CHAPTER 4

# TIMSS Survey Operations Procedures

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## Introduction

The quality of the data collected by each participating country and benchmarking entity is critical to meaningfully interpreting countries' student mathematics and science achievement profiles and learning contexts. While the development of the assessments is an intensely collaborative process involving all project partners, administering the assessments and collecting the data is uniquely the responsibility of the national center in each country or benchmarking participant.

To ensure a consistent and uniform approach necessary for high-quality, internationally comparable data, all participants must follow a set of standardized operations and procedures. These procedures were developed through a partnership involving the TIMSS & PIRLS International Study Center, IEA Amsterdam, IEA Hamburg, RTI International, and National Research Coordinators (NRCs) from participating countries. The main steps of the operations and procedures are similar from one TIMSS assessment cycle to the next. However, with each new cycle, the operations and procedures are updated to enhance efficiency and accuracy and reduce burden, using technological developments to automate routine activities wherever possible. One major tool for continuous improvement and monitoring of the national implementations of survey operations is the Survey Activities Questionnaire, which seeks feedback on all aspects of the participants' experience conducting TIMSS.

### Role of the National Research Coordinators and National Center Staff

In each participating country or benchmarking entity, the NRC is responsible for the implementation of TIMSS. Internationally, NRCs provide the country's perspective in all international discussions, represent the country at international meetings, and serve as the responsible contact persons for all project activities. Locally, NRCs are responsible for implementing all internationally agreed-upon procedures and facilitating national decisions regarding TIMSS, including any adaptations for the national context.

The tasks of the NRCs vary over the course of a TIMSS cycle. In the initial phases, National Research Coordinators participate in the development of TIMSS assessment frameworks and assessment instruments (see Chapter 1 and Chapter 2) and collaborate with the TIMSS Sampling Team in developing a plan to implement the TIMSS sampling design (see Chapter 3). Then, NRCs oversee operations to prepare national assessment instruments, manage the TIMSS assessment administration, and submit all necessary database files and documentation.


https://doi.org/10.6017/lse.tpisc.timss.rs2399

In each TIMSS cycle, countries conduct a full-scale field test of all instruments and operational procedures in preparation for the main data collection. The field test provides crucial data to support the finalization of the assessment instruments (achievement items and context questionnaires), and it enables NRCs and their staff to become familiar with the operational activities. Feedback from the field test is used to improve the procedures for the main data collection and contributes significantly to ensuring the successful execution of TIMSS.

### School Coordinators and Test Administrators

In cooperation with school principals, National Research Coordinators identify and train School Coordinators for all participating schools. A School Coordinator could be a teacher or guidance counselor in the school, for example, or NRCs could appoint a member of the national center to fill this role. In some countries, a School Coordinator from the national center is responsible for several schools in a geographical area. School Coordinators are provided with a School Coordinator Manual describing their responsibilities, which include the following:

- providing the national center with information on the school
- coordinating the dates, times, and places for testing
- identifying and training Test Administrators
- coordinating the completion of survey tracking forms
- preparing devices for testing if school-owned devices are used for test administration
- confirming receipt of all assessment materials, overseeing their security, and ensuring their return to the national center following assessment administration
- distributing questionnaires, including obtaining parental permission when necessary

Each sampled class is assigned a Test Administrator who follows procedures described in a Test Administrator Manual to administer the assessments and student questionnaire. In some cases, the School Coordinator doubles as the Test Administrator. Test Administrators are responsible for distributing materials to the appropriate students, reading the instructions provided in the Test Administrator Manual to the students, and timing the sessions.

## TIMSS Survey Operations Units, Manuals, and Software

To support the National Research Coordinators in conducting TIMSS, the TIMSS & PIRLS International Study Center provides step-by-step documentation for all operational activities. Organized into a series of units, the TIMSS Survey Operations Procedures are made available at critical junctures of the project to ensure that NRCs have all the tools and information necessary to perform their responsibilities. The procedures units are accompanied by a series of manuals for School Coordinators, Test Administrators, and National Quality Control Monitors that NRCs must localize. The TIMSS & PIRLS International Study Center and IEA also provide NRCs and their staff with training targeting the instrument preparation process, constructed-response item scoring, and data management.

TIMSS uses two digital platforms to prepare national assessment instruments and deliver them to respondents (school principals, teachers, students, and their parents/guardians). For the student achievement test, a digital assessment platform owned by RM Results, Assessment Master, is used. For all context questionnaires, IEA's Online SurveySystem (OSS) is used (see Chapter 5). IEA and the TIMSS & PIRLS International Study Center provide manuals and training on using both platforms.

IEA Hamburg also provides NRCs with a range of custom-built software products to support project activities. These include a software for class sampling and participation tracking (Within-School Sampling Software—WinW3S); for human scoring of the constructed-response items and documenting scoring reliability (CodingExpert); and for creating and checking data files for any paper-based assessment instruments (Data Management Expert—DME). These software products are accompanied by user manuals.

The TIMSS Survey Operations Procedures units are crucial resources for NRCs, as they describe the tasks the NRCs are responsible for conducting. For situations where some tasks may be contracted out to other organizations, the units ensure that the NRCs have sufficient knowledge of these matters to supervise the activities of the people contracted to conduct aspects of the assessment in their countries.

The following units, manuals, and software systems are provided for administering TIMSS:

- *TIMSS Survey Operations Procedures Unit 1: Sampling Schools and Obtaining their Cooperation*
- *TIMSS Survey Operations Procedures Unit 2: Preparing for and Conducting the TIMSS Field Test*

  Unit 2 consists of the following sections: Sampling Classes and Field Test Administration, Preparing the Field Test Instruments, Scoring the Field Test Constructed-Response Items, and the Field Test Databases and Documentation.

