- *Test Administrator Manual* (TIMSS & PIRLS International Study Center, 2006j) described the role and responsibilities of the Test Administrator, including distribution of the student test instruments according to the student tracking forms, supervising the testing sessions, ensuring the correct timing of the testing sessions, and recording student participation.
- *International and National Quality Control Monitor Manuals* (TIMSS & PIRLS International Center, 2006a, 2006b) provided quality control monitors (QCMs) with information about TIMSS and described their role and responsibilities in the project. The manuals specified the timelines, actions, and procedures that should be followed in order to carry out the international and national quality assurance programs.
- *Scoring Guides for Constructed-response Items* (TIMSS & PIRLS International Center, 2006d) provided detailed and explicit guides used to score each constructed-response item.
- *Windows® Data Entry Manager Software (WinDEM) and Manual* (IEA, 2006c) provided for entering, editing, and verifying the TIMSS 2007 data. Along with the software, countries also received codebooks, which described the properties and the layout of the variables to be entered from each TIMSS 2007 assessment instrument.
- *Windows® Within-school Sampling Software (WinW3S) and Manual* (IEA, 2006d) enabled TIMSS 2007 participants to randomly select classes in each sampled school. The software also was used to track school, teacher, student, and student-teacher linkage information; prepare the survey tracking forms; and assign test instruments to students, including printing labels for all the test booklets and questionnaires.
- *Trend Scoring and Reliability Scoring Software and Manual (TSRS)* (IEA, 2006b) provided to document the scoring reliability from one TIMSS cycle to the next. The student responses included in the trend reliability scoring were scanned and provided on individually prepared CDs for each participated country, along with the TSRS software and its manual.

- *Cross-country Scoring and Reliability Software and Manual (CCSRs)* (IEA, 2006a) provided to document the reliability of scoring across countries. The responses were scanned and provided on CDs along with the software and its manual.

In addition to the software manuals, the IEA DPC held two Data Management Seminars to provide training in the use of the WinW3S and WinDEM software.

6.4 Survey Tracking Forms

TIMSS relied on a series of tracking forms to sample classes, assign booklets and questionnaires, and track the participation status of students and their teachers. They facilitated the data collection and data verification process. They also provided information to compute sampling weights and were used to evaluate the quality of the sampling process.

Most of the tracking forms were created automatically by the WinW3S software, then completed by schools and returned to the national centers. There were six different tracking forms in all, which are listed below.

- **School Tracking Form.** This form was sent to national centers by Statistics Canada (Sampling Form 13). It listed the sampled schools and their replacements and included any school information originally provided to Statistics Canada, such as the school ID, school measure of size (MOS), school name, and school contact information.
- **Class Listing Form.** A separate class listing form was created in WinW3S for each sampled school and sent to the School Coordinators for completion. The School Coordinators listed the eligible fourth and/or eighth grade classes in the participating schools and provided details about the classes, such as the class stream, number of students, and names of mathematics teachers.
- **Class Sampling Form.** This form was created in WinW3S as a result of the class sampling procedure. It indicated which classes had been sampled from each school.
- **Student-Teacher Linkage Form.** This form was created in WinW3S for each sampled class and sent to the School Coordinators for completion. The School Coordinators listed the names of the students and their teachers in the sampled classes; students' dates of birth, sex, and exclusion codes; and linked the students to their teachers.

- **Student Tracking Form.** This form was created in WinW3S and sent to the schools with students' test booklets and questionnaires for completion by the Test Administrators during test administration. The Test Administrators used this form to verify the assignment of test instruments to students and indicate student participation.
- **Teacher Tracking Form.** This form was created in WinW3S and sent to the School Coordinators with the *Teacher Questionnaires*. The School Coordinators used this form to indicate the completion of the *Teacher Questionnaires*.

