MAIN STUDY NATIONAL PROJECT MANAGER'S MANUAL

Final Version

December 2005

OECD
PISA

OECD Programme for International Student Assessment

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LIST OF EXHIBITS

ACRONYMS USED IN PISA

Acronym	Expansion	Comments
BAS	(Common) Booklet (Parts) Adaptation Spreadsheet	
BPC	Board of Participating Countries	Former name for PGB
CBAS	Computer Based Assessment of Science	
CBT	Country (of Birth) Table	
CNT	Country	
FOC	Final Optical Check	
FT	Field Trial	
FTP	File Transfer Protocol	Internet communication method
ICT	Information Communication Technology	
ID	Identification (number)	
IIC	Item Information for Cleaning	
IOP	International and National Options Form	
LNT	Languages Table	
MAS	Manuals Adaptation Spreadsheet	Formerly the NAF
MEG	Mathematics Expert Group	
MS	Main Study	
MSRV	Main Study Review	
NAF	National Adaptation Form	No longer used - cf. TAS
NAS	National Adaptation Spreadsheet	No longer used - cf. MAS
NC	National Centre	
NCQM	National Centre Quality Monitor	
NPM	National Project Manager	
pdf	Portable Document Format	Document file format
PGB	PISA Governing Board	
PISA	Program for International Student Assessment	
PQ	Parent Questionnaire	
PQM	PISA Quality Monitor	
PVS	Preferred Verification Schedule	
QAS	Questionnaire Adaptation Spreadsheet	
QEG	Questionnaire Expert Group	
REG	Reading Expert Group	
SA	School Associate	Combined TA/SC role
SC	School Coordinator	
SCQ	School Questionnaire	
SEG	Science Expert Group	
SEN	Special Education Needs	
SFKQ	Sampling Form KeyQuest	New for PISA 2006MS see p 46
SMP	Sampling Plan	
SPT	Study Programme Table	
SQ	Student Questionnaire	Label on STF (STQ elsewhere)
SR	Session Report (Form)	
STF	Student Tracking Form	

STQ	Student Questionnaire	(SQ on the STF)
TA	Test Administrator	
TAG	Technical Advisory Group	
TAS	Test Adaptation Spreadsheet	Formerly the NAS
TP	Translation Plan	
UH	'Une-Heure' (One-Hour) Booklet	

STQ   Student Questionnaire

TA   Test Administrator

CHAPTER ONE: INTRODUCTION

THE MAIN STUDY NATIONAL PROJECT MANAGER'S MANUAL

1.   This manual is a continuation of the National Project Manager's Manual released prior to the field trial, with a focus on the *Main Study Preparation and Implementation* phase of the PISA project cycle.

2.   At the end of 2005, two additional chapters will be provided to be added to this manual. The first chapter will provide details regarding the assembly and packaging of the assessment materials. This will include tables with the test booklet design, as well as the allocation of items to clusters and booklets. The second chapter will detail all aspects of the main study coding procedures. An appendix with coding sheets for the multiple coding activity will also be provided at this time.

3.   Because many acronyms referring to various documents and processes are used throughout the manual and the PISA project as a whole, a list of acronyms is provided at the start of this manual, following the Table of Contents.

4.   This manual seeks to describe all of the major activities of this phase, including:

- procedures that were implemented for the field trial that have been modified or updated in some way
- new procedures that are specific to this phase of the project

5.   The data collection activities of each country throughout the PISA 2006 testing cycle will ultimately be judged against the *Technical Standards for PISA 2006,* in order to determine the data for inclusion in the PISA 2006 dataset. Throughout the NPM manual, reference to the Standards will be made in the description of procedures.

CHECKLIST OF NPM ACTIVITIES

6.   The following is an activity checklist that may be modified to reflect each country's schedule of activities. You may wish to use this checklist to assist in monitoring study progress within your country.

7.   You will note that some activities will need to be done in a particular order and others can occur concurrently. The actual scheduling of these activities in a country will depend on resource availability and the dates for the assessment. As a guide, activities related to translation, adaptation, assembly, and printing of assessment materials can occur at the same time as those related to obtaining school co-operation and identifying the student sample. Hiring and training TAs may also occur at the same time as other activities.

Exhibit 1: Checklist of Activities

	Activity
	☐ **Review your national data collection plan**
	☐ Review national centre security arrangements
	☐ Review your national Field Trial Analysis Reports
🖅[1]	☐ Confirm your national implementation plan with ACER
🖅	☐ Confirm the print quality of your main study materials
	☐ Review strategy for implementing the parent questionnaire[2]
	☐ **Prepare school sampling forms and sampling frame**
🖅	☐ Submit school sampling forms to Westat
	☐ **Obtain school co-operation**
	☐ Arrange necessary permissions for approaching schools
	☐ Prepare promotional and publicity material
	☐ Identify SC
	☐ Establish assessment date
	☐ **Attend the NPM meeting**
	☐ **Prepare Assessment Instruments and Manuals**
	☐ Organise the revision of national material against the new source versions
	☐ Provide technical and administrative support during translation-verification
	☐ Comply with Translation Guidelines
	☐ Revise manuals to reflect national plan
🖅	☐ Submit a filled PVS to the verification coordinator
🖅	☐ Submit proposed adaptations to common booklet parts to your verification coordinator
🖅	☐ Submit proposed manual adaptations to ACER for negotiation
🖅	☐ Submit national manuals and agreed adaptations to your verification coordinator
🖅	☐ Submit proposed questionnaire adaptations to ACER for negotiation
🖅	☐ Submit national questionnaires and agreed adaptations to your verification coordinator
🖅	☐ Submit test units and proposed adaptations to your verification coordinator

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[1] The symbol 🖅 is used as a reminder that certain materials are to be submitted to the consortium.

