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**TECHNICAL STANDARDS FOR THE IMPLEMENTATION OF PISA 2003
(NOTE BY THE SECRETARIAT)**

1. The PISA data strategy, that was adopted by Member governments in 1997 as the foundation for PISA, specifies that *“Member countries will agree on a set of general rules for the inclusion/exclusion of country results in international reports. Any matter of dispute between countries and the prime international contractor on the application of these rules will be arbitrated by the Secretariat, under guidelines established by the Board of Participating Countries”* [see paragraph 96 in document DEELSA/ED/CERI/CD(97)4].
2. In order to achieve this, the Board of Participating Countries adopted in 1998 a set of data quality standards [see doc. Ref. DEELSA/PISA/BPC(1998)4] that national datasets would need to meet in order for the results to be included in the international publications. In 2000, the Board of Participating Countries further operationalised these data quality standards and established a process for the arbitration of these standards [see doc. Ref. DEELSA/PISA/BPC(2000)16].
3. At its meeting in October 2000, the Board of Participating Countries then asked the Secretariat to review the standards in the light of experiences in PISA 2000 and develop a proposal for standards for use in PISA 2003 for review and approval by the BPC at its meeting on 18-20 April 2000.
4. This document presents the proposed standards for PISA 2003. Although the proposed standards largely correspond to those used in PISA 2000, some modifications are suggested:
 - In addition to minimum requirements for school-level response rates and overall student-level response rates, it is proposed to add a criterion for student-level response rates within participating schools as follows: *A response rate of 80 per cent of selected students in the participating schools is required. A student will only be considered a participant if that student participates in the first testing session. Students absent for the first testing session will not be included in the database.* This criterion will ensure that potential bias from absentees during the assessment is contained.
 - In order to avoid that schools with low student-response rates have undue weight in the estimation of school-level response rates and the overall PISA survey estimates, the following criterion is proposed: *Schools with a student participation rate between 25 per cent and 50 per cent will not be considered as a participating school but data will be included in the database and will contribute to the different estimations. Data from schools with less than 25 per cent of student participation rate will not be included in the database.*
 - In order to ensure the comparability of the target ages of students, the following criterion is proposed: *The testing windows, which are used to define the national target population, must not changed without the approval of the consortium.*
 - More flexibility is introduced in determining the extent and nature of the school quality monitoring process. The intention is not to relax the requirements used for PISA 2000 but to focus resources more on areas where, based on experience in PISA 2000 in each country,

problems are likely to be expected. The following is proposed: *National Project Managers are required to nominate School Quality Monitors no later than six weeks before the assessment is due to start, but preferably by three months before this time. The number of School Quality Monitors will be determined with each National Project Manager. National Project Managers are also required to arrange a room for the School Quality Monitor training session. The PISA Consortium employs the School Quality Monitors. School Quality Monitors should 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. A School Quality Monitor should not be a member of the same institution where the National Project Manager works. A School Quality Monitor should not report to the National Project Manager in their day-to-day work.*

5. The BPC is invited to:

- **REVIEW** and, subject to any modifications, **ADOPT** the standards for use in PISA 2003.