6.5 Contacting Schools and Sampling Classes

One of the essential, first steps in the TIMSS survey activities was to establish good working relationships with the schools that had been sampled to participate in the study (for more information on all sampling procedures, please refer to Chapter 5). NRCs were responsible for contacting these schools and encouraging them to take part in the assessment, which often involved obtaining support from national or regional educational authorities, depending on the national context.

In cooperation with school principals, national centers identified and trained School Coordinators for all participating schools. The School Coordinator could be a teacher or guidance counselor in the school, although the School Coordinator was not allowed to be a teacher of the students who were sampled and who participated in the study. Alternatively, some national centers appointed one of their own members to fill this role. Often this person was responsible for several schools in an area. Each School Coordinator was provided with a *TIMSS 2007 School Coordinator Manual*, which described their responsibilities in detail and encouraged them to contact the NRC if they had any questions.

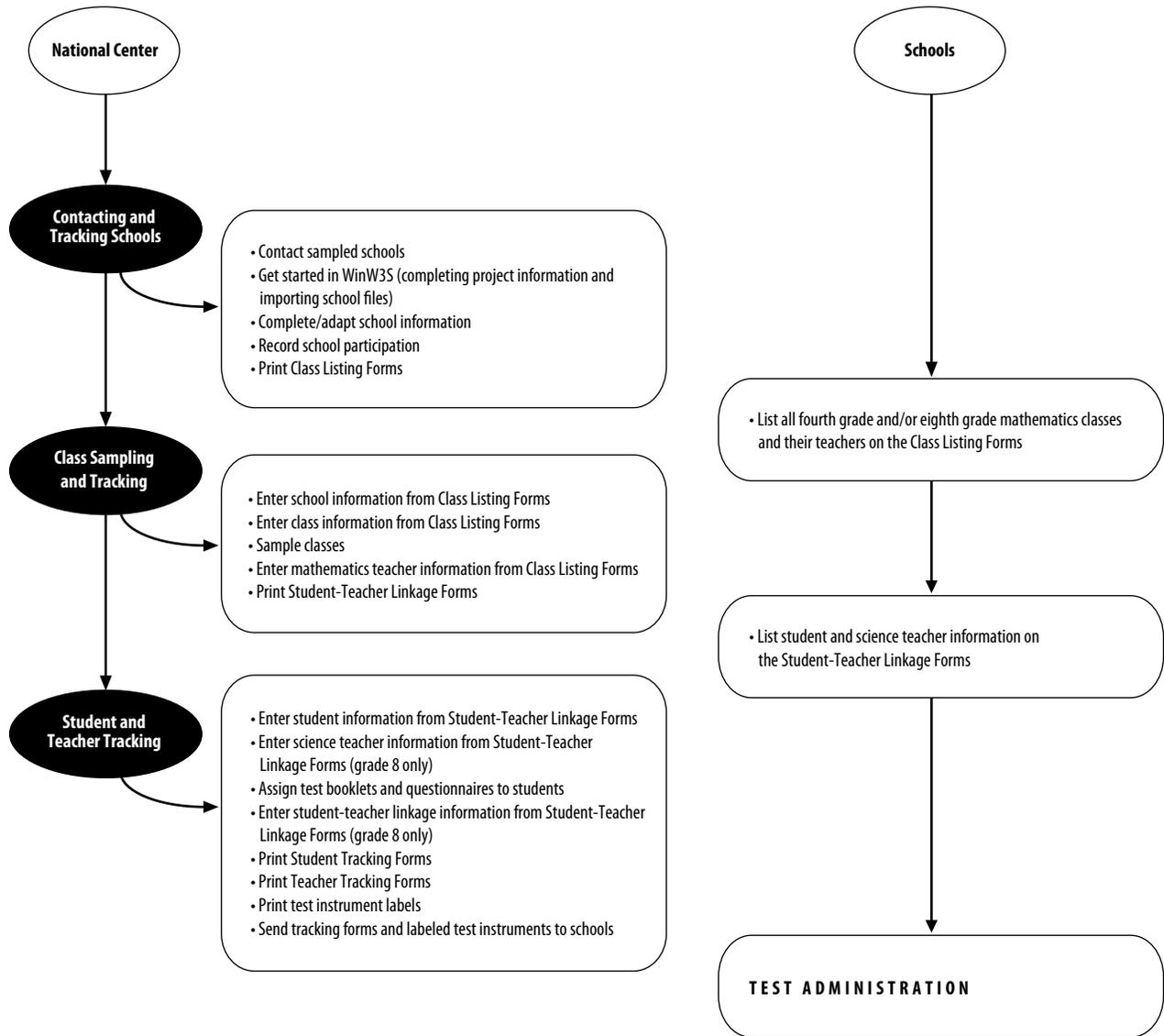
The responsibilities of the School Coordinator included providing the necessary information about their school; coordinating the date, time, and place for testing; identifying and training a Test Administrator; coordinating the completion of the student tracking forms and teacher tracking forms; distributing teacher and school questionnaires; and obtaining parental permission (if necessary). They also ensured that all testing materials were received and kept secure at all times and were returned to the national center after the test administration.