[2] If implementing this international option

- ✉ ☐ Construct booklets, questionnaires and coding guides, incorporating verification feedback and submit for final optical check (FOC)
  - ☐ Make final revisions based on feedback from FOC
  - ☐ Organise a final proofread of your materials prior to printing

☐ **Select Student Samples**

- ☐ Install main study version of KeyQuest
- ☐ Send instructions for preparing the List of Eligible Students to schools
- ☐ Receive lists back from schools
- ☐ Use KeyQuest to select student sample and generate Student Tracking Form
- ☐ Send Student Tracking Form to schools

☐ **Hire and train TAs**

☐ **Co-ordinate activities of TAs**

☐ **Oversee assembly and printing of assessment booklets and questionnaires**

- ☐ Assemble booklets and questionnaires
- ☐ Print PISA materials
- ✉ ☐ Send hard copies, pdf and word files of all assessment materials (including coding guides) to ACER for archive

☐ **Oversee packing and shipping of all materials**

☐ **Oversee receipt of materials from schools**

☐ **Review coding and data entry operations**

☐ **Organise for staff to attend the PISA coder training session**

☐ **Oversee coding and data entry**

- ☐ Recruit coders
- ☐ Organise coding
- ☐ Process booklets
- ☐ Code questionnaires

✉ ☐ **Submit KeyQuest database and related documents to ACER**

☐ **Have a data manager available to respond to queries following data submission**

☐ **Archive your main study materials**

☐ **Complete the School Tracking Form (Sampling Form 12) with the participation status of schools**

✉ ☐ **Complete Main Study Review and submit to ACER**

✉ ☐ **Submit a sample of booklets to the consortium for the International Coding Review**

8.   In addition to the NPM manual, the Consortium provides a number of other documents that describe aspects of the PISA 2006 Main Study.

9.   Exhibit 2 below briefly summarises these documents.

10.   Where more details about specific activities are contained within one of these other documents, a reference to that document is provided within this manual.

11.   This collection of documents and manuals are located on the 'MS_Resources 2006' page of the PISA website (http://pisaweb.acer.edu.au). It is recommended that hard copies of these documents be kept together in a binder for easy reference.

12.   Once released, changes to documents and manuals will be made only when absolutely necessary. You will be notified of any such changes.

Exhibit 2: Summary of key documents, PISA 2006 Main Study

Technical Standards for PISA 2006 This document details the standards for the collection of data for PISA 2006. 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.
PISA 2006 Main Study National Project Manager's Manual This manual
PISA 2006 Field Trial National Project Manager's Manual The field trial version of this manual
Logistics and communication protocols This document summarises the organisational structure of PISA, and discusses the protocols of communication between the groups and stakeholders of the project.
PISA 2003 Assessment Framework - Mathematics, Reading, Science and Problem Solving Knowledge and Skills The frameworks used for the development of Reading and Mathematics literacy items.
PISA 2006 Science Framework The framework, revised for PISA 2006, used for the development of Science literacy items.
PISA 2006 Contextual Framework The framework used for the development of questionnaire items.
PISA 2006 School Sampling Preparation Manual This manual describes the sampling procedures and guidelines for completing the required sampling forms for the main study..

Exhibit 2: Summary of key documents, PISA 2006 Main Study - continued

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PISA Translation Guidelines

This document describes the guidelines for the translation, adaptation and verification tasks associated with the preparation of national instruments and manuals.

PISA 2006 Main Study School Coordinator's Manual

This manual describes the procedures to be followed at the school level.

PISA 2006 Main Study Test Administrator's Manual

This manual describes the procedures to be followed in administering the PISA test and questionnaire.

PISA 2006 Main Study School Associate (Combined Test Administrator and School Coordinator) Manual

A manual that combines the Test Administrator and School Coordinator manuals. To be used in countries where the same person undertakes both roles.

KeyQuest Manual

This manual describes the functionality of the student sampling and data entry software, KeyQuest.

Data Management Manual – PISA 2006 Main Study

This manual describes data entry procedures specific to the PISA 2006 Main Study.

Coding Guides Reading, Mathematics and Science– PISA 2006 Main Study

These documents will be released prior to the February training meeting. They contain instructions for the coding of material completed as part of the PISA assessment.

Coding Recruitment Kit

Material from previous PISA assessments to assist with the recruitment of coders for the PISA assessment.

COMMUNICATIONS AND THE PISA WEBSITE

13.   The Field *Trial NPM Manual* provided an explanation of communication protocols and procedures, including reference to the more substantive document, *Logistics and Communication Protocols*. It also provided an explanation of the structure of the PISA website, and the National Profile pages where documents related to your national implementation (your 'national milestone documents') are placed, and where the progress of these documents can be tracked.

