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## TECHNICAL STANDARDS FOR PISA 2006

### Introduction

1. This document describes the proposed technical standards for the collection of data for PISA 2006. The standards described in this document have been developed for the purpose of creating an international dataset, that contains data on student achievement and background, which is of a quality that will enable valid cross-national inferences to be made.

2. The data adjudication process for PISA 2006 will use the standards in this document to determine the data for inclusion in the PISA 2006 dataset. In addition to detailing the standards, this document details the quality assurance processes and quality assurance data for each standard. The quality assurance data will be used in the data adjudication process to demonstrate that a standard has been met.

3. Only data that has met the standards will be recommended for inclusion in the PISA 2006 dataset. The quality assurance data is essential for demonstrating that the standards have been met.

4. It is important that the BPC finalises these standards at its meeting on 15-17 March 2004 so that both the PISA Consortium and participating countries can base the development of the PISA 2006 instruments and operational procedures on these standards. The BPC is invited to:

- **REVIEW** and, subject to any modifications, **ADOPT** the technical standards for PISA 2006.

### Structure of the document

5. There are three types of standards in this document where each type has a specific purpose. **Data Standards** ensure that all collected data can be added to the final PISA 2006 dataset that will be released by the OECD. **Management Standards** ensure that all PISA operational objectives are met in a timely and coordinated manner. **National Involvement Standards** ensure that the internationally developed instruments meet the highest standards of cross-national, cross-cultural and cross-linguistic validity and equivalence, and that the PISA results have the greatest possible meaning for national stakeholders.

Definition 1. The **PISA operations manuals** are provided by the Consortium and are the following manuals.

- National Project Manager’s Manual
- Test Administrator Manual
- School Coordinator Manual
- School Sampling Preparations Manual
- Data Entry Manual

Note 1. The Consortium will provide source versions for a separate Test Administrator Manual and a School Coordinator Manual as well as a combined version. Where the combined source version is used, the standards for both the Test Administrator Manual and School Coordinator Manual will apply to the combined version.

Definition 2. **Agreed Upon** means variations and definitions agreed upon between the National Project Manager and the Consortium. Agreed upon variations will be available to National Project Managers on their National Centre webpage on the Consortium website.

Definition 3. **Agreed procedures and timelines** are those that are specified in the PISA operations manuals, or variations that are agreed upon between the National Project Manager and the Consortium.

Definition 4. **Source Versions** are the documents provided in English and in French by the Consortium.

Definition 5. The **Consortium Website** address is [pisaweb.acer.edu.au](http://pisaweb.acer.edu.au). This website contains the source version of instruments, manuals and other documents and information relating to National Centres.

## I. DATA STANDARDS

### 1. Target population and sampling

Note 2. The Target Population and Sampling standards apply to the Main Study but not Field Trial.

Definition 6. The **PISA Target Population** is 15-year old students attending educational institutions located within the country, in grades 7 and higher.

Definition 7. **National Desired Target Population** is the PISA Target Population defined for a specific country. It provides the most exhaustive national coverage of eligible students as is feasible.

Definition 8. The **National Defined Target Population** is all those eligible students in the schools that are listed on the school sampling frame. That is, the National Desired Target Population minus exclusions.

Definition 9. **Within-school exclusions** are those students excluded from potential assessment because they are:

- functionally disabled,

- intellectually disabled,
  - of insufficient language proficiency to take the PISA test in the test language,
  - not assessable for some other reason as agreed upon.
- Definition 10. **School Level Exclusions** are those schools excluded from the sampling frame because:
- of geographical inaccessibility (but not part of a region that is omitted from the National Desired Target Population),
  - of extremely small size,
  - administration of the PISA assessment within the school would not be feasible,
  - all students in the school would be within-school exclusions,
  - of other reasons as agreed upon.
- Definition 11. **Measure of Size** is the estimated number of students in the PISA Target Population at a school.
- Definition 12. **Functionally disabled students** are students who are permanently physically disabled in such a way that they cannot perform in the PISA testing situation.
- Definition 13. **Intellectually disabled students** are students who are considered in the professional opinion of the school principal, or by other qualified staff members, to be intellectually disabled or who have been tested psychologically as such. This includes students who are emotionally or mentally unable to follow even the general instructions of the test. Students should not be excluded solely because of poor academic performance or normal discipline problems.
- Definition 14. Students with **insufficient language proficiency** to take the PISA test in the test language are students who have received less than one year of instruction in the language of the test can be excluded.
- Definition 15. **Participating School** – A sampled school in which more than 50 per cent of sampled students respond.
- Note 3. Data from schools where the student response rate is greater than 25 per cent will be included in the PISA dataset.
- Definition 16. The **Testing Period** is the period of time during which data is collected in a country.
- Definition 17. The **PISA Testing Window** is a three-month interval in which the testing period must be contained.
- Standard 1.1 The National Desired Target Population must be agreed upon.
- Standard 1.2 The age of the student participating in the test must be between 15 years and 3 (completed) months to 16 years and 2 (completed) months at the beginning of the testing window.
- Standard 1.3 The testing period must:
- be no longer than 6 consecutive weeks unless otherwise agreed upon,

- not coincide with the first three months of the academic year, and
  - be inside the testing window.
- Standard 1.4 Schools must be sampled using, agreed upon, established and professionally recognised principles of scientific sampling.
- Standard 1.5 National Project Managers must identify appropriate stratification variables to reduce sampling variance when appropriate.
- Standard 1.6 Students must be sampled using agreed upon established and professionally recognised principles of scientific sampling and in a way that represents the full population of 15-year old students.
- Standard 1.7 The National Defined Target Population must cover 95 per cent or more of the National Desired Target Population. Acceptable exclusions are as follows.
- school level exclusions due to geographical inaccessibility, extremely small school size, administration of PISA not feasible, and other agreed upon exclusions must total to less than 0.5 per cent of National Desired Target Population,
  - school level exclusions due to a school containing only students that would be within-school exclusions must be less than 2.0 per cent of National Desired Target Population, and
  - within school exclusion must be less than 2.5 per cent of the National Desired Target Population.
- Standard 1.8 The student sample size must be a minimum of 4,500 assessed students, or the National Defined Target Population.
- Standard 1.9 The school sample size must be 150 schools or all schools that have students in the National Defined Target Population.
- Standard 1.10 Thirty-five students, or an agreed upon number not less than 20, must be sampled from each sampled school.
- Standard 1.11 School response rates must be above 85 per cent of sampled schools. If a response rate is below 85 per cent then an acceptable response rate can still be achieved through agreed upon use of replacement schools.
- Standard 1.12 The overall student response rates must be above 80 per cent of sampled students.

***Quality Assurance***

- *Sampling procedures as specified in PISA operations manuals.*
- *School sample drawn by Consortium.*
- *Student sample drawn through KeyQuest.*
- *Sampling forms submitted to the Consortium.*
- *Main Study Review Quality Assurance Survey.*

## 2. Language of testing

- Standard 2.1 The language of the PISA test administered to a student must be a language of instruction provided by the sampled school to that sampled student in the major domain (Science) of the test.
- If the language of instruction in the major domain is not well defined, then if agreed upon, the student can be provided with a choice of languages before the test is administered. Agreement will be subject to the principle that the language alternatives provided to the student should be languages that are common in the community and a common language of instruction in schools in that country.

## 3. Field trial participation

- Standard 3.1 National Centres participating in the PISA 2006 Main Study must successfully implement the Field Trial according to the PISA operations manuals.

## 4. Adaptation of cognitive tests, questionnaires and Test Administrator Manual and School Coordinator Manual

Note 4 The quality assurance requirements for this standard apply to instruments that are in a language that is administered to more than 5 per cent of the target population.

Standard 4.1 Cognitive items administered in previous cycles of PISA and selected for linking must not undergo changes or new adaptations.

Standard 4.2 All cognitive instruments must be psychometrically equivalent to the source version. They must be adapted to the local context only if needed and agreed upon.