  Unit 2 is accompanied by field test versions of the School Coordinator and Test Administrator manuals, instructions on "Preparing Computers for TIMSS," scoring guides, and a National Quality Control Monitor Manual.

  In addition to the manuals, NRCs receive field-test versions of all required software and systems.
- *TIMSS Survey Operations Procedures Unit 3: Contacting Schools and Sampling Classes for the TIMSS Main Data Collection*

  Unit 3 is accompanied by the WinW3S software and its manual, the main data collection versions of the School Coordinator Manual, instructions on "Preparing Computers for TIMSS."
- *TIMSS Survey Operations Procedures Unit 4: Preparing the TIMSS Assessment Instruments*

Due to staggered release and distinct system preparation instructions, separate sections of Unit 4 are provided for preparing digital trend achievement items, digital achievement tests, and context questionnaires. Countries administering any paper assessment option receive a section for preparing the paper booklets. Countries receive access to digital systems via the corresponding sections, enabling NRCs to translate and/or adapt the materials into their language(s) of instruction (see Chapter 5).

- *TIMSS Survey Operations Procedures Unit 5: Conducting the Data Collection*

  Unit 5 is accompanied by the Test Administrator Manual and the National Quality Control Monitor Manual.
- *TIMSS Survey Operations Procedures Unit 6: Scoring the Constructed-Response Items*

  Unit 6 is accompanied by the scoring guides and the CodingExpert software for human scoring of constructed-response items.
- *TIMSS Survey Operations Procedures Unit 7: Creating and Submitting the TIMSS Databases and Documentation*

  Unit 7 is accompanied by the DME software, codebooks, and manual.

## TIMSS Survey Tracking Forms

TIMSS uses a series of tracking forms to document class sampling procedures, assign assessment instruments, and track school, teacher, and student information, including the participation status of the respondents. The tracking forms also facilitate the data collection and data verification process. Four different tracking forms are used for TIMSS:

- Class Listing Form: This form is completed for each sampled school. It lists the eligible classes and provides details about them, such as the class stream (if applicable), the number of students, and the names of teachers.
- Student-Teacher Linkage Form: This form is completed for each class sampled, listing the names of the students and their teachers, student birth dates, gender, exclusion codes, and linking the students to their teachers.
- Student Tracking Form: This form is created for each class assessed and is used by the Test Administrators during test administration to indicate student participation. It also provides student IDs and passwords to log students into the achievement test and the student questionnaire. This form also is used to verify the assignment of any paper survey instruments to students.
- Teacher Tracking Form: This form is completed for each sampled school to indicate the completion of the teacher questionnaires.

## Operations for Data Collection

The following subsections describe the major operational activities coordinated by the NRCs for each TIMSS cycle:

- Contacting schools and sampling classes
- Overseeing national assessment instrument preparation
- Managing the TIMSS assessment administration
- Scoring the constructed-response items
- Creating and submitting the TIMSS database files and documentation

Although briefly mentioned here, the following TIMSS operational activities are described in separate chapters of this publication in greater detail: sampling schools (Chapter 3), localization and verification of the systems and the assessment instruments (Chapter 5), and scoring the constructed-response items (Chapter 7).

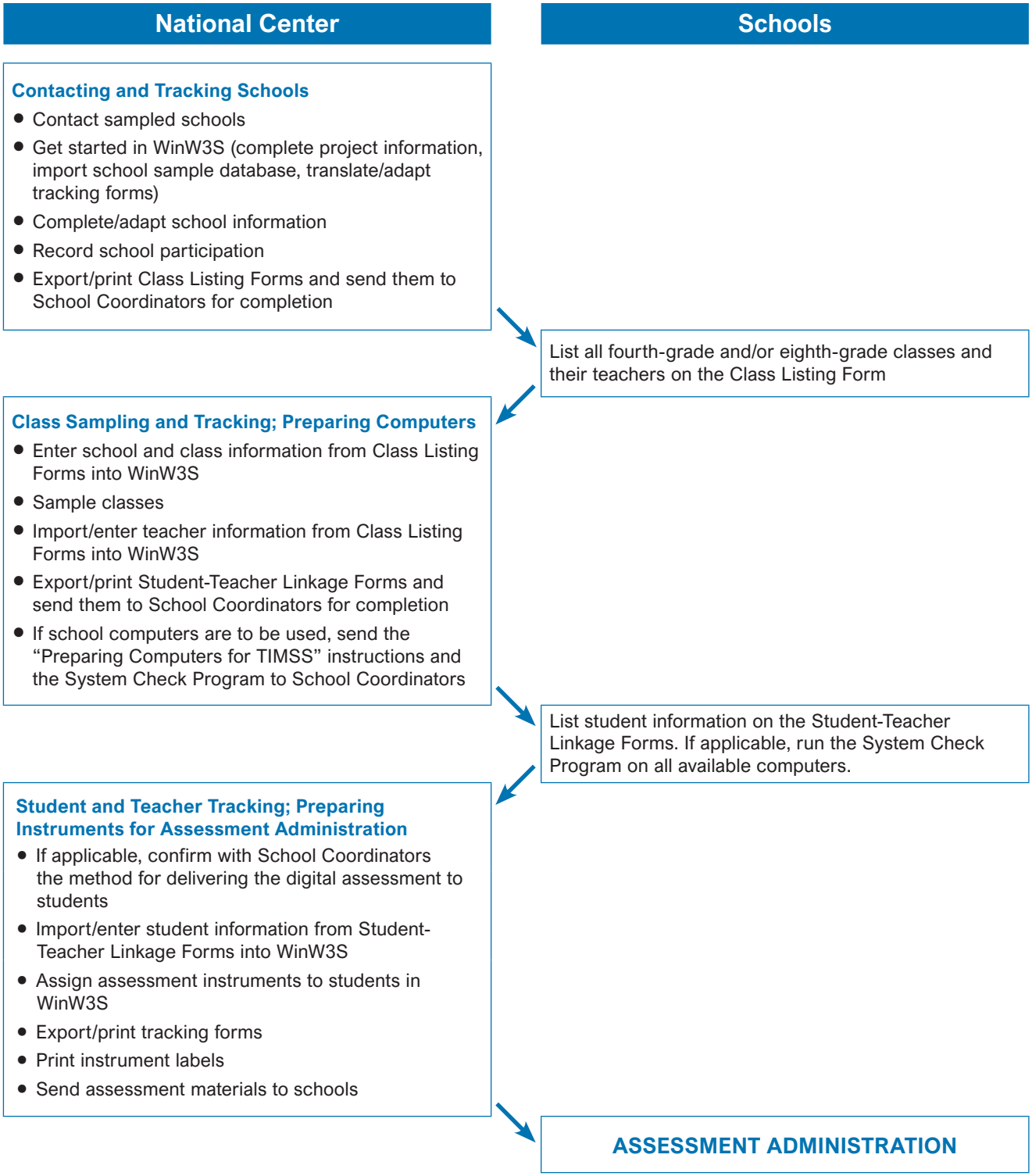
### Contacting Schools and Sampling Classes