14.   The website pages that will be most useful for the implementation of the main study are listed below.

- **MS_Resources 06** – that contains documents such as manuals, adaptation forms, as well as empty template milestone documents.
- **MS_Instruments 06** – that contains the source versions of all the test and questionnaire instruments to be implemented in the main study.

- **MS_CBAS_Resources 06** – that contains the source versions of the CBAS paper based test and documents such as manuals, adaptation forms, errata and so on.
- **Latest 06** – that contains the documents from the MS_Resources 06 and MS_Instruments 06 pages ordered by date of dispatch.
- **Key Dates –** lists all the Key Dates for the PISA project including meeting dates.

15. The current list of national milestone documents identified for the main study is shown in Exhibit 3 below. Note that some of these documents will in general be carried over from the Field Trial (unless the NPM requests an update), some are field trial documents that you will be asked to confirm or update, and some are new documents specific to the main study. This distinction is clarified in the 'Notes' column of Exhibit 3.

16. Note that one member of the consortium is listed as a contact in relation to each milestone document. However for several of these documents a number of consortium staff will be involved, and a person other than the contact listed below may be your primary contact. It may also be the case that your primary contact is out of the office for a period of time. For these reasons, we recommend that you copy pisa@acer.edu.au into all communications with the consortium, or at the very least until communication with your primary contact on a particular task have been established. All communications to pisa@acer.edu.au will be read and directed to the appropriate consortium staff member.

17. If contact with the relevant consortium staff has been firmly established, and you decide that it is not necessary to copy pisa@acer.edu.au into your communications, we strongly recommend that you at least copy pisaarchive@acer.edu.au. Communications sent to pisaarchive@acer.edu.au are saved directly into the consortium email archive without being read. However, this does allow for email communications to be traced back if necessary. Communications sent to pisa@acer.edu.au are automatically saved to the consortium email archive and so if sending to pisa@acer.edu.au, it is not necessary to also save to pisaarchive@acer.edu.au.

> **If in any doubt about who to contact within the consortium, direct your mail to pisa@acer.edu.au**

18. To assist the Consortium in managing the volume of material, it would be helpful if you include at the start of the subject line of the e-mail the following text: **"PISA – [Document Code] – [Country Code]"** (see **Exhibit 3** for Document codes)

Exhibit 3: National Milestone Documents PISA 2006 Main Study

Document Code	Milestone Document	Consortium Member e-mail address	Information to be placed on information page in National Profile	NPM Manual Reference	Notes
-	National Centre Contact Details	Wei Buttress pisa@acer.edu.au	All contact information		Updated upon request from NPM
ADMIN	Variations to standard PISA administrative arrangements - PISA 2006	Wei Buttress pisa@acer.edu.au	Adjudicated regions; Oversamples Sub regional analyses and reports Additional verification work Additional Quality Monitoring Other variations to standard PISA administrative arrangements		Updated upon request from NPM
TP	Translation Plan	Beatrice Halleux halleux@acer.edu.au		Appendix 2 of the *Field Trial NPM Manual*	Updated upon request from NPM
SPT	National Study Programme Table	Eveline Gebhardt pisa@acer.edu.au		Paragraph 29	Field trial table to be confirmed or updated by 30 Nov.

Exhibit 2: National Milestone Documents PISA 2006 Main Study - continued

Document Code	Milestone Document	Consortium Member e-mail address	Information to be placed on information page in National Profile	NPM Manual Reference	Notes
LNT	Languages Table (Languages Spoken at Home)	Alla Routitsky pisa@acer.edu.au		Paragraph 29	Field trial table to be confirmed or updated by 30 Nov.
CBT	Countries Table (Countries of Birth)	Alla Routitsky pisa@acer.edu.au		Paragraph 29	Field trial table to be confirmed or updated by 30 Nov
IOP	PISA 2006 Main Study: International and National Options	Martin Murphy pisa@acer.edu.au	All National and International Option Information	Paragraph 30	**NEW DOCUMENT FOR MS** To be confirmed by 30 Nov.
PRINT	Statement on print quality of test materials - PISA 2006 FT	Wei Buttress pisa@acer.edu.au		Paragraph 31	**NEW DOCUMENT FOR MS** To be confirmed by 30 Nov.
	Main Study School Sampling Forms	Sheila Krawchuk krawchs1@westat.com		Paragraph 33	**NEW DOCUMENTS FOR MS** The schedule for the submission of these forms was negotiated with Westat and is recorded on your national profile pages.
IIC	Item Information for Cleaning	Alla Routitsky pisa@acer.edu.au		Paragraph 248	**NEW DOCUMENT FOR MS** Submitted at the time that you submit your KeyQuest database, 12 weeks after the last date of testing
	Main Study Database	Alla Berezner pisa@acer.edu.au		Paragraph 250	12 weeks after final date of testing in your country.