TECHNICAL STANDARDS FOR THE IMPLEMENTATION OF PISA 2003

Sampling

1. To provide valid estimates of student achievement, the sample of students must be selected using established and professionally recognised principles of scientific sampling, in a way that represents the full population of 15-year-old students
2. Furthermore, quality standards must be maintained with respect to:
 - a) *Coverage of the International PISA Target Population*: the overall exclusion rate must be kept below 5 per cent. Furthermore,
 - School level exclusions for inaccessibility, size, feasibility or other reasons should cover less than 0.5 per cent of the total number of students in the International PISA Target Population.
 - School level exclusions for educable mentally retarded students, functionally retarded students or non-native language speakers should cover less than 2 per cent of students.
 - b) *Accuracy and precision*: A minimum sample size of 4,500 assessed students must be selected from a minimum of 150 schools. Unless otherwise agreed with the PISA Consortium, schools will be sampled with a probability proportional to a measure of the school size and the students will be randomly (or by using a systematic procedure) sampled within each school. Unless otherwise agreed with the PISA Consortium, 35 students will be sampled within each participating school. National Project Managers are encouraged to use the software provided by the consortium to select the students. If National Project Managers intend to use another software, they are required to fully document their implemented procedures. National Project Managers are strongly encouraged to identify stratification variables to reduce the sampling variance and will be required to increase the school sample size depending on the educational system features (i.e. intra-class correlation, mainstreaming or highly tracked schools, percentage of small schools, 15-year-old students not largely falling into one level of schooling, etc.).
 - c) *School Response rates*: A response rate of 85 per cent is required for initially selected schools. If the initial school response rate is between 65 and 85 per cent, an acceptable school response rate may still be achieved through the use of replacement schools. Furthermore, schools with a student participation rate between 25 per cent and 50 per cent will not be considered as a participating school but data will be included in the database and will contribute to the different estimations. Data from schools with less than 25 per cent of student participation rate will not be included in the database. The following table provides detailed information on the International Requirements.

- d) Student Response rates: a response rate of 80 per cent of selected students in the participating schools is required. A student will only be considered as participant if that student participates to the first testing session. Students absent for the first testing session will not be included in the database.

Condition	Rate		
	Before Replacement	After Replacement	Zone
1	Above 85%	Above 85%	Acceptable
2	x%, between 65% and 85%	Above y%, where $y=(255-x)/2$	Acceptable
3	x%, between 65% and 85%	Below or equal to y%, where $y=(255-x)/2$	Intermediate
4	Below 65%	Any	Not Acceptable

Table 1. Table 1

- e) Unless problems resulting from low response rates are compounded by other factors (in which case the OECD Secretariat will prepare a specific recommendation on the use and annotation of country results to the BPC), results from countries with condition 3 in the above table will normally be included in international indicators and reports. The deviations from the international standards will, however, be documented in the international reports and publications.
- f) Results from countries with conditions 4 will only be included in the international indicators and reports if the country concerned can provide additional evidence to the OECD Secretariat that the potential bias introduced by the low response rates is unlikely to be greater than under conditions 2. The OECD Secretariat will examine this evidence and prepare a specific recommendation on the use and annotation of the country results to the BPC. The costs for this examination will be borne by the country concerned and will not be charged to the general PISA budget to be paid by all countries.
- g) National sampling plans must be based on sound and well-documented scientific sampling methods. The PISA 2003 will present the documentation National Project Managers must provide as well as the date this documentation must be sent.

Translation and translation verification

3. National Project Managers must arrange for the adaptation and translation of the assessment booklets, questionnaires and manuals into their testing language(s) if the target language is used to teach more than 5 per cent of the 15-year-old population. Translated materials must be submitted to the PISA Consortium for review and approval before the testing takes place.

4. The materials to be translated include:

- a) A set of test units, each one of which includes
- a stimulus (text extract, graphics, diagram, ...) which shall be used as a basis for the work of the student;
 - one or more questions (items);

- information on the nature and the intent of these items;
 - scoring rules to be followed for the coding of answers;
- b) Questionnaires on the educational context (student questionnaire and school questionnaire);
- c) Manuals for School Co-ordinators, Test Administrators and markers.

5. A double independent translation procedure is required for the *tests* and the *questionnaires*. Double translation is optional for the *manuals*. It is strongly recommended that one of the two translators uses the *English* source version, and the second translator uses the *French* source version.

6. For each of the instruction languages selected, the National Project Manager shall appoint a team of at least three translators. Two of them, independently of each other, will carry out parallel translations of the material. The third translator will be responsible for the verification of the two versions obtained and for their collation with a view to achieving a reconciled national version that the National Project Manager will submit for the approval of their National Committee. All alterations suggested by the Committee experts will be discussed and incorporated by the verifier.