### *Quality Assurance*

- *Agreed Upon National Adaptation Spreadsheet.*
- *Verifier Report.*
- *Final Optical Check.*
- *Field Trial and Main Study Review Quality Assurance Surveys.*
- *Item statistics.*

Standard 4.3 The questionnaire instruments must be equivalent to the source version. They must be adapted to the local context only if needed and agreed upon.

### *Quality Assurance*

- *Agreed Upon Questionnaire Adaptation Spreadsheet.*
- *Verifier Report.*
- *Final Optical Check report.*
- *Field Trial and Main Study Review Quality Assurance Surveys.*
- *Item statistics.*

Standard 4.4 Test Administrators manual and the School Coordinators manual must be equivalent to the source versions and must be adapted to the local context only if needed and agreed upon. Any adaptations must not alter the intent or the structure of the manual.

### ***Quality Assurance***

- *Agreed Upon Manual Adaptation Form.*
- *Verifier Report.*
- *Final Optical Check report.*
- *Field Trial and Main Study Review Quality Assurance Surveys.*

## **5. Translation of Cognitive tests, Questionnaires and Test Administrator Manual and School Coordinator Manual**

Note 5                      The quality assurance requirements for this standard apply to instruments that are in a language that is administered to more than 5 per cent of the target population.

Standard 5.1              The following documents must be translated into the local language and to linguistic equivalence to the international source version that incorporates agreed upon adaptations.

- All administered cognitive instruments.
- All administered questionnaires.
- Test Administrators Manual.
- School Coordinators Manual.

### ***Quality Assurance***

- *Agreed Upon Translation Plan developed in accordance to the specifications in the PISA operations manual.*
- *Verifier report.*
- *Final Optical Check report.*
- *Submitted booklets.*
- *Main Study Review Quality Assurance Survey.*

## **6. Test administration**

Standard 6.1              All test sessions must follow international procedures as specified in the PISA operations manuals. In particular the procedures:

- relating to test session timing,
- for maintaining test conditions,
- for student tracking, and
- for assigning booklets.

Standard 6.2              Test Administrators must be trained according to agreed procedures.

Standard 6.3              Test Administrators must be trained in person.

### ***Quality Assurance***

- *Test Administrators Test Session Report Forms.*
- *PISA Quality Monitors.*
- *Main Study Review Quality Assurance Survey.*

Standard 6.4 The relationship between the Test Administrator and the participating student must not compromise the credibility of the test session. In particular, the Test Administrator should not be the reading, mathematics, or science instructor of any students in the assessment sessions he or she will administer for PISA.

## 7. National options

Definition 18 A national option occurs if  
i) a National Centre administers any additional instrumentation, for example a test or questionnaire, to schools or students that are part of the PISA international sample. Note that in the case of adding items to the questionnaires, an addition of 5 or more items to either the school questionnaire or student questionnaire is regarded as a national option.

OR

ii) a National Centre administers any PISA international instrumentation to any students or schools that are not part of the PISA international sample and therefore will not be included in the PISA International database.

Standard 7.1 The implementation of all national options must be agreed upon between the National Centre and the Consortium before implementation by the National Centre.

Standard 7.2 Any National Option instruments will be administered after all the cognitive and questionnaire instruments of the core component of PISA have been administered to students that are part of the international PISA sample.

## 8. Security of the material

Standard 8.1 PISA materials must be kept secure at all times, in particular:

- no person other than approved project staff and participating students during the test session must be able to access and view the test material,
- no person other than approved project staff will have access to secure PISA data and embargoed material.
- formal confidentiality arrangements will be in place for all approved project staff.

### *Quality Assurance*

- *Security arrangements as specified in the PISA operations manuals or agreed upon variation.*
- *National Centre Quality Monitor Interview.*
- *Field Trial and Main Study Review Quality Assurance Surveys.*

## 9. Quality monitoring

Note 6 A failure to meet the quality-monitoring standard in the Main Study will lead to a significant lack of quality assurance data for other standards.