Exhibit 2: National Milestone Documents PISA 2006 Main Study - continued

Document Code	Milestone Document	Consortium Member e-mail address	Information to be placed on information page in National Profile	NPM Manual Reference	Notes
MSRV	Main Study Review	Martin Murphy pisa@acer.edu.au		Paragraph 254	**NEW DOCUMENT FOR MS** Submitted 16 weeks after the last date of testing
PVS	Preferred Verification Schedule - PISA 2006 Main Document	Verification coordinator[3]	PVS dates	Paragraph 51	**NEW DOCUMENT FOR MS** To be confirmed by 30 Nov.
MAS	Manuals Adaptation Spreadsheet	Martin Murphy pisa@acer.edu.au		Paragraph 87	**NEW DOCUMENT FOR MS** Formerly the 'NAF'. Schedule for negotiating the MAS as per agreed PVS.
BAS	Common Booklet Parts Adaptation Spreadsheet	Verification coordinator		Paragraph 109	**NEW DOCUMENT FOR MS** Schedule for negotiating the BAS as per agreed PVS.
TAS	Test Adaptation Spreadsheet	Verification coordinator		Paragraph 119	**NEW DOCUMENT FOR MS** Formerly the 'NAS'. Schedule for negotiating the TAS as per agreed PVS.
QAS	Questionnaire Adaptation Spreadsheets (QAS)	Maurice Walker pisa@acer.edu.au		Paragraph 143	**NEW DOCUMENT FOR MS** Schedule for negotiating the QAS as per agreed PVS.

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[3] Verification coordinator for English language materials is ACER, and cApStAn for non-English language materials. Refer to Exhibit 18 and Exhibit 19 for contact names.

Exhibit 2: National Milestone Documents PISA 2006 Main Study - continued

Document Code	Milestone Document	Consortium Member e-mail address	Information to be placed on information page in National Profile	NPM Manual Reference	Notes
	Hard copies of all test and questionnaire instruments as used in the field (Not photocopies of these materials)	Wei Buttress pisa@acer.edu.au		Paragraph 157	Submitted as soon as possible after printing.
	Electronic versions of final (post-FOC) versions of ALL Materials used in the main study.	Wei Buttress pisa@acer.edu.au		Paragraph 157	Submitted as soon as possible after printing.

CHAPTER TWO: PRELIMINARY MAIN STUDY PREPARATION ACTIVITIES

> **Do not hesitate to contact ACER if you have any questions about how to apply the procedures described in this manual in your country.**

REVIEW YOUR NATIONAL DATA COLLECTION PLAN

REVIEW NATIONAL CENTRE SECURITY ARRANGEMENTS

19.   Strict confidentiality when handling PISA material is vital for protecting the integrity of the PISA project. This includes test items, draft questionnaires, data under embargo, and draft material provided to national centres for feedback and comment.

20.   If in doubt about the security status of any PISA material, seek confirmation from the Consortium by emailing pisa@acer.edu.au.

21.   You should review the security arrangements that you established for the field trial, with a view to any procedural improvements that may be required. For example you may have received feedback via the session reports completed by test administrators that have implications regarding test security.

22.   As the main study is a substantially larger exercise than the field trial, new processes may be necessary for certain activities, and the security implications of these processes need to be considered. For example, compared to the 'convenience sample' of the field trial, the main study will involve more test administrators, approaching more schools. Refinements to procedures may be required for organising test administrator training, monitoring the activity of test administrators, transporting materials, and so on.

23.   It is a requirement that formal confidentiality arrangements be established with people who are provided access to the secure material. This includes staff at the national centre, sub-contracted staff (e.g. translators, coders, data entry staff) and sub-contracted organisations (e.g. printers).

24.   Appendix 1 provides a sample confidentiality form that can be modified as required and used for the purpose of formalising confidentiality arrangements.

25.   You should exercise direct supervision and control of confidentiality arrangements for their national centre.

26.   You may also need to consider confidentiality requirements at the national level. For example, legislative requirements related to student privacy.

27.   The PISA Standard relating to security of material is shown in Exhibit 4 below.

Exhibit 4: Security of PISA materials, PISA Standards

> **PISA Standard 8.1**
>
> PISA materials designated as secure must be kept confidential at all times. Secure materials include all test materials, data, and draft materials. 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.

REVIEW YOUR NATIONAL FIELD TRIAL ANALYSIS REPORTS

28.   You will receive a set of reports describing the main results from the field trial. Consideration of these reports will be particularly important as you begin preparing your items for the Main Study. This is explained in detail in Chapter 3 of this manual.

CONFIRM YOUR NATIONAL IMPLEMENTATION PLAN WITH ACER

Your national study programme table (SPT), Country of Birth table (CBT) and Language Table (LNT)

29.   It is possible that some updates will be required to the following tables that were agreed prior to the Field Trial. Shortly before the Mildura meeting, the Consortium will contact each national centre to finalise these tables for the main study.

- Study Programme Table (SPT);
- Language Table (LNT);
- Country Table (CBT).

YOUR STATEMENT OF PROPOSED NATIONAL AND INTERNATIONAL OPTIONS

30.   The Consortium will also be in contact with you regarding your plans with regard to proposed National and International Options for the Main Study. You will be asked to complete an updated IOP form to record these proposed options for the main study, and return this to the consortium for agreement.