Exhibit 4.1 illustrates the main steps in working with schools to sample classes and prepare for the TIMSS assessment administration. Once the school samples are drawn, National Research Coordinators are tasked with contacting schools and encouraging them to participate in TIMSS. Depending on the national context, this may involve obtaining support from national or regional educational authorities. Survey Operations Procedures Unit 1 suggests ways to encourage schools to participate in the assessment.

School Coordinators play a critical role in providing information to the national center for the sampling process, including data on eligible classes in the school. With this information, the national centers use sampling software to sample class(es) within the school and generate necessary tracking forms and instrument labels to facilitate both the assessment administration process and the data-cleaning process.

As TIMSS samples intact classes, one of the roles of the School Coordinator is to ensure that every student in the school is listed in one and only one class. This helps to ensure that the sample of classes results in a representative sample of students and that every student at the target grade has a chance of being selected.

## Exhibit 4.1: Diagram of Sampling Procedures and Preparations for the Assessment Administration Implemented by National Centers and Schools



## Overseeing National Assessment Instrument Preparation

The process of preparing national TIMSS assessment instruments and the digital platforms used is described in Chapter 5 of this publication. National Research Coordinators are responsible for overseeing this process, making sure it results in high-quality national assessment instruments. The overarching goal of assessment instrument preparation is international comparability while allowing for appropriate adaptations for the national context of each participating country.

The participating countries receive access to translate and localize the instruments provided in the international source language (English) along with instructions on producing high-quality, standardized instruments in the corresponding Survey Operations Procedures units and manuals.

## Managing the TIMSS Assessment Administration

The TIMSS achievement test is delivered to students via the TIMSS Player produced by RM's Assessment Master. The student questionnaire is delivered via IEA's Online SurveySystem (OSS). The TIMSS achievement test and student questionnaire can be administered online or offline (delivering the TIMSS Player and OSS application via individual devices or USB sticks). In addition, the local server method is available, for which the TIMSS Player and OSS application are delivered via one server PC connected to multiple devices using a Local Area Network (LAN) or Wi-Fi. School, teacher, and home questionnaires can be delivered online via OSS or on paper.

Preparing assessment materials and distributing them to the participating schools requires careful organization and planning by National Research Coordinators. The assessment materials are provided to the School Coordinators before the scheduled testing date, giving them ample time to confirm the receipt and correctness of the materials. The school and teacher questionnaires or instructions for accessing online versions are then distributed, and the other materials (e.g., USBs for the test delivery) are kept in a secure room until the testing date.

In each sampled class, Test Administrators are responsible for distributing materials to the appropriate students, reading the instructions provided in the Test Administrator Manual to the students, and timing the sessions. The Test Administrators use Student Tracking Forms with the login information to facilitate the distribution of the assessment instruments to the correct students. When a class has a participation rate below 90%, it is the School Coordinator's responsibility to hold a makeup session for the absent students before returning all testing materials to the national center. Using the Test Administration Form, the Test Administrators document the timing of the testing sessions and note any unusual incidents that took place during assessment administration.

The achievement test consists of two sections, and the time allotted for each section is standardized and strictly enforced. To complete each part of the TIMSS achievement test, fourth-grade students are allowed 36 minutes and eighth-grade students are allowed 45 minutes. The TIMSS Player automatically logs students out of the system once the time allowed has expired.

For paper booklet administration, the timing is enforced by the Test Administrators. A required break (up to 30 minutes) is scheduled between the two parts of assessment administration. Students who complete part 1 or part 2 of the assessment before the allotted time are not allowed to leave the testing room and are instructed to review their answers or read quietly.

Following the administration of the TIMSS assessment, students are provided 30 minutes to complete the student questionnaire, and extra time can be provided to students who need it. During the fourth-grade student questionnaire administration, Test Administrators are permitted to read the questionnaire items aloud to the students. Online delivery used an automated transition between the TIMSS Player and OSS according to each student's login credentials specified in the tracking forms. Test Administrators had to prepare both applications for offline delivery and enter login credentials into each one separately.