Note 7 The Quality Monitoring standards apply to the Main Study but not to the Field Trial.

- Definition 19      **National Centre Quality Monitor** – a Consortium representative that visits a National Centre in the month preceding the Main Study to train PISA Quality Monitors and conduct a scheduled interview with the National Centre Project Manager.
- Standard 9.1      The National Project Manager must nominate an agreed upon number of PISA Quality Monitors a minimum of six weeks prior to the Main Study testing period.
- Standard 9.2      The nominations for PISA Quality Monitors must:
- be knowledgeable about testing procedures,
  - speak fluently the test language and either English or French,
  - have a background in education, assessment or research,
  - be sensitive to the needs of schools and students and feel comfortable about being in a school environment,
  - be able to represent PISA in schools diplomatically and positively,
  - be able to conduct their work in such a way as to ensure that it is independent of the National Centres within the countries where they are working,
  - not be a member of the same institution where the National Project Manager works or where the National Centre is based,
  - not be an immediate relative of an employee at the National Centre,
  - not report to the National Project Manager in their day-to-day work, and
  - be able and have the capacity to independently and effectively communicate with the consortium using e-mail.

***Quality Assurance***

- *Curricula Vitae forwarded by the National Project Manager to the Consortium.*
- Standard 9.3      The PISA Quality Monitor will be reimbursed at a rate equivalent to that of a teacher with 10-15 years experience in the country where the PISA Quality Monitor is performing their duties. The PISA Quality Monitor will also be reimbursed a standard rate for personal car use. The National Project Manager must provide both these rates to the Consortium.
- Standard 9.4      The PISA Quality Monitoring visits must be unannounced.
- Standard 9.5      The National Project Manager must assist the PISA Quality Monitors in performing their duties by:
- providing a list of all participating schools that includes the school name, complete address, the School Coordinators name and phone number, the Test Administrator name for each testing session, and the date and time of the test session,
  - forwarding all amendments to the above information as soon as the National Project Manager becomes aware of a change,

- assisting the PISA Quality Monitors to establish protocols to monitor testing session unannounced.

Standard 9.6 National Project Managers must collaborate with the Consortium to arrange for the National Centre Quality Monitor visit and provide facilities for the training of the PISA Quality Monitors.

### *Quality Assurance*

- *PISA Quality Monitor Reports*
- *National Centre Quality Monitor Visit Report.*

## **10. Printing of material**

Standard 10.1 All student assessment material must be printed on an agreed upon paper quality and print quality. National Centres will submit a sample of printed material to the Consortium for agreement.

Standard 10.2 The printed material must include the cover and selected items as specified in the PISA operations manuals.

Standard 10.3 The cover page of all PISA assessment instruments used in schools must contain all information as specified in the PISA operations manuals.

Standard 10.4 The layout and pagination of all cognitive test material must be the same as the source version.

## **11. Coding<sup>1</sup>**

Standard 11.1 The coding scheme as described in the coding guide in the distributed items will be implemented in the manner described by the Consortium item developers.

Standard 11.2 A representative from each National Centre will attend the international PISA coder training session for both the Field Trial and the Main Study.

Standard 11.3 Both the single coding and multiple coding procedures as specified in the PISA operations manuals, or an agreed upon variation thereof, must be implemented.

Standard 11.4 Coders will be recruited and trained following agreed procedures.

### *Quality Assurance*

- *reliability indices,*
- *International Coding Review (ICR)<sup>2</sup>,*
- *Field Trial and Main Study Review Quality Assurance Surveys.*

## **12. Data submission**

Standard 12.1 Only one database must be submitted per country unless otherwise agreed.

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1. The terms coding, coders and codes are now used instead of other terms such as marking, markers marks, rating and raters.
  2. The term International Coding Review (ICR) is now used where the term ‘cross-country coder validation study’ and ‘international country rater reliability study’ were previously used.

- Standard 12.2 Data must be submitted in the format specified in the PISA operations manuals.
- Standard 12.3 Data for all instruments must be submitted. This includes
- cognitive data,
  - questionnaire data,
  - Test Session Report data.
- Standard 12.4 Documentation as specified in the PISA operations manuals must be submitted with the National database.