Exhibit 5: Agreement of national options; Order of administration of national options

> **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.
>
> **Standard 13.1.** National Options must be agreed upon … before 1 December 2005 for the Main Study. (Standard 7.1)

CONFIRM THE PRINT QUALITY OF YOUR MAIN STUDY MATERIALS

31.   The Consortium will review the copies of your field trial test and questionnaire instruments that you submitted, and will be in contact with you to negotiate your *Statement of Print Quality* for the main study. If there were no issues concerning the print quality of the field trial instruments, you will be asked to confirm that your main study instruments will have at least the same level of print quality. If there were concerns regarding the quality of your field trial instruments, these concerns will be discussed with you, and you may be asked to submit a print sample to be used as the basis for negotiating the quality of your main study instruments. PISA Standard 10.1 relates to the print quality of the PISA student assessment material.

Exhibit 6: Print Quality, PISA Standards

> **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.
>
> - the printed sample must include the cover and selected items as specified in the PISA operations manuals (See Note 1), alternatively, booklets submitted to the consortium for previous cycles can be used for the purpose of agreeing on printing quality.

REVIEW YOUR STRATEGY FOR IMPLEMENTING THE PARENT QUESTIONNAIRE [4]

32.   Review your approach to implementing the parent questionnaire (international option) in the field trial and consider any improvements that could be made. The NPM meeting in Mildura will be an opportunity to discuss successful strategies for maximising the response rate to this questionnaire.

NEGOTIATE YOUR MAIN STUDY SCHOOL SAMPLING PLAN

33.   You will work with WESTAT in order to prepare your Main Study Sampling Plan. The PISA standards regarding the target population are shown in Exhibit 7 below. These are discussed in detail in the *School Sampling Preparation Manual*.

Exhibit 7: Target Population, PISA Standards

> **Standard 1.1.** The PISA Desired Target Population must be agreed upon.
>
> **Standard 1.7.** The PISA Defined Target Population must cover 95 per cent or more of the PISA 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 PISA 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 PISA Desired Target Population, and
>
> - within school exclusions must be less than 2.5 per cent of the PISA Desired Target Population.

34.   The standards regarding school sampling are shown below in Exhibit 8 and discussed in detail in the *School Sampling Preparation Manual*.

Exhibit 8: School and Student Sampling PISA Standards

> **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.

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[4] For those implementing this international option.

> **Standard 1.9.** The school sample size must be a minimum of 150 schools or all schools that have students in the PISA Defined Target Population.
>
> **Standard 1.10.** The target cluster size is typically 35 PISA eligible students which upon agreement can be increased or reduced to a number not less than 20.

35. Part of the preparation of your school sampling plan will be the identification of your testing dates for the main study. These were initially proposed during the field trial, but will be confirmed at the main study stage. As PISA eligibility is linked to your testing dates, and as the scheduling of many activities is also linked to your testing dates, it is very important that you immediately inform the consortium of any changes to your agreed testing dates. Exhibit 9 below shows the PISA Standard with regard to the testing period.

Exhibit 9 PISA Standards - Main Study Testing Period

> **Standard 1.3.** The testing period must:
>
> - be no longer than 6 consecutive weeks unless otherwise agreed upon,
>
> - not coincide with the first six weeks of the academic year unless otherwise agreed upon, and
>
> - be inside the testing window.

36. The *School Sampling Preparation Manual* provides paper versions of the sampling forms to record the required sampling information for PISA. These forms are also available for download from the PISA website.

37. As discussed in the *School Sampling Preparation Manual*, some of the sampling forms will need to be prepared by the NPM and sent to the Consortium for review, while others will be first prepared by the Consortium and sent to the NPM for review.

38. A schedule for submitting the main study sampling forms has been negotiated with each national centre. This schedule appears on the national centre information page on the PISA website.

39. Following agreement, each sampling form will be located on the national profile web pages of the PISA website.

OBTAIN SCHOOL CO-OPERATION

40. Your work in ensuring the co-operation of the sampled schools and the students sampled from those schools is vital for ensuring that your school and student response rates will meet the PISA Standards (refer to the discussion of school and student response rates in Chapter 8).

41. Procedures for securing school co-operation will vary from country to country. In some countries, participation is not a problem. All selected schools are expected to participate and do so. In other countries, it is very difficult to get schools to participate. Reasons for these difficulties vary from concerns about too much testing and loss of instructional time, to the burden on students, teachers, and school staff.

42. The following suggestions may help to assure school co-operation:
   - **Develop informational materials.** These materials should address the particular concerns of the educational system within the country. Although international materials provide useful information and examples, each NC needs to develop a strategy for addressing the special needs and concerns of its own system.