A Class Listing Form was sent to each School Coordinator to provide information on all the eligible fourth grade and/or eighth grade classes in the school. Using this information, the national centers sampled classes within the schools. Intact classes had to be sampled, ensuring that every student in the school was in only one class (course), and no student was in more than one class. Such an organization was necessary for a random sample of classes to result in a representative sample of students. At fourth grade, most countries used the same class for all subjects, including mathematics and science. Accordingly, the fourth grade classroom was the sampling unit. At the eighth grade, students in most countries attended different classes for mathematics and science. For sampling purposes, classrooms usually were defined on the basis of mathematics instruction.

Exhibit 6.1 presents the major activities conducted by the national centers for working with schools to sample classes; track schools, teachers, students, and student-teacher linkage information; and prepare for test administration.

Although all students enrolled in the sampled classes were part of the target population, TIMSS recognized that some student exclusions were necessary because of either some functional or intellectual disability or in cases where there were non-native language speakers. Accordingly, the sampling procedures provided for the exclusion of students with any of several disabilities (for more information on sampling procedures, see Chapter 5). Countries were required to track and account for all excluded students and were cautioned that excluding more than 5 percent of students would lead to their results being annotated in the TIMSS 2007 international reports. It was important that the conditions under which countries excluded students be carefully documented, because the definition of being disabled varied from country to country.

Exhibit 6.1 Procedures for Working with Schools to Prepare for Test Administration



6.5.1 Linking Students to their Teachers and Classes

To track students, teachers, and schools, there was a system in place to assign hierarchical identification codes (IDs). The hierarchical identification numbers that uniquely identified the sampled schools, teachers, and classes were created by the WinW3S software. Exhibit 6.2 represents the hierarchical identification system codes.

Exhibit 6.2 Hierarchical Identification (ID) System

Unit	ID Components	ID Structure	Numeric Example
School	School	CCCC	0001
Class	School + Class within School	CCCCKK	000101
Student	School + Class within School + Student within Class	CCCCKKSS	00010103
Teacher (as an Individual)	School + Teacher within School	CCCCTT	000101
Teacher Link Number	School + Teacher within School + Link Number	CCCCTLL	00010102

Each mathematics and science teacher of the selected classes (i.e., those listed on the Teacher Tracking Form) was assigned a teacher identification number consisting of the four-digit school number followed by a two-digit teacher number unique within the school. Since a teacher could be teaching both mathematics and science to some or all of the students in a class, it was necessary to have a unique identification number for each teacher linked to a class and a teacher linked to certain students within the class. This was achieved by adding a two-digit link number to the six digits of the teacher identification number and giving a unique eight-digit identification number. This is very important so that during data analyses, each class and student may be linked to a teacher, and student outcomes may be analyzed in relation to teacher-level variables.