7. On the other hand, all PISA 2000 cognitive items and context questionnaire items included in PISA 2003 should not be re-translated and NPMs must ensure that they will use the same version as PISA 2000. Any modification of the PISA 2000 material should be approved by the consortium. This is the *first verification* step.

Selection of the translators

8. The translators as a group need to have:

- a) a thorough command of both the source language and the target language;
- b) a solid command of the domains covered by the test, in particular for the tests of Mathematics and Science;
- c) an in-depth knowledge of the school system of the country (in particular for the school and student questionnaires); and
- d) some knowledge of the characteristics of the school systems of other countries (particularly those where the source language is used).

9. National Project Managers are encouraged to organise a training session for the translators and verifiers.

Submission of questionnaire adaptations and modifications for approval

10. National Project Managers are required to submit to the PISA Consortium all adaptations and modifications they plan for the student and school context questionnaires, included the IT and CCC questionnaires if they are implemented.

Submission of material for translation verification

11. The PISA tests and questionnaires are measuring tools. One of the vital challenges for the study is to guarantee the equivalence of these tools: it must be possible to interpret in the same way an identical test mark or an identical answer to the educational context questionnaire from students responding in Japanese in Osaka, in Norwegian in Oslo, in German in Munich, in English in Wellington, etc. Consequently, the quality of the translation of the survey materials into the various languages of the participating countries is an issue of the highest importance.

12. In particular, it is essential to ensure that the translation process in each country does not introduce biases likely to distort international comparisons. To reach this goal, the consortium has developed strict translation guidelines and all National Project Managers are required to submit all materials for translation verification. This applies to adapted materials as well as to translated materials.

13. The PISA Consortium has developed, for the translation verification, standard forms. It is mandatory that copies of these forms (where all indispensable deviations from the version in the source language must be described) accompany each of the translated/adapted documents when they are sent to the *PISA Consortium*.

Test Administration

14. It is essential that the study procedures are followed carefully to ensure that the tests are administered the same way in all of the participating countries. Failure to do so might invalidate the results of the study. Ensuring the security of the materials before, during and after the assessment, verifying and recording all information on the student tracking form, respecting the administration script and timing are of prime importance for the success of the data collection.

15. In particular, Test Administrators will contact School Co-ordinators to verify the information on the student tracking form, confirm the date and time of the testing session and organise the final arrangements for the session at the school. If materials are sent to the Test Administrators, they will check the received materials before the assessment. If materials are sent directly to schools, Test Administrators will be able to check the materials 45 minutes prior to the testing session. Test Administrators will organise the testing session according to the international script:

- a) Reading the directions and distributing the materials will take 10-15 minutes
- b) The assessment booklet is divided into two 1-hour parts. Students must be given exactly 1 hour for each of these two parts;
- c) Test Administrators are not allowed to answer student questions during the test session, except for questions about how to respond;
- d) Test Administrators may answer questions during the Student Questionnaire session for students who ask for clarification of meaning (a section of the Test Administrator Manual is provided for this purpose);
- e) A 5-20 minute break is suggested between the two parts of the Assessment Booklet and a longer break before beginning the Student Questionnaire session;
- f) The time devoted to the Student Questionnaire session will be determined later. It should be held after the achievement test and can be held on a different day; and

- g) Collecting the materials and ending the session will take 3-5 minutes.

Selection of Test Administrators

16. To minimise the burden on the participating schools, to establish the credibility of PISA as valid and as unbiased and to encourage uniformity in the administration of the testing sessions, the PISA Consortium has established the following criteria for the Test Administrator at a school:

- a) It is required that the Test Administrator not be the reading, mathematics, or science instructor of any students in the sessions he or she will administer for PISA.
- b) It is recommended that the Test Administrator not be a member of the staff of any school where he or she will administer PISA, and,
- c) It is preferable that the Test Administrator not be a member of the staff of any school in the PISA sample.