- **Develop a strategy to notify appropriate authorities.** In many systems, there is an established hierarchy of authority that should be contacted in a defined order. Letters, informational materials, telephone calls and personal visits are all useful ways for contacting the appropriate authorities. Some of these approaches may be more effective than others with different levels of authority. It is important to develop a plan or strategy that defines how contacts will be made and what information will be provided to each of the different levels.
- **Secure permission.** In some systems, it is not enough to notify the appropriate authorities; permission must be obtained. This would include permission from one governmental level to contact another as well as permission from a governing board to contact individual schools. Obtaining permission can be time-consuming. It is important to begin the process of securing co-operation early enough so that all necessary permissions may be obtained.
- **Decide whether to use incentives.** In other studies and in previous cycles of PISA countries have tried a variety of incentives, including the following: cash payments, instructional materials, study reports, certificates of appreciation, posters and banners. NPMs should decide whether incentives can or should be used in their countries.
- **Identify a School Co-ordinator (SC).** An important part of securing the co-operation of the selected school is to identify someone within the school who will act as the SC. The SC acts as the liaison between the school and the project. This person is very important to the success of the project. In some studies the SC are paid a small honorarium in appreciation for their time and effort.
- **Share approaches that work.** Sharing information about approaches that work is an important part of participating in PISA. A display of promotional material will be set up at the Mildura NPM meeting and you are strongly encouraged to contribute to this display. Example letters, informational materials, and general descriptions of successful approaches will be of interest to other NPMs and to the Consortium as plans for the main study are developed.

ATTEND THE NPM MEETING IN MILDURA

43. The NPM meeting in October will review various aspects of the field trial in order to identify areas of improvement for the PISA 2006 main study and will discuss the Consortium's plans for the main study. It is also a valuable opportunity to discuss issues and concerns, and to share ideas with other NPMs.

PREPARE THE MAIN STUDY TEST INSTRUMENTS AND SURVEY MATERIAL

44. You should arrange for the preparation of the Main Study assessment booklets, questionnaires and manuals. You will need to coordinate the work with the consortium on the agreement of adaptations and the verification of the national materials. Chapter 3 of this manual describes in detail the processes you should follow in preparing your materials. A detailed schedule of the instrument preparation activities is provided within this chapter.

NOMINATE PISA QUALITY MONITORS (PQMS)

45. For the main study, the Consortium will appoint PISA Quality Monitors who will observe the administration of the PISA test in a few randomly selected schools in each country. At the Mildura NPM meeting, this process will be explained to you in detail. Following the NPM meeting you will be requested to nominate suitable people from your country to act in this role.

46. Exhibit 10 below lists the PISA Standards in relation to PISA Quality Monitors.

Exhibit 10: PISA Quality Monitors, PISA Standards

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 be sufficiently fluent in either English or French to communicate effectively with the Consortium and to effectively implement required procedures,

- 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.

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 adjudicated entity 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 Coordinator's 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,

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

CHAPTER THREE: PREPARATION OF TEST INSTRUMENTS, MANUALS AND MATERIALS

47.   This chapter describes the steps to be taken in the preparation of the assessment materials for the Main Study. These steps are summarised in Exhibit 11 below. The material to be revised and the steps to take for the revision of the material appear in chronological order.

Exhibit 11: Main steps in the development of the Source and National versions of the instruments for the PISA 2006 Main Study.

August 22

Dispatch of the link material together with instructions for preparing this material and the TAS.

September 28 to October 6

The PISA Reading, Mathematics and Science Expert groups meet in Melbourne to review the results of the FT items analyses together with the test developers, they propose a list of items to be retained for the MS.

October 3

Dispatch of:

* the TA, SC and SA manuals. It is recommended to wait for the post Mildura version before starting the manual revision.

* the Preferred Verification Schedule (PVS). You are encouraged to submit to cApStAn a draft PVS to inform the consortium of your testing dates, the language(s) that will be used in their assessment, and the timeline they foresee for the revision and verification of your national version(s) *prior to* the Mildura meeting. If this is not possible this draft will need to be provided at the Mildura meeting.

October 12

Dispatch of the source versions of the Common Booklet Parts together with the BAS. You are encouraged to revise and send them to cApStAn for verification together with the completed BAS.

You will also receive the list of selected items.

October 24 to 28

NPM meeting in Mildura. Discussion of the material selected for use in the Main Study, and of the Main Study procedures.

End of October to November 28

You start preparing your national material. It is strongly recommended that you begin with the following activities:

* Retrieve the latest FT national version of the PISA 2006 items that were selected for the MS from your PISA 2006 FT booklets and of their scoring instructions from your final Coding Guides. Use your national *Field Trial Analysis Reports*, to check all retained items that appeared to have flaws in order to identify possible remaining translation or adaptation mistakes.

(cont. next page)

- Revise the national SC and TA manuals (or the combined SA manual) according to the source that will be sent after the Mildura meeting and send the *Manual Adaptation Spreadsheet* (MAS) to ACER for approval. Once approval of the manual adaptations has been obtained, submit your manuals and approved MAS to your verification team. These processes are completed according to the PVS.

November 28

Dispatch of the new science units together with the Test Adaptation Spreadsheet.

Begin implementing all the revisions and possible corrections in documenting the new changes in the TAS.

December 12

Dispatch of the Questionnaires with the *Questionnaire Adaptation Spreadsheet,* as well as all item clusters and booklets.

Begin revising your Questionnaires according to the source and send the completed QAS to ACER for approval. Once agreement has been reached between you and the Consortium about the questionnaire adaptations, submit the Questionnaires and agreed QAS to your verification team. These processes are completed according to timeline in the PVS.