6.6 Preparing the Test Instruments for Data Collection

The TIMSS & PIRLS International Study Center provided countries with all the necessary instrument production files, including fonts, style guides, graphic files, and explicit instructions in *TIMSS 2007 Survey Operations Procedures Unit 3* on how to use the materials in order to produce good quality test instruments. The TIMSS achievement booklets and questionnaires were developed using the Adobe®InDesign® layout program.

The overarching goal of the test instrument preparation was to create internationally comparable assessment booklets and background questionnaires that were appropriately adapted for the national context. This began with translating the text of the test instruments from English into the language(s) used in the participating countries.¹ All the translated contents of the test instruments (i.e., item blocks, directions or instructions, cover pages, and questionnaires) were submitted to the IEA for an independent international translation verification, where independent translators provided suggested changes in the texts (for more information on translation and national adaptations of the TIMSS 2007 test instruments, please refer to Chapter 4).

Once the translation verification was completed and any resulting changes implemented into the test instrument production files, the item blocks, cover pages, directions, and instructions had to be distributed throughout the booklets in order to assemble the assessment booklets. Each background questionnaire consisted of a single InDesign file and did not require any assembling.

6.6.1 TIMSS & PIRLS International Study Center Review

Before the test booklets and questionnaires were printed and administered to students, the NRCs were required to submit a print-ready copy of all the test instruments to the TIMSS & PIRLS International Study Center for layout verification and review of national adaptations.

The national test instruments were checked against the international version to identify any deviations. The verification was checked for any discrepancies in pagination, page breaks, item sequence, response options, text formats, graphics, etc.

1 The IEA Secretariat and the TIMSS & PIRLS International Study Center also provided a generic Arabic version of the TIMSS assessment booklets and questionnaires.

The test instruments from the participating countries were not exactly identical due to the changes in text length that often occurred during translation. The international versions, however, were designed with this in mind, and extra space was provided in the margins of the pages to facilitate the use of a longer text and different size paper without extensive changes to the layout of the instruments. All deviations or errors were documented in the layout verification report forms and sent to the NRCs for their consideration. The NRCs were required to comment on whether or not each of the suggested changes was completed, including an explanation if a suggestion was not adapted.

All national adaptations to the international test instruments were documented in the national adaptations forms. During the review, the TIMSS & PIRLS International Study Center checked if the national adaptations in the national background questionnaires influenced the ability to produce internationally comparable data for the affected questions. In some cases, countries had implemented adaptations that were impossible to be recoded later to fit the international data structure. In such cases, suggestions were sent to the NRCs to reconsider their adaptation.

This whole procedure ensured that students experienced the test instruments in the same way, apart from the translation of text.

6.7 Administering the TIMSS 2007 Assessment

Once printed, distributing materials to the schools required careful organization and planning on the part of the NRC. Using labels and the Student Tracking Form produced by WinW3S, each sampled student was assigned one achievement booklet. The test booklets were assigned in a systematic rotation so that each achievement block within the booklets was assigned to an equal number of students. Each student also was assigned a *Student Questionnaire* that was labeled to link it to the achievement booklet. These materials were packaged for each sampled class. In addition, a *Teacher Questionnaire* was assigned and sent for each teacher listed on the Teacher Tracking Form and a *School Questionnaire* for the principal. The packaged materials were sent to the School Coordinator prior to the testing date, who was asked to confirm the receipt of all instruments. The *School Questionnaire* and *Teacher Questionnaire* were then distributed, while the other instruments were kept in a secure room until the testing date.

Each sampled TIMSS class was assigned a Test Administrator whose role was to administer the test along with the *Student Questionnaires*, according to procedures described in the *Test Administrator Manual*. This person was chosen and trained by the School Coordinator, although, in many cases, the School Coordinator also filled the Test Administrator role. The Test Administrator was responsible for distributing materials to the appropriate students, leading students through the assessment, and timing the sessions accurately. Following the assessment, they administered the *Student Questionnaire*.