Training of Test Administrators

17. It is the policy of PISA that National Project Managers organise an in-person training session for Test Administrators. If exceptional circumstances prevent a in-person training session, Test Administrators will be trained by a video and National Project Managers will contact all Test Administrators by phone.

Security of the material

18. In order to protect test security, it is strongly recommended that the test booklets and student questionnaires be sent to the Test Administrators rather than to the schools. If there are compelling reasons for shipping them directly to the participating schools, then the National Project Manager must ensure that test security is not compromised. To do so, the secure instruments may be packaged in bundles that are secured with strapping tape or sealed in plastic so that it will be obvious to the School Quality Monitor if the package is opened inappropriately. Bundles must not be opened until 45 minutes prior to the beginning of the assessment session.

Testing session

19. The consortium requires that all testing sessions be organised within a six-week period. The National Target population definition for a country will not be approved until the National Project Manager has provided the testing period. It is recommended that assessment sessions take place in March or April 2003 for the Northern Hemisphere countries and must take place before October 2003 in the Southern Hemisphere countries. Testing windows must not fall in the first three months of the school year. As PISA assesses an age sample and not a class or grade sample, it is of prime importance that the testing windows, which was used to define the national target population, be not changed without the approval of the consortium.

20. National Project Managers are not allowed to introduce modifications in the assessment session script and instructions described in the Test Administrator Manual unless the Consortium approves this modification or unless the Test Administrator Manual explicitly allows modifications or adaptations. National Project Managers must ensure that:

- a) Test Administrators work with the School Co-ordinator to prepare the assessment session, including updating student tracking forms and identifying excluded students;
- b) No extra time should be given for the cognitive items. Extra time may be given for the student questionnaire, depending on the international and national options;
- c) No instrument will be administered before the two 1-hour parts of the cognitive session;
- d) Test Administrators record the student participation status on the student tracking forms and fill in the Session Report Forms;
- e) No cognitive instrument may be photocopied or lent by the Test Administrator to any person before the assessment session;
- f) Test Administrators return the material to the national centre immediately after the assessment sessions.

21. National Project Managers are encouraged to organise a follow-up session when more than 15% of the PISA sample was not able to attend the original testing session.

22. National Project Managers should check regularly with their Test Administrators on the progress of the assessment and to answer any questions the Test Administrators may have.

Quality monitoring

Site visits and training of school quality monitors

23. The consortium will implement a program of visits to National Centres approximately one month before the assessment sessions are due to start. The National Centre Quality Monitors will review all the components of the PISA project and will focus on the data collection procedures. National Project Managers are required to collaborate with the National Centre Quality Monitor and provide him/her with all the material requested.

24. National Project Managers are required to nominate School Quality Monitors no later than six weeks before the assessment is due to start, but preferably by three months before this time. The number of School Quality Monitors will be determined with each National Project Manager. National Project Managers are also required to arrange a room for the School Quality Monitor training session.

25. The PISA Consortium employs the School Quality Monitors. School Quality Monitors should 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. A School Quality Monitor should not be a member of the same institution where the National Project Manager works. A School Quality Monitor should not report to the National Project Manager in their day-to-day work.

26. A School Quality Monitor should:

- a) Be knowledgeable about PISA procedures and materials;
- b) Speak fluently the test language and either English or French;

- c) Have a background in education or assessment;
- d) Be sensitive to the needs of schools and students and feel comfortable about being in a school environment;
- e) Be able to represent PISA in schools diplomatically and positively.

27. National Project Managers will assist the PISA Consortium and the National Centre Quality Monitor teams and help the consortium to solve problems, which may occur with the School Quality Monitors.

Visits by School Quality Monitors

28. National Project Managers are required to provide a list of all participating schools to the School Quality Monitor with the following information:

- a) School name and complete address;
- b) School Co-ordinator name and complete address, including phone number;
- c) Test Administrator name and address (i.e., for the Test Administrator who will be responsible for the conduct of the assessment session in this particular school);
- d) Date and time of the assessment session.