Before the fourth-grade students are dismissed, home questionnaires or instructions for accessing online versions are distributed for parents/guardians. If administered online, students are given printed information about the questionnaire and how to access it to take home for their parents or guardians. Countries may choose other means of communication with the parents about completing and returning the home questionnaire (e.g., through email or a parent app). If the home questionnaire is administered on paper, students are asked to bring the completed questionnaire back to their teacher or the School Coordinator.

## Scoring the Constructed-Response Items

Reliable and valid scoring of constructed-response items is critical to the assessment results. The TIMSS & PIRLS International Study Center provides explicit scoring guides for each item that requires human scoring and conducts training in their use (see Chapter 7). Survey Operations Procedures units include procedures for efficiently organizing and implementing the scoring activities.

## Creating and Submitting the TIMSS Database Files and Documentation

NRCs oversee necessary data entry and management of all data collected from various sources (i.e., sampling, tracking, and participation information, any paper context questionnaires and/or achievement test booklets and human-scoring sheets). Quality control throughout the data entry is essential to ensure accurate data is received.

For online administration of the achievement test and context questionnaires, no additional data submission steps are necessary, and data is automatically delivered to the allocated servers. For the offline administration of the digital achievement test and student questionnaire, the Test Administrators and/or School Coordinators or the national center must upload the data after the testing. Data monitoring reports can be created both from RM's Assessment Master and IEA's OSS.

Countries are asked to perform multiple data availability and consistency checks cross checking the WinW3S database versus data delivered via the Assessment Master platform, OSS, or manually entered via the DME software.

For manually entering data collected from any paper instruments, NRCs are responsible for performing double data entry for a portion of data, reliability checks during and after data entry, and a series of data verification checks incorporated within the provided software systems.

Chapter 8 of this report provides more detailed information on databases, documentation, and data processing at IEA Hamburg.

## TIMSS Survey Activities Questionnaire

Each new TIMSS assessment cycle brings something new and unique, requiring the adaptation of operations and procedures. As part of ongoing efforts to improve operations, the National Research Coordinators are asked to complete a Survey Activities Questionnaire for each cycle seeking feedback on all aspects of their experience conducting TIMSS. The feedback solicited in the questionnaire includes evaluating the quality of the assessment materials and the effectiveness of the operations procedures and documentation.

The Survey Activities Questionnaire for TIMSS is composed of six sections focusing on the following aspects:

- Sampling schools and classes
- Translating, adapting, and producing the assessment instruments
- Administering the assessments
- Implementing the National Quality Control Program
- Preparing for and scoring the constructed-response items
- Creating and submitting the databases and documentation

Most items in the Survey Activities Questionnaire include accompanying comment fields, in which National Research Coordinators are encouraged to explain their responses, provide additional information, or suggest improvements for the process.

## TIMSS 2023 Survey Activities Questionnaire

The 2023 cycle of TIMSS was the first fully digital assessment with new items developed for computer-based administration only. However, nine countries administered a paper version of the TIMSS 2023 assessment at the fourth or eighth grade. The paper version contained trend items only and required operations and software to accommodate a paper administration.

The TIMSS 2023 Survey Activities Questionnaire was administered online and was completed by a total of 65 NRCs: 56 administered TIMSS 2023 digitally; 7 administered TIMSS 2023 on paper; and 2 administered TIMSS 2023 on paper at the fourth grade and digitally at the eighth grade. The following subsections summarize information gathered from the Survey Activities Questionnaire.

## Sampling Schools and Classes

The first section of the TIMSS 2023 Survey Activities Questionnaire asked National Research Coordinators about the Survey Operations Procedures units for sampling schools (Unit 1) and sampling classes within the sampled schools (Unit 3). As shown in Exhibit 4.2, 63 NRCs considered Survey Operations Procedures Unit 1 to be clear and sufficient, and 62 considered Unit 3 to be clear and sufficient. Nine countries reported deviating from the expected TIMSS sampling design. Their reasons for these modifications include a change in the number of regions, the decision to test all students, and the need to remove overlap between schools administering TIMSS 2023 and those administering another IEA study. In addition, one country adjusted the timing of sampling so that they were able to reach out to schools earlier in the school year to ensure participation. The TIMSS 2023 Sampling Team selected the school samples for participating countries and benchmarking entities.

**Exhibit 4.2: TIMSS 2023 Survey Activities Questionnaire, Section One—Sampling (Numbers of NRC Responses)**

| Question | Yes | No | Not Answered |
|---|---|---|---|
| Was the information provided in the "TIMSS 2023 Survey Operations Procedures Unit 1: Sampling Schools and Obtaining their Cooperation" clear and sufficient? | 63 | 1 | 1 |
| Were there any conditions or organizational constraints that necessitated deviations from the basic TIMSS sampling design described in the "Survey Operations Procedures Unit 1"? | 9 | 55 | 1 |
| Did you use the Within-School Sampling Software (WinW3S) to sample classes? | 63 | 1 | 1 |
| *If you answered "yes", did you experience any problems when using the WinW3S software?* | 16 | 48 | 1 |
| Was the information provided in the "TIMSS 2023 Survey Operations Procedures Unit 3: Contacting Schools and Sampling Classes" clear and sufficient? | 62 | 2 | 1 |
| Did you follow the procedures outlined in "TIMSS 2023 Survey Operations Procedures Unit 3: Contacting Schools and Sampling Classes" for working with the schools to sample classes (e.g., using the appropriate tracking forms in the proposed order to obtain information from School Coordinators)? | 56 | 8 | 1 |

All but one NRC reported using WinW3S provided by IEA Hamburg to select classes within the sampled schools. Sixteen NRCs reported experiencing problems using the WinW3S software. Among the issues reported were questions about adding or removing exclusion status for students, questions about linking students and teachers that required manual corrections, and some technical issues. IEA Hamburg assisted countries with any WinW3S software questions.