The administration of the TIMSS 2007 assessment consisted of two parts. The first part concerned the achievement booklets, which contained two sections. This was followed by the completion of the *Student Questionnaire*. The time allotted for each of these sections was standardized across countries. To complete each part of the achievement test, fourth graders were allowed 36 minutes and eighth graders 45 minutes. There was a required break in between the two parts not exceeding 30 minutes. If a student had completed part 1 or part 2 of the assessment before the allotted time was over, he or she was allowed to review his or her answers or read quietly but was not allowed to leave the testing room. To complete the *Student Questionnaire*, students were given at least 30 minutes and were allowed to continue if extra time was necessary. The Test Administrators were required to document the starting and ending time of each section on the Test Administration Form.

The Test Administrator used the Student Tracking Form to distribute the booklets to the correct students and to document student participation. The School Coordinator used the information on the participation status to calculate the participation rate. If this was below 90 percent in any class, it was the School Coordinator's responsibility to hold a makeup session for the absent students before returning all of the testing materials to the national center.

The national centers entered the information recorded on the student and teacher tracking forms into WinW3S software.

6.7.1 Quality Control

Considerable effort has been expended in developing standardized materials and procedures so that the data collected in each country for TIMSS will be comparable to the greatest possible extent. In order to further ensure the quality of the TIMSS data, an international quality control program was developed to document data collection activities around the world.

The NRCs were required to nominate an International Quality Control Monitor (QCM) for their country. This person could be a school inspector, a ministry official, or a retired school teacher. He or she had to be fluent in both English and the language(s) spoken in the country. The nomination of a member of the national center, a family member, or a personal friend of the NRC was not allowed.

The QCMs were hired by the IEA and trained by the TIMSS & PIRLS International Study Center. The role and responsibilities of an international QCM also were described in the *International Quality Control Monitor Manual*. The responsibilities included collecting and submitting a number of TIMSS 2007 materials from the national centers to the TIMSS & PIRLS International Study Center. During the test administration, 15 schools per grade tested in each participating country were visited by the QCMs. During their school visits, they noted if any changes were made to the standardized administration script, timing, or procedures. After the TIMSS testing sessions, they interviewed the School Coordinator and/or the Test Administrator about his or her experiences with the TIMSS 2007 assessment. The QCMs also checked whether or not the comments and suggestions made by the international translation verifier had been integrated into the final test instruments.

Additionally, countries were asked to conduct their own quality control procedures in another 10 percent of sampled schools. To assist them, countries were provided with the *National Quality Control Observer Manual*, which could be used to train their observers and modified to suit their national system.

6.8 Scoring the TIMSS 2007 Assessment

The success of assessments containing constructed-response questions depends on the degree to which student responses are scored reliably. Almost half of the TIMSS 2007 assessment items were constructed response, and scoring them in a reliable manner was critical to the quality

of the TIMSS 2007 results. This was accomplished through the provision of explicit scoring guides and extensive training in their use, as well as continuous monitoring of the quality of the work.

Two international scoring trainings were held, where the NRCs (or the country representative(s) appointed by the NRC) were trained to score each of the constructed-response items in the TIMSS 2007 assessment. At these trainings, the *TIMSS 2007 Scoring Guides for Constructed-response Items*, which are more thoroughly discussed in Chapter 2, were reviewed and applied to a sample set of student responses that had already been scored. These example papers were actual student answers that came from pilot testing held in several English-speaking countries. They were chosen to represent a range of response types, intended to demonstrate the guides as clearly as possible. Following this, NRCs attempted to apply the scoring guide to a different set of student responses that had not yet been scored. The scores that NRCs gave to these practice papers were shared with the group and any discrepancies discussed. Following the training, NRCs were given a set of the correct scores for these practice papers along with rationales.

