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Translation and Cultural Adaptation of the TIMSS Instruments¹

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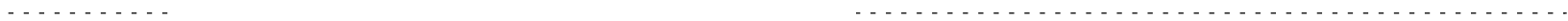
4.1

The TIMSS 1999 data-collection instruments (achievement tests and background questionnaires) were prepared in English and translated into 33 languages. Ten of the thirty-eight participating countries collected data in two languages. The most common languages of testing were English (nine countries) and Arabic (four countries). Even though the United States and the Benchmarking participants collected data in English, it was nonetheless necessary to make minor cultural adaptations to reflect U.S. instrument usage. This chapter describes the extensive procedures for translating and adapting the TIMSS instruments.

Countries that administered the instruments in English followed specific procedures for cultural adaptation and verification as they translated them into a different target language. For the TIMSS 1999 survey, each country had to translate the instruments:

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4.2.2 Adaptation of the U.S Instruments

The review of the US instruments for cultural adaptation was led by Westat with the work conducted by Educational Testing Services (ETS) under subcontract. No translation was necessary as the international versions of the instruments were in American English, thus the purpose of the review was to identify changes necessary due to cultural context. Westat suggested a number of changes that were to be made in the U.S. versions.

These included adding commas in numbers to denote thousands, millions, etc.; spelling out units of measurement; and changing unit terms from the International System of Units (metric units) to U.S. inch-pound units when the measure was not integral to the task.

International procedures required that the International Study Center be notified, and a corresponding statement included in the NRC Survey Activities Report, of any items that proved to be problematic for translators. To identify problematic items, Westat contracted with Educational Testing Service to conduct a sensitivity and fairness review. Reviewers indicated that no items were found to be problematic and that the items were of excellent quality.

4.2.3 Recording Deviations from the International Version

After a single translation had been agreed upon, the Translation Deviation Form was used to record all changes in test and questionnaire items. Translators were asked to document all changes in vocabulary and content not authorized in the translation guidelines. The description of each deviation included the English term, the translated term, and an explanation of why that term was selected. Translators also noted any other changes in or problems with the translation. This record was used in translation verification and during the item analysis and review.

4.3 Verification of Instruments

Each country's translated documents went through a rigorous process that included verification of the item translations at the national centers, verification by an international translation company, a review by the International Study Center, and a check by quality control monitors.

4.3.1 Verification of Translations at National Centers

The results of item analyses from the field test were reviewed by each country. Since unusual results for an item could indicate errors in translation, NRCs were asked to check for items that might have been mistranslated. NRCs were also notified of any potentially problematic items and asked to verify that the translation was sound.

4.3.2 External Verification

Once the final translated version of each instrument was agreed upon, it was externally verified. NRCs were required to send (no later than six weeks before printing) the following material to the IEA Secretariat in preparation for external translation verification:

- A copy of the test item clusters (A through Z) and the accompanying instructions for students
- A set of test booklets (1 through 8)
- A copy of the School Questionnaire, Student Questionnaire, and Teacher Questionnaires

All 38 countries that participated in the TIMSS 1999 main survey submitted their national versions of instruments for external verification.

4.3.3 International Verification

The IEA Secretariat, which organized and managed the translation verification process, enlisted Berlitz, an international translating company with a reputation for excellence, to check the quality of the translations. Berlitz staff were to document all errors and omissions, and to make suggestions for improvements so that NRCs could review and revise their instruments.

Verifiers received general information about the study and instrument design. They also received materials describing the translation procedures used by the national centers along with detailed instructions for reviewing the instruments (TIMSS, 1998b). Each verifier received a package consisting of:

- The international version of each survey instrument
- A set of translated instruments to be verified
- A copy of the instructions given to the translators in their country
- Instructions for verifying the layout of the survey instruments
- Instructions for verifying the content of the survey instruments

- Instructions for verifying the instructions to students
- Translation Verification Control Forms to be completed for each instrument
- Translation Verification Report Forms

The main task of the translation verifier was to evaluate the accuracy of the translation and the comparability of layout of the survey instruments. The verification guidelines emphasized the importance of maintaining the meaning, difficulty level, and format of each item while allowing for cultural adaptations as necessary.