## II. MANAGEMENT STANDARDS

### 13. National options

- Standard 13.1 National Options must be agreed upon before 1 September 2004 for the Field Trial, and before 1 September 2005 for the Main Study.

### 14. Schedule for submission of materials

- Definition 20 **Preferred Translation and Verification Schedule** is a document that provides a timeline for the submission of material relating to adaptation of instruments and submission of instruments for linguistic verification and including the final optical check. This schedule can be found in the PISA National Project Manager's manual.
- Standard 14.1 All specified materials in the PISA operations manuals required by the Consortium to enable it to manage the project's quality must be submitted along agreed timelines. Such materials include
- print sample of booklets prior to final printing
  - sampling forms,
  - Study Programme Tables,
  - Field Trial and Main Study Reviews,
  - other as specified in the PISA operations manuals.
- Standard 14.2 There will be an agreed upon Preferred Translation and Verification Schedule. National Centres must submit a first draft of the Preferred Translation and Verification Schedule by the agreed timeline.
- Standard 14.3 Any variations to the agreed upon Translation and Verification Schedule must be further agreed upon.
- Standard 14.4 Questionnaire material must be submitted for linguistic verification only after all adaptations have been agreed upon.

#### *Quality Assurance*

- *Agreed Upon Preferred Translation and Verification Schedule*
- *Consortium records*

## 15. Drawing samples

- Standard 15.1 For efficient and effective quality assurance provision, unless otherwise agreed upon,
- the Consortium will draw the school sample, and
  - KeyQuest will be used to draw the student sample.

## 16. Management of data

- Standard 16.1 National databases must be forwarded to the Consortium within twelve weeks of the last day of testing or an alternative agreed upon timeline.
- Standard 16.2 National Centres should execute data checking procedures as specified in the PISA Operation Manuals before submitting the database.
- Standard 16.3 National Centres must make available a data manager upon submission of the database. The data manager must be:
- authorised to respond to Consortium data queries,
  - available for a three month period after the database is submitted, and
  - able to respond to Consortium queries within three working days
  - able to resolve data discrepancies.
- Standard 16.4 A complete set of PISA instruments, as administered to students and including any national options, must be forwarded to the Consortium on or before the first day of testing. The submission must include
- hard copies of instruments
  - PDF copies of instruments on CD or DVD
  - MS Word copies of instrument on CD or DVD.

### *Quality Assurance*

- *Consortium Records.*

## 17. Archiving of materials

- Standard 17.1 National Centres must develop and maintain an electronic archive of all materials as used for previous studies that include all items selected for linking.
- Standard 17.2 National Centres will archive all Field Trial materials until the commencement of the Main Study, and all Main Study materials until the publication of the international report, unless otherwise requested. Materials to be archived include
- Student booklets and questionnaires.
  - Sampling forms.
  - Student lists.
  - Student tracking forms.
  - All data as submitted to the Consortium.

### III. NATIONAL INVOLVEMENT STANDARDS

#### 18. National committees

Standard 18.1 Countries Participating in PISA must establish National Committees for the following purposes.

- To promote participation, effective implementation, and dissemination of results amongst all relevant national stakeholders including, where appropriate, representatives from:
  - all school sectors,
  - national and regional governments,
  - peak parent bodies,
  - peak teacher bodies, and
  - peak principal bodies.
- To provide feedback on the development of instruments, domain frameworks and other domain related matters. Membership can include, where appropriate, representatives from:
  - national curriculum bodies,
  - teacher bodies,
  - parent bodies,
  - government bodies, and
  - academic bodies such as universities
- To provide advice to the National Centre on the adaptation and translation of instruments. Membership can include, where appropriate, representatives from:
  - national curriculum bodies,
  - teacher bodies,
  - parent bodies,
  - government bodies, and
  - academic bodies such as universities.

#### *Quality Assurance*

- *National Centre Quality Monitor Visit*
- *Membership records*
- *Meeting records*