NRCs used this information to train their scoring staff on how to apply the scoring guides for constructed-response items. In some cases, NRCs created their own example papers and practice papers from student responses collected in their country.

To prepare for this substantial task, NRCs were provided with suggestions on how to organize, in regards to staff, materials, and procedures, the scoring process. NRCs were encouraged to hire scorers who were attentive to detail and familiar with education, particularly those with a background in mathematics and/or science instruction at the fourth grade and/or eighth grade level. The TIMSS & PIRLS International Study Center also provided guidelines on how to train scorers to accurately and reliably score the constructed-response achievement items.

6.8.1 Documenting Scoring Reliability

In order to demonstrate the quality of the TIMSS data, it was important to document the reliability of the scoring process within countries, across countries, and over time (2003–2007).

To establish the reliability of the scoring within each country, two different scorers independently scored a random sample of 200 responses for each constructed-response item, which corresponded to 100 of each of

the 14 test booklets per grade tested. The random sample of test booklets designated to be scored twice was selected by the WinW3S software. The degree of agreement between the scores, assigned by the two scorers, is a measure of the reliability of the scoring process. The scoring procedure recommended by the TIMSS & PIRLS International Study Center blended the scoring of the reliability sample with the normal scoring activity, with both taking place simultaneously in a systematic manner. In collecting the reliability data, Reliability Scoring Sheets were used so that one scorer did not know the scores that the other assigned to the responses.

In order to measure the reliability of the scoring process across countries (cross-country reliability scoring), each country had to have a minimum of two scorers from the TIMSS 2007 scoring team who were able to score student responses written in English. Computing the level of agreement across countries provided information about how consistently the scoring guides were applied from one country to the next. This scoring activity, however, was conducted by participants on the Northern Hemisphere schedule only, since it entailed scoring a set of student responses gathered from the English-speaking countries that participated in TIMSS 2007 on the Southern Hemisphere timeline. The student responses included in the cross-country reliability scoring were scanned by the IEA DPC, stored on CDs, and provided to all countries participating on the Northern Hemisphere timeline, along with the Cross-country Scoring Reliability Software, which was developed by the IEA DPC. The CD also included a manual on how to install and use the software.

The purpose of the trend reliability scoring was to measure how reliable the scoring was from one TIMSS cycle to the next, i.e., from 2003 to 2007. Thus, trend reliability scoring only applied to countries that participated in TIMSS 2003 and submitted their TIMSS 2003 reliability booklets to the IEA DPC to be scanned. Using this approach, scorers for the TIMSS 2007 assessment could score student responses from 2003 and compare their scores to those given in TIMSS 2003. The student responses included in the trend reliability scoring, totaling approximately 10,000 responses per grade tested, were provided on individually prepared CDs for each participating country, along with the software, Trend Scoring and Reliability Software, developed by the IEA DPC. The CD also included a manual on how to install and use the software. At least two different scorers from the TIMSS 2007 scoring team in each country participated in the trend reliability scoring. It

was important that the countries that participated in TIMSS 2003 started with the trend reliability scoring prior to all the other TIMSS 2007 scoring activities. The results then were used also as a diagnostic tool to indicate the need for further training. Two scorers independently scored about half of the items provided on the trend reliability scoring CD. Then, NRCs were asked to analyze the results of the agreement between the two scorers, as well as between each of their TIMSS 2007 scorers and the scores that were awarded in 2003. If agreement on any comparison was below 85 percent, retraining of the scorers was required. If agreement was 85 percent or above, countries could continue with the trend reliability scoring and all the other scoring activities.

6.9 Creating the TIMSS 2007 Data Files

As described earlier in this chapter, the IEA DPC provided a Windows-based program called WinDEM to accommodate data entry and data verification. Detailed information on installing and using the program was provided in the *Windows Data Entry Manager Software Manual* accompanying the software. The program worked in conjunction with WinW3S software so that it was not necessary to re-enter tracking information that had been recorded into WinW3S. WinDEM primarily was used for the entry of data from test booklets and questionnaires. The software also offered data and file management capabilities, a convenient checking and editing mechanism, interactive error detection, and reporting and quality-control procedures.