Eight NRCs modified the Survey Operations Procedures Unit 3 procedures. For example, several countries used online surveys to gather the needed information, while others created national digital forms to collect information. The TIMSS & PIRLS International Study Center reviewed and approved all modifications.

## Translating, Adapting, and Producing Assessment Instruments

The second section of the TIMSS 2023 Survey Activities Questionnaire asked NRCs about translating, adapting, and producing the test materials and issues related to checking the materials and securely storing them. This section asked specific questions related to using the digital platforms for preparing the assessment materials. Questions related to printed materials applied to those countries administering the TIMSS 2023 achievement test and/or any of the context questionnaires on paper.

As reported in Exhibit 4.3, almost all National Research Coordinators found the instructions on preparing digital and paper assessment instruments to be clear and sufficient. However, seven NRCs reported needing some help with using the paper-based instrument production materials. These problems included issues formatting national text that was longer than the international version and the need for careful record-keeping so that the paper and online versions of the questionnaires matched. The 26 NRCs who reported issues with RM's Assessment Master platform noted the inability to produce PDFs of their materials and layout issues due to longer national text, different alphabets, and right-to-left text. Some NRCs also reported difficulties in locating changes to instruments made after the field test. These issues were resolved by the TIMSS & PIRLS International Study Center and/or by the platform provider. Five NRCs reported some outstanding issues with their national TIMSS Players. These were related to either country-specific layout issues, specific schools experiencing an issue that could not be addressed externally, or delays in the transition from the achievement test to the student questionnaire.

**Exhibit 4.3: TIMSS 2023 Survey Activities Questionnaire, Section Two—Translating, Adapting, and Producing Assessment Instruments (Numbers of NRC Responses)**

| Question | Yes | No | Not Answered |
|---|---|---|---|
| Was the information provided in the "TIMSS 2023 Survey Operations Procedures Unit 4: Section on Preparing the Digital Trend Achievement Items" and the "TIMSS 2023 Survey Operations Procedures Unit 4: Section on Preparing the Digital Achievement Test" clear and sufficient? (*digital only*) | 54 | 4 | 7 |
| Was the information provided in the "TIMSS 2023 Survey Operations Procedures Unit 4: Section on Preparing the Paper Achievement Booklets" clear and sufficient? | 18 | 0 | 46 (not applicable)<br>1 (not answered) |
| Did you encounter any major problems using the assessment instrument InDesign/RTF production/ translation materials (used for preparing any paper-based instruments)? | 7 | 26 | 31 (not applicable)<br>1 (not answered) |
| Did you encounter any major problems using RM's Assessment Master for translating and/or adapting the TIMSS 2023 achievement test? (digital only) | 26 | 32 | 7 |

**Exhibit 4.3: TIMSS 2023 Survey Activities Questionnaire, Section Two—Translating, Adapting, and Producing Assessment Instruments (Numbers of NRC Responses) (Continued)**

| Question | Yes | No | Not Answered |
|---|---|---|---|
| Were there any significant issues that could not be resolved for your country's final TIMSS 2023 Player(s) contents? (*digital only*) | 5 | 53 | 7 |
| After the translation verification (IEA Amsterdam), did you correct your translations/adaptations as suggested by the verifier in the majority of cases? | | | |
| *TIMSS digital achievement test* | 56 | 2 | 6 (not applicable)<br>1 (not answered) |
| *TIMSS paper achievement booklets* | 15 | 0 | 49 (not applicable)<br>1 (not answered) |
| *Context questionnaires* | 61 | 3 | 0 (not applicable)<br>1 (not answered) |
| After the layout verification (TIMSS & PIRLS International Study Center), did you correct your assessment instruments as noted by the verifier in the majority of cases? | | | |
| *TIMSS digital achievement test* | 58 | 0 | 6 (not applicable)<br>1 (not answered) |
| *TIMSS paper achievement booklets* | 15 | 0 | 49 (not applicable)<br>1 (not answered) |
| *Context questionnaires* | 62 | 2 | 0 (not applicable)<br>1 (not answered) |
| Did you apply any quality control measures to check paper assessment instruments during the printing process (e.g., checking for missing pages, upside-down pages, text too bright or too dark)? | 23 | 1 | 40 (not applicable)<br>1 (not answered) |
| Did you apply quality control measures to check TIMSS 2023 Player USBs (e.g., number of files, size of the files, initiating the TIMSS Player) before they were provided to schools? (*digital only*) | 39 | 2 | 17 (not applicable)<br>7 (not answered) |
| Did you take measures to protect the security of the assessment instruments during the preparing and duplicating process? | 63 | 1 | 1 |
| Did you detect any potential breaches in security of the assessment instruments? | 0 | 64 | 1 |
| Did you encounter any problems preparing the Online SurveySystem files for administering the context questionnaires? | 9 | 49 | 6 (not applicable)<br>1 (not answered) |

Almost all NRCs reported applying corrections to their assessment instruments as suggested by the external verifiers of both translation and layout verification. When suggestions were rejected, it was because the language suggested was not the most appropriate for the age group or was not consistent with styles used in trend items. In addition, a small number of trend items were adjusted to correct for grammatical or text errors in the previous cycle.