For the United States and other TIMSS 1999 countries that also participated in 1995, verifiers were responsible for ensuring that the translated version of the trend items was identical to that administered in 1995. Accordingly, verifiers reviewing instruments for trend countries also received the following:

- A set of trend item clusters A through H (1995 version used in that country)
- A Trend Item Verification Form

4.3.4 Translation Verification Reports

The translation verifier prepared two types of reports. The first was a Translation Verification Control Form for each instrument. Its cover sheet served as a summary and indicated whether or not deviations were found. If the translated version was judged to be equivalent to the international version, no further entry needed to be made in the form. Second, for each translated version of an item that differed in any way from the international version, an entry was made in the Translation Verification Report Form giving:

- The location of the deviation (item number)
- The severity of the deviation (using the severity code below)
- A description of the change
- A suggested alternative translation

These records were used to document the quality of the translations and the comparability of the testing materials across countries. The *severity codes* ranged from 1 (serious error) to 4 (acceptable adaptation)² as described below:

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2. When in doubt as to the severity of the deviation, verifiers used code 1.

Code 1 - Major Change or Error: Examples include incorrect ordering of choices in a multiple-choice item; omission of a graph; omission of an item; incorrect translation of text such that the answer is indicated by the question; incorrect translation that changes the meaning or difficulty of the question; incorrect ordering of the items or placement of the graphics.

Code 2 - Minor Change or Error: Examples include spelling errors that do not affect comprehension; misalignment of margins or tabs; incorrect font or font size; discrepancies in the headers or footers of the document.

Code 3 - Suggestions for Alternative: The translation may be adequate, but the verifier suggests a different wording.

Code 4 - Acceptable Changes: The verifier identifies changes that are acceptable and appropriate, for example, a reference to winter that is changed from January to July for the Southern Hemisphere.

The layout of the documents was also reviewed during verification for any changes or deviations. Exhibit 4.3 details the layout issues to be considered and checked for each survey instrument.

Exhibit 4.3 Layout Issues Considered in Verification

| Layout Issues | Verification Details |
|------------------------------|--|
| Instructions | Test items should not have been visible when the test booklet was opened to the Instructions |
| Items | All items should have been included in the same order and location as in the international version |
| Response options | Response options should have appeared in the same order as in the international version |
| Graphics | All graphics should have been in the same order and modifications should have been limited to necessary translation of text or labels |
| Font | Font and font size should have been consistent with the international version |
| Word emphasis | Word emphasis should have remained the same as in the international version; if the form of emphasis was not appropriate for the given language, an acceptable alternate form should have been used (e.g., italics instead of capital letters) |
| Shading | Items with shading should have been clear and text legible |
| Page and item identification | Headers and footers that include booklet and page identification as well as item identification should have been present |
| Pagination | Page breaks should have corresponded with the international version of the instruments |

For any deviation from the original international version, an entry was made in the Translation Verification Report Form indicating location and severity and describing the change. If necessary and appropriate, a suggestion for improving the layout was included. In the case of TIMSS 1995 participants, any differences between the 1995 and 1999 versions of test items were entered in the Trend Item Verification Form, and the nature of the change was described.

The completed Translation Verification Forms were sent to NRCs and to the International Study Center at Boston College. In the United States, Westat was responsible for reviewing the report forms and reevaluating the instruments based on the translation verifiers' suggestions. Necessary changes were sent by Westat to a subcontractor, National Computer Systems, who produced the assessment materials.

4.3.5 International Study Center Item Review

As a final review, when the suggestions of the verifiers had been acted upon, a print-ready copy of the achievement test booklets and questionnaires was submitted to the International Study Center at Boston College. This was reviewed by the International Study Center primarily to identify issues such as misplaced graphics, improper format, and inconsistent text.