Trainings in using the WinW3S and WinDEM software and in operational procedures of data management were provided to NRCs and/or their data managers by the IEA DPC at various stages of the project, including an extensive 4-day training seminar before the field test and before the TIMSS 2007 data collection.

One of the very important benefits of using WinDEM was that it incorporated the international codebooks describing all variables and their characteristics, thus ensuring that the data files that were produced fulfilled the TIMSS 2007 rules and standards for data entry. There was one codebook for each of the background questionnaires, one for the test booklets, and one for the Reliability Scoring Sheets. Data files for entering the TIMSS data were created based on these codebooks. However, the codebooks had to match the national instruments exactly so that the answers of the respondents could be entered properly. Therefore, any adaptations done to the international instruments also required adaptations of the international codebooks.

The adapted national codebooks then were used for creating the TIMSS 2007 data files within each participating country. Data from the background questionnaires, achievement booklets, and Reliability Scoring Sheets were recorded into WinDEM data files as follows:

For fourth grade:

- *School background file* contained responses from the *School Questionnaire*.
- *Teacher background file* contained responses from the *Teacher Questionnaire*.
- *Student background file* contained responses recorded from the *Student Questionnaire*.
- *Student achievement file* contained responses from the test booklets.
- *Reliability scoring file* contained codes from the constructed-response Reliability Scoring Sheets.

For eighth grade:

- *School background file* contained responses from the *School Questionnaire*.
- *Mathematics teacher background file* contained responses from the *Mathematics Teacher Questionnaire*.
- *Science teacher background file* contained responses from the *Science Teacher Questionnaire*.
- *Student background file* contained responses recorded from the *Student Questionnaire*.
- *Student achievement file* contained responses from the test booklets.
- *Reliability scoring file* contained codes from the constructed-response Reliability Scoring Sheets.

Quality control throughout the data entry process was essential in maintaining accurate data. Therefore, NRCs were responsible for performing periodic reliability checks during the data entry and for applying a series of data verification checks provided by WinDEM software prior to submitting the data files to the IEA DPC. As part of this process, NRCs required their data-entry staff to double enter at least 5 percent of each instrument type to ensure reliability of the data entry process. An error rate of 1 percent or less was acceptable for the background files. An error rate of 0.1 percent

or less was required for the student achievement files and the reliability scoring files. If the required agreement was not reached, retraining of the key punchers was required.

Additionally, the data verification module of WinDEM identified a range of problems, such as inconsistencies of identification codes and out-of-range or otherwise invalid codes. WinDEM software also allows for verification of the integrity of the linkage between the students, teachers, and schools entered into the WinDEM data files and tracking of information for those specified in WinW3S.

When all data files had passed the WinDEM quality control checks, they were submitted to the IEA DPC, along with data documentation for further checking and processing. For information on data processing at the IEA DPC, please refer to Chapter 8.

6.9.1 Online Data Collection for Curriculum Questionnaires and Survey Activities Questionnaires

For the first time, in TIMSS 2007, the *Curriculum Questionnaire* and *Survey Activities Questionnaire*² were administered online. The online survey system for the questionnaires was developed by the IEA DPC and hosted on its server.

There were many benefits to administering questionnaires via the Internet for a large-scale assessment such as TIMSS. Online data collection saves money and time for printing and distributing the materials. Furthermore, the online administration facilitates data entry, cleaning, and analysis. The responses are directly stored in an MS SQL Server.

Since the *Curriculum Questionnaires* and the *Survey Activities Questionnaires* did not require any national adaptations and were completed in English, unlike the other TIMSS 2007 background questionnaires, they were best suited for the online data collection process.