Nearly all NRCs conducted the recommended quality control checks when preparing devices for TIMSS and context questionnaires administered digitally and while printing any paper instruments. For TIMSS digital administration, countries either randomly sampled USB sticks to ensure that the size of the files was correct or that they were operating properly. Samples of any printed materials were checked for missing pages, pages in the wrong order, upside-down pages, and too dark or too light text. Nine NRCs reported problems with IEA's survey system (OSS) for creating and administering the context questionnaires. They reported country-specific issues related to fonts, the monitoring system, and the URLs used. The NRCs noted the assistance and support from IEA Hamburg when using OSS.

The TIMSS 2023 Survey Activities Questionnaire also asked NRCs about the length of time it took to prepare all their materials. Only a handful of NRCs reported that it took 2 weeks or less to prepare all the translations to be submitted for translation verification. A third of NRCs reported that it took 3 to 4 weeks, and over half of the NRCs noted that they required 5 weeks or more to prepare all the translations. The verification and localization process lasted 11 weeks or more for slightly more than half the NRCs, with 10 reporting that the process took 6 weeks or less. These were generally countries who administered TIMSS 2023 in English, participated only at one grade level, and/or who submitted their materials very early in the process.

## Assessment Administration

The third section of the TIMSS 2023 Survey Activities Questionnaire addressed the administration of TIMSS 2023, including the extent to which National Research Coordinators were notified about errors in the testing materials sent to schools. As shown in Exhibit 4.4, few errors were found in the materials. More than half of such errors were corrected before distributing the materials to the respondents. Errors found after distribution were mostly minor and related to incorrect URLs or issues with the USBs. The URL issues were fixed with help from the national centers and/or IEA Hamburg, and schools had extra USBs to replace any problematic ones.

**Exhibit 4.4: TIMSS 2023 Survey Activities Questionnaire, Section Three—Assessment Administration (Numbers of NRC Responses)**

| Question | Yes | No | Not Answered |
|---|---|---|---|
| Was the information provided in the "TIMSS 2023 Survey Operations Procedures Unit 5: Conducting the Data Collection" clear and sufficient? | 62 | 1 | 2 |
| Were any issues detected in any of the following assessment materials after they were sent to schools? | | | |
| *TIMSS paper achievement test booklets* | 4 | 11 | 48 (not applicable)<br>2 (not answered) |
| *TIMSS achievement test (e.g., wrong URL, faulty USB stick)* | 9 | 48 | 6 (not applicable)<br>2 (not answered) |
| *TIMSS achievement test ID labels* | 4 | 54 | 5 (not applicable)<br>2 (not answered) |

## Exhibit 4.4: TIMSS 2023 Survey Activities Questionnaire, Section Three—Assessment Administration (Numbers of NRC Responses) (Continued)

| Question | Yes | No | Not Answered |
|---|---|---|---|
| *Student Questionnaire* | 5 | 56 | 2 (not applicable)<br>2 (not answered) |
| *Student Questionnaire ID labels* | 2 | 56 | 5 (not applicable)<br>2 (not answered) |
| *Early Learning Survey* | 0 | 50 | 13 (not applicable)<br>2 (not answered) |
| *Early Learning Survey ID labels* | 2 | 49 | 12 (not applicable)<br>2 (not answered) |
| *Student Tracking Forms* | 3 | 59 | 1 (not applicable)<br>2 (not answered) |
| *Teacher Questionnaire(s)* | 3 | 57 | 3 (not applicable)<br>2 (not answered) |
| *Teacher Tracking Forms* | 0 | 60 | 3 (not applicable)<br>2 (not answered) |
| *School Questionnaire* | 0 | 60 | 3 (not applicable)<br>2 (not answered) |
| *School Coordinator Manual* | 0 | 59 | 4 (not applicable)<br>2 (not answered) |
| *Test Administrator Manual* | 1 | 60 | 2 (not applicable)<br>2 (not answered) |
| *If any errors were detected, were they resolved before the testing began?* | 14 | 13 | 33 (not applicable)<br>5 (not answered) |
| Did you provide access to the Data Protection Declaration (provided by IEA and/or prepared by your country) to respondents in your country? | 29 | 22 | 12 (not applicable)<br>2 (not answered) |
| Does your country have a confidentiality policy that restricts putting respondents' names on tracking forms and assessment instrument labels? | 21 | 42 | 2 |
| Did you encounter any problems translating and/or adapting the School Coordinator Manual? | 3 | 60 | 2 |
| Did you encounter any problems translating and/or adapting the Test Administrator Manual(s)? | 3 | 60 | 2 |
| Were most/all School Coordinators appointed from within the participating schools? | 55 | 8 | 2 |
| How were School Coordinators trained in your country? | | | |
| *In-person training session(s)* | 44 | 19 | 2 |
| *Online training session(s)* | 28 | 35 | 2 |
| *Via manuals or online information (website) only* | 31 | 32 | 2 |
| Were Test Administrators appointed from within the participating schools? | 26 | 25 | 12 (not applicable)<br>2 (not answered) |
| Who trained Test Administrators in your country? | | | |
| *School Coordinators within the participating schools* | 46 | 17 | 2 |
| *External School Coordinators* | 60 | 3 | 2 |
| *National Center staff* | 8 | 55 | 2 |
| *External agency* | 55 | 8 | 2 |