From December 19

After implementing all changes and revisions needed in your national versions of the Test units, submit your material in unit format to the verification team together with the completed TAS. Once the material has been verified, item clusters should be formed and perfected, and then test booklets should be formed from the clusters. The booklets are then submitted again to the verification team for Final Optical Check. These processes are completed according to the timeline in the PVS.

January 30

Dispatch of Coding guides and Coder training material.

February 20 to 24

International coder training meeting

March 18

You receive (if needed) the list of any last minute changes implemented in the Coding Guides as a results of the Coder Training. You finalise your national version of the Coding Guides and submit them for FOC according to the explanations given in the paragraph 129 of this chapter. This process will be completed according to the timeline in the PVS.

MATERIALS TO BE REVISED.

48.   The MS material to be revised will include:

- The *PISA 2003 Reading, Mathematics* and *Science Link items* retained from the PISA 2003 Main Study material together with the corresponding *Test Adaptation Spreadsheet* (TAS)
- Main Study versions of the School Co-ordinator, Test Administrator Manuals and School Associate manual, together with *Manuals Adaptation Spreadsheets* (MAS).
- Main Study versions of the School and Student Context Questionnaires, and ICT and Parent optional instruments, together with Questionnaire Adaptation Spreadsheets. Note that no rotation will be used in the Main Study for the *Student*

Questionnaire, which will have only one form, instead of forms A, B, C, D and E as used in the FT.

- Main Study versions of the test materials, i.e. the *PISA 2006 Science* items that will be selected from the FT material, together with *Test Adaptation Spreadsheets(TAS)*.

49.   The test material will be provided in three formats :

- "unit" format (units containing stimulus, questions and coding instructions). This version of the material will include track changes to expose all alterations made to items since the final dispatch of the FT items and final Coding Guides (the post-Marbella versions);
- "cluster" format (i.e. as groups of items from which booklets will be formed using the rotation design of the study);
- "booklet format" (i.e. as master copies of the final test booklets).

NEGOTIATE A VERIFICATION SCHEDULE WITH THE CONSORTIUM

50.   A team of translators appointed and trained by the PISA Consortium carries out the verification of all PISA materials. As in the FT, the co-ordination of all international verification activities involving non-English materials will be undertaken at cApStAn (pisa.verif@capstan.be), and the verification of English materials will be undertaken at ACER. A list of contact names responsible for the respective verification tasks is provided at the end of this chapter.

51.   A *Preferred Verification Schedule* form *(PVS)* is dispatched together with this manual. It is **required** that a provisional copy of this schedule be filled in and submitted to the Consortium at the Mildura meeting in October. Note that you are encouraged to submit to cApStAn a draft PVS with your testing dates, the language(s) that will be used in your assessment, and the timeline you foresee for the revision and verification of your national version(s) *prior to* the Mildura meeting. In case you are still uncertain about your national testing window or other aspects of your national timelines, please indicate the most probable dates. The PVS is a starting point, intended to enable the verification team to give their staff some idea of the periods when they are likely to receive your material for verification. It can be re-negotiated in case you need to change your timelines, but it is essential both for your work and the work of your verifier that a provisional schedule be submitted as early as possible.

52.   When filling in the PVS, please consider (i) the time available between the moment when the source versions of the FT materials will be circulated and the moment when your assessment instruments should be ready for use in your schools; (ii) the time needed by your national team to revise your national version of the instruments and to implement all changes needed; (iii) the time needed to seek agreement with ACER about all of the adaptations included in your Questionnaires and Manuals, as well as for possible adaptations in the test materials that may be more "substantive" rather than purely linguistic adaptations, and therefore would require approval from the test developers; and (iv) the time needed by the international verification team to check the equivalence of your national version against the source versions.

53.   Based on previous experience, the verification exercise for both the Test material and Questionnaires newly developed for the PISA 2006 MS should usually start about 12 weeks before the beginning of your testing period, that is:

The verifier will need about four weeks to verify your material in unit format;
You will need about two weeks to implement the verifier's edits and to assemble the material into clusters, then into booklets;
The verifier will need one week to receive hard copies or pdf files of your final booklets and Questionnaires, perform a Final Optical Check (FOC) and return to the National

Centre a FOC report detailing possible residual errors that must be corrected before the materials go to press.

You will need about 5 or 6 weeks to implement the edits from the FOC, to have your material printed and to dispatch it to the schools.

54.   The process will be smoother if you send the materials for verification in two or three batches; if you do not forget to join the related *Adaptation Spreadsheets*; and if you make an early start with the revision of Questionnaires (which require that agreement is reached with the Consortium regarding the QAS prior to the verification).

LANGUAGE INFORMATION

55.   In the PVS, please also indicate whether you intend to use national versions in more than one national language, and if so, which languages will be used in your assessment

56.   The following PISA Standard relates to the test languages used in PISA.

PISA 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, a choice of language can be provided, with the decision being made at the student, school, or National Centre level. Agreement with the Consortium will be subject to the principle that the language alternatives provided should be languages that are common in the community and are common languages of instruction in schools in that country. In all cases the choice must be made prior to the administration of the test, and the entire test must be taken in the chosen language.