The purpose of the *Curriculum Questionnaires* was to collect information about the national mathematics and science curriculum at the fourth- and eighth-grade levels. NRCs were asked to complete the questionnaires drawing on the experience of curriculum specialists and educators.

2 The *Survey Activities Questionnaire* replaced the Survey Activities Report, which served the purpose of attaining feedback about survey operations from NRCs for the previous TIMSS cycles.

The purpose of the *Survey Activities Questionnaire* (one per grade tested) was to gather opinions and information about the strength and weaknesses of the TIMSS 2007 assessment materials (e.g., test instruments, manuals, scoring guides, and software) and countries' experiences with the TIMSS 2007 survey operations procedures. NRCs were asked to complete these questionnaires with assistance of their data managers and the rest of the national center staff. The information will be used to improve the quality of the survey activities and materials for future TIMSS cycles.

NRCs were able to familiarize themselves with the content of the online questionnaires prior to completing them online. The TIMSS & PIRLS International Study Center provided countries with PDF versions of the online questionnaires at least 3 months before they were available for completion online.

The individual login information for accessing each questionnaire was sent to the NRCs with Internet links pointing to the location of the online questionnaires. Before submitting the responses to the IEA DPC, NRCs could go back and change their answers if necessary.

6.10 TIMSS 2007 Bridging Study

As a part of the TIMSS 2007 bridging study, countries that had participated in TIMSS 2003 administered four additional booklets per grade. The bridge booklets, labeled B1, B2, B3, and B4, were booklets 5, 6, 11, and 12, respectively, from the TIMSS 2003 assessment.

Operationally, that meant that these countries required additional sample of at least 1,150 students per grade, and the bridge booklets had to be incorporated in all survey operations, including production of the survey instruments, assignment of booklets to students, the scoring of the constructed-response items, and data entry.

The countries were required to use the bridge booklets as they were administered in TIMSS 2003. However, the TIMSS & PIRLS International Study Center provided new covers for the bridge booklets. The procedure for replacing the covers was described in *TIMSS 2007 Survey Operations Procedures Unit 3*. After replacing the covers, countries were required to send these booklets for layout verification, along with their TIMSS 2007 survey instruments. The TIMSS & PIRLS International Study Center reviewed the bridge booklets by comparing them to the booklets administered in 2003.

The assignment of bridge booklets to students was incorporated in the WinW3S software and automated. Specific instructions for students completing any of the bridge booklets were provided in the *Test Administrator Manual*. In order to ease the procedure of scoring the constructed-response items, separate scoring guides for the bridging study were provided by the TIMSS & PIRLS International Study Center. Finally, entering data from the bridge booklets was fully incorporated in the WinDEM software.

6.11 TIMSS 2007 Field Test

The TIMSS 2007 field test was a smaller administration of the TIMSS 2007 assessment, involving approximately 1,400 students per grade tested in each participating country.

The field test was crucial to the development of the instruments for the TIMSS 2007 assessment, particularly the achievement tests. As part of the dissemination of the TIMSS 2003 results, about half of the achievement items were released into the public domain. Items that replaced the released ones were tried out in the field test in order to investigate the psychometric characteristics of the achievement items and make well-informed decisions about the best replacements. The field test involved 14 newly developed item blocks (7 for science and 7 for mathematics), which corresponds to 7 test booklets.

The field test also served the purpose of testing the TIMSS 2007 survey operations procedures in order to avoid any possible problems during the TIMSS 2007 data collection. An essential step towards achieving this goal was to conduct a full-scale field test of all instruments and operational procedures under conditions approximating, as closely as possible, those of the data collection. Additionally, this allowed the NRCs and their staff to become acquainted with the activities and refine their national operations and provide feedback that was used to improve the procedures for the data collection. The field test resulted in some small modifications to survey operations procedures and contributed significantly to the successful execution of TIMSS 2007. The field test was conducted from March–April 2006.

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