**Exhibit 4.4: TIMSS 2023 Survey Activities Questionnaire, Section Three—Assessment Administration (Numbers of NRC Responses) (Continued)**

| Question | Yes | No | Not Answered |
|---|---|---|---|
| Did the Test Administrators document any problems or special circumstances that occurred frequently during the assessment administration (please refer to the completed Test Administration Forms)? | 32 | 31 | 2 |
| What kind of devices did you use for administering TIMSS 2023 digitally? (*digital only*) | | | 8 (not answered) |
| *PCs* | 32 | -- | -- |
| *Apple computers (iMac, MacBook)* | 0 | -- | -- |
| *Apple iPads* | 0 | -- | -- |
| *Android tablets* | 1 | -- | -- |
| *Chromebooks* | 2 | -- | -- |
| *A mix of the above or other* | 22 | -- | -- |
| Who did the devices used for TIMSS testing belong to? (*digital only*) | | | 8 (not answered) |
| *Participating schools* | 18 | -- | -- |
| *Outsourced company* | 7 | -- | -- |
| *National Center staff* | 4 | -- | -- |
| *A combination of above* | 28 | -- | -- |
| Which delivery method did you use to administer digital TIMSS in your country? (*digital only*) | | | 8 (not answered) |
| *Individual PCs/USB sticks* | 20 | -- | -- |
| *Online administration* | 21 | -- | -- |
| *Local PC server method* | 2 | -- | -- |
| *A mix of methods was used* | 14 | -- | -- |
| Did you require/suggest/provide an additional person to help the Test Administrators during the digital TIMSS testing sessions? (*digital only*) | 37 | 20 | 8 |
| Did any Test Administrators report experiencing technical issues during the TIMSS 2023 administration which required stopping or postponing the testing session for the whole class? (*digital only*) | 23 | 34 | 8 |
| Did you have a sufficient number of devices available for all/most schools to test all of the selected students (the whole class) at the same time? (*digital only*) | 38 | 19 | 8 |
| Did the COVID-19 pandemic still significantly affect the TIMSS 2023 main data collection process in the participating schools? | 5 | 58 | 2 |

For TIMSS 2023 to comply with the requirements of the General Data Protection Regulation (GDPR) law of the European Union, IEA provided countries with Data Protection Declaration templates for each of the TIMSS 2023 Context Questionnaires. The templates specifically reflected the questionnaire's content and were fully compliant with the GDPR of Europe. All European countries prepared a Data Protection Declaration, complying with the GDPR and

country-specific amendments to the law, and provided it to respondents along with each of the TIMSS 2023 national context questionnaires. Some non-European participating countries also adapted and adopted the declaration as required by law in those countries. Altogether, 29 NRCs responded that they prepared and provided Data Protection Declarations with the national context questionnaires. In addition, 21 NRCs reported not using student names on tracking forms and assessment instrument labels. Many of these countries used a number or a code instead. Some countries used student names at the class level but encrypted this information before the tracking forms left the schools.

Three NRCs reported that rather than translating and distributing the full School Coordinator Manual in full, they provided the information to the School Coordinators in sections. These sections were distributed at different time points that aligned to the major steps in the process.

In 55 countries, most or all School Coordinators were appointed from within the participating schools. School Coordinators came from the national center or were contracted externally in the remaining countries. The NRCs organized in-person training sessions for School Coordinators, online training sessions, online and written materials, or a combination of these training methods. Test Administrators were trained by the School Coordinators within the participating schools, external School Coordinators, national center staff, an external agency, or a combination of these.

Although the TIMSS 2023 administration mostly went well, Test Administrators reported occasional difficulties. While most issues were technology-related, the range of problems documented by Test Administrators included the following: difficulties logging in and staying logged in to delivery systems, incorrect or slow links to the student questionnaire, slowness of the system overall, functionality issues with videos and the ruler tool in achievement items, problems with USB sticks that required replacement, changes in the excluded status of students at the start of the testing session, anxious students, and students having difficulty understanding some of the content.

More than half of the NRCs reported that at least one additional person helped the Test Administrators during the testing sessions. This was usually the classroom teacher, School Coordinator, or an information technology (IT) consultant/expert who assisted with computer setup and troubleshooted any technical issues that occurred during the testing session. Several national centers also offered telephone support for possible technical issues.

About a third of NRCs reported that technical issues required stopping or postponing testing sessions for whole classes. NRCs noted electrical or internet outages that affected entire classes or schools as well as other technical issues (such as problems with login information). In addition, there were issues with labels and loading of the student questionnaire that caused delays. These cases were investigated by IEA Hamburg and the platform provider, and the issues were resolved as soon as possible after being reported. In most schools observed, TIMSS 2023 was successfully administered with no major issues.

More than half of the reporting countries had enough computers or tablets for each school to test all students in the selected class(es) simultaneously. Where this was not the case, schools held multiple sessions with two to five sessions per school.

Five NRCs reported lingering effects from the COVID-19 pandemic that significantly affected the data collection process. In particular, they noted lower participation rates at the school level due to curriculum backlogs and increased teacher absences. Some schools were worried about outside professionals entering their schools. Finally, lower student participation was also mentioned due to the increased numbers of home-schooled students.

## National Quality Control Program

The fourth section of the TIMSS 2023 Survey Activities Questionnaire addressed the National Quality Control Program that each country implemented during data collection. As part of national quality assurance activities, National Research Coordinators were instructed to send National Quality Control Monitors to 10% of the participating schools to observe the TIMSS 2023 test administration and to document compliance with the prescribed procedures. The national program was in addition to the International Quality Control visits managed by IEA (see Chapter 6). Three countries did not conduct their own program since the Test Administrators were from the national centers and provided daily feedback. On average, the quality monitors in participating countries visited 21.8% of participating schools.