PISA International Standard Indicators

29. School Quality Monitor reports will be summarised to describe the conditions in which the students were assessed. The consortium may use the reported information to exclude the data of particular schools.

Coding

Selection of the markers

30. The markers of PISA tests:

- a) must have a good understanding of mid-secondary level mathematics and science of the test language;
- b) understand secondary level students and the ways that students at this level express themselves.

31. National Project Managers are required to train the markers according to instructions and procedures which will be explained later.

Single marking

32. National Project Managers are required to use the single marking design developed by the consortium. The consortium must approve all modifications National Project Managers would like to introduce in the international design. Non-approved modifications may jeopardise the cognitive data scaling.

Multiple marking

33. To assess the quality of the marking, the consortium will designed a multiple marking study on a sub-sample for each booklet. This multiple marking study is mandatory and National Project Managers are required to submit multiple marking data at the same time as the other data. Countries must implement the multiple marking design specified by the consortium. The consortium must approve any modification National Project Managers may wish to introduce to the international design.

34. National Project Managers will be required to submit a sample of multiple marked booklets to the IPC for a cross-country validation study.

PISA International Standard Indicators

35. Reliability indices will assess the quality of the marking. Countries with low reliability coefficients may be requested to remark material or the data with low reliability coefficients may be excluded from the released data set.

36. The cross-country validation study is designed to detect systematic bias. Where necessary, countries may be requested to remark material or the data may be excluded from the released data set.

Data entry and data submission***Material to be submitted***

37. National Project Managers must send a hard copy of the complete set of instruments to the PISA Consortium (the cognitive booklets, the context questionnaires and the international option instruments) and are invited to provide an electronic version of this documentation on a CD.

38. Adaptation and Modification Forms must accompany the submission of student, school, IT and CCC questionnaires. The whole set of instruments and the adaptation and modification forms should be sent as soon as the instruments are printed.

39. National Project Managers have 12 weeks after the end of the testing sessions to code items, enter all data and submit all the documentation and files to the PISA Consortium. Data files must be submitted in KeyQuest.

40. Before submitting the database, National Project Managers are required to run the checking procedures and, if necessary, to correct the mistakes detected. Hard or electronic copies of the cleaning reports must be submitted with the database.

41. The database must include:

- a) The data for the cognitive booklets and context questionnaires;
 - b) The data for the international option instruments;
 - c) The data for the multiple marking study;
 - d) The student tracking forms and the list of schools.
42. If National Project Managers do not import the student lists into KeyQuest, they are required to provide hard copies of each student list.
43. Hard copies of the Student Tracking forms will also be sent to the IPC.
44. It is required that each PISA country submits one and only one data base, unless the consortium has given advance approval to the submission of more than one data base.

Data cleaning

45. National Project Managers must designate a data entry manager who will work actively with the PISA Consortium during the data cleaning. Responses to requests for information by the PISA Consortium must be provided within three working days of the request.
46. Unsolved student identification problems will lead to deletion of that record and other unsolved data errors will also lead to the deletion of the data.

PISA International Standard Indicators

47. The following characteristics of the sampling procedures will be used in evaluating the quality of the observed student sample and will be formally and adequately presented in the technical international report:
- a) PISA Coverage Index (that is the difference between the 15-year-old population and 15 year-old-population enrolled in educational institutions);
 - b) School-level exclusions;
 - c) Student-level exclusions;
 - d) The quality of the national school sample frame (exhaustiveness of the school listing, presence of invalid or duplicate listings as an indication of possible non-coverage and duplication biases, missing or inaccurate data used for stratification and the accuracy of the measure of size);
 - e) School and student sampling procedures;
 - f) School sample sizes;
 - g) School participation rates (unweighted school participation rates, before and after replacement);

- h) Student response rates (the weighted and unweighted student participation rates).