As shown in Exhibit 4.5, almost all national centers conducting a quality assurance program used the National Quality Control Monitor Manual. Among the documented problems detected by the national monitors were the long time required for the Test Administrators to log students into the two separate applications for the achievement test and student questionnaire for offline administration or issue with the automatic transfer from the achievement test to the student questionnaire for online administration. They also reported some students' unfamiliarity with using a mouse and, for one country, some anxiety.

**Exhibit 4.5: TIMSS 2023 Survey Activities Questionnaire, Section Four—National Quality Control Program (Numbers of NRC Responses)**

| Question | Yes | No | Not Answered |
|---|---|---|---|
| Did you conduct a national quality control program that observed the data collection in the participating schools? | 60 | 4 | 1 |
| Did you use the National Quality Control Monitor (NQCM) Manual and the Classroom Observation Record, provided by the TIMSS & PIRLS International Study Center, to conduct your national quality control program? | 54 | 6 | 4 (not applicable)<br>1 (not answered) |
| Did your national quality control monitors (NQCMs) document any major problems or special circumstances that occurred frequently during the assessment administration? | 9 | 52 | 3 (not applicable)<br>1 (not answered) |

## Preparing for and Scoring the Constructed-Response Items

Exhibit 4.6 provides data on responses to items asking NRCs about their experiences preparing for and scoring the constructed-response items. Almost all NRCs found the scoring procedures explained in Survey Operations Procedures Unit 6 to be clear and sufficient. Countries used an average of eight scorers and took on average 3 weeks to complete the scoring. However, this varied across countries especially related to participating at one or both grade levels, having larger samples, or testing in multiple languages.

**Exhibit 4.6: TIMSS 2023 Survey Activities Questionnaire, Section Five—Preparing for and Scoring the Constructed-Response Items (Numbers of NRC Responses)**

| Question | Yes | No | Not Answered |
|---|---|---|---|
| Was the information provided in the "TIMSS 2023 Survey Operations Procedures Unit 6: Scoring the Constructed Response Items" clear and sufficient? | 62 | 2 | 1 |
| Did you encounter any major problems using the scoring training materials, provided by the TIMSS & PIRLS International Study Center? | 7 | 56 | 2 |
| Did you create national scoring training materials in addition to the international scoring training materials? | 30 | 33 | 2 |
| Did you encounter any major procedural problems during the TIMSS 2023 constructed response item scoring in your country? | 3 | 60 | 2 |
| Did you encounter any major problems with the Online Scoring System (IEA's CodingExpert Software)? | 14 | 49 | 2 |
| Did your scorers report experiencing issues with scoring student responses in English for the Cross-country Reliability Scoring? | 7 | 54 | 2 (not applicable)<br>2 (not answered) |

NRCs who reported problems with the scoring training materials asked for more examples overall, including more "borderline" examples and more detailed explanations within the scoring guides. Almost half of NRCs reported creating national examples and practice papers for training their scorers, as suggested by the TIMSS & PIRLS International Study Center.

Three countries reported major procedural problems with scoring constructed-response items, noting their need for more detailed scoring guides and clarity regarding the codes used. Some countries reported problems using IEA's CodingExpert software. The reported problems included a number of country-specific technical issues as well as more general ones. The time lag between uploading the achievement results and the availability of the items for scoring was also noted. Because only English responses were used for the cross-country reliability scoring task, not all scorers were able to participate. For the countries that did not participate in eTIMSS 2019, the question on the trend reliability scoring procedures did not apply.

## Creating and Submitting the Databases and Documentation

The last section of the TIMSS 2023 Survey Activities Questionnaire addressed the use of WinW3S and DME software as well as the data quality checks when submitting the databases and documentation. As shown in Exhibit 4.7, almost all of the National Research Coordinators found the instructions in Survey Operations Procedures Unit 7 to be clear and sufficient. Seventeen NRCs reported issues using WinW3S, including import and export function problems that required manual work to fix, difficulties when adjusting the exclusion status of students, and several other country-specific issues. Four NRCs reported major problems when using IEA's DME software. IEA Hamburg provided support to countries as needed and resolved the issues.

**Exhibit 4.7: TIMSS 2023 Survey Activities Questionnaire, Section Six—Creating and Submitting the Databases and Documentation (Numbers of NRC Responses)**

| Question | Yes | No | Not Answered |
|---|---|---|---|
| Was the information provided in the "TIMSS 2023 Survey Operations Procedures Unit 7: Creating and Submitting the TIMSS 2023 Databases and Documentation" clear and sufficient? | 60 | 4 | 1 |
| Did you encounter any problems entering test administration information and exporting your WinW3S database for submission? | 17 | 47 | 0 (not applicable)<br>1 (not answered) |
| Did you encounter any major problems using the IEA's Data Management Expert (DME) software? | 4 | 35 | 25 (not applicable)<br>1 (not answered) |
| If you entered any paper instrument data manually, did you enter 5% of each assessment instrument twice as a quality control measure? | 27 | 4 | 33 (not applicable)<br>1 (not answered) |
| Did you apply all the data quality checks described in the "TIMSS 2023 Survey Operations Procedures Unit 7: Creating and Submitting the TIMSS 2023 Databases and Documentation" before submitting your data and documentation to IEA Hamburg? | 63 | 1 | 1 |
| Have you stored all the hard copy assessment instruments in a secure storage area until the original documents can be destroyed? | 48 | 0 | 16 (not applicable)<br>1 (not answered) |

All but one NRC that responded to the questionnaire applied all required data quality checks. All countries that responded reported having securely stored their original assessment instruments until all data were processed and reported.