Exhibit 12: Test Languages, PISA Standards

57.   If, in your country, the school sample for the Main Study includes schools that use a language of instruction for which no national version was developed for the Field Trial, you will need to produce one for the Main Study. This may be achieved by implementing national adaptations in one of the existing PISA versions: English, French, or one of the 36 other languages used by countries that participated in the PISA 2006 FT, that is Arabic, Azeri, Bahasa Indonesian, Basque, Bokmål, Bulgarian, Catalan, Chinese, Croatian, Czech, Danish, Dutch, Estonian, Finnish, Galician, German, Greek, Hebrew, Hungarian, Icelandic, Italian, Japanese, Korean, Kyrgyz, Latvian, Lithuanian, Polish, Portuguese, Russian, Serb (Ekavian), Serb (Yekavian), Slovak, Slovene, Spanish, Swedish, Thai, Turkish. Please contact the consortium if you plan to do this.

58.   If no previous PISA version is available, you will have to produce a national version in the new target language. In doing this, follow the *Instructions for the Translation of the PISA Materials* included in Chapter 6 of the *PISA 2006 NPM Field Trial Manual*.

59.   Please contact the consortium for any special cases (e.g. school systems with bilingual schools).

60.   It is important to note that all national versions used in schools attended by more than 5% of your national target population should be submitted to the Consortium for verification. We expect that national versions used in schools attended by only 5% or less of the sampled students will be verified by the National Centre. NPMs who have reached agreement with the Consortium regarding the administration of PISA in additional adjudicated entities should discuss with the Consortium the requirements regarding the verification of language versions.

61.   The ENG and FRE source versions of the PISA 2003 Reading, Mathematics and Science Link items were dispatched on 22nd August and are available on the PISA website. These units will not undergo further modifications.

COUNTRIES THAT PARTICIPATED IN THE PISA 2003 MAIN STUDY

62.   Countries that participated in PISA 2003 were requested to submit a sample of units to cApStAn by mid-September.

63.   These units are:

For Reading: R067 *Aesop* and R111 *Exchange Students*
For Science: S114 *Greenhouse* and S304 *Water*
For Mathematics: M155 Population Pyramids, M462 The Third Side, M442 Braille and M828 Carbon Dioxide

64.   If you have not done so already, please "reconstruct" these units in item pool format by using your final test booklets and your final coding guides from PISA2003 MS. Alternatively, for the science link units you can use the FT06 versions and delete the attitude items – either way, you must then revise the double-digit scoring in S114Q04 and S268Q02.

65.   Once these units will be checked you will receive a confirmation that your material is up-to-date. In case your material proves NOT to correspond with your final versions you will receive further instructions on how to solve this issue (depending on its nature).

66.   Cognitive items administered in previous cycles of PISA and selected for linking must **not** undergo changes or new adaptations. This point is the subject of PISA Standard 4.1, refer to Exhibit 13 below. Any change introduced in order to correct spelling or grammar errors, or because the item had poor statistics, would result in that item no longer being considered as a link item. If you think the changes are important, then you may make the judgment that having better functioning items for the current assessment is worth more than the value of the current items being used for linking. In that case you will need to list these changes in the TAS for link items and to send the concerned units together with the TAS to the verification team for verification/approval of these changes.

Exhibit 13: Link items, PISA Standards

> **PISA Standard 4.1**
>
> Cognitive items administered in previous cycles of PISA and selected for linking must not undergo changes or new adaptations.
>
> **Note:** The quality assurance requirements for this standard apply to instruments that are in an assessment language used as a language of instruction for more than 5 per cent of the target population.

NEW COUNTRIES THAT DID NOT PARTICIPATE IN PISA2000 NOR IN PISA 2003

67.   Additional Maths units that have not been field trialled need to be translated following the translation guidelines and the agreed Translation Plan as for the FT material. Recording of the adaptations would be made in the corresponding worksheet in the TAS for link units, following the same process as in the FT. The verification will take place according to the PVS you will negotiate with cApStAn and the Consortium.

68.   For the link units that have been field-trialled in 2005, new countries will need to assemble and send the "link" units for verification together with the TAS (test adaptation spreadsheet) that was provided with the link units in August. It is strongly recommended that the new PISA countries re-construct a national version of the link units by cutting and pasting from their FT booklets and related Coding guides, and then checking them against the ENG and FRE source versions. In addition, you will need to review the results from your *Field*

Trial Analysis Reports in order to identify and correct possible translation flaws that went undetected during the translation process. Since in these countries no anchoring with the PISA 2003 data will be needed, you will have somewhat more freedom to improve your version – though still taking in account the general principle that "*if it ain't broken, don't fix it*" (i.e., unnecessary changes made in items that worked well in the FT may result in unexpected new bugs rather than in improvements).

69. The material should be submitted for verification in unit format, together with the related *TAS*. Note that the *TAS* should be sent directly to the verification team, and does not require prior approval by ACER. Please document in the *TAS* all changes that you intend to implement in each test unit. Changes that merely reflect amendments made by the test developers in the source versions do not need to be documented. Also indicate in the spreadsheet any possible 'new' adaptations.

70. **Countries NOT testing in English** do **NOT** need to re-enter the national adaptations that were already approved for the FT. However, **countries testing in English** do need to re-enter the national adaptations that were already approved in the FT with the mention "approved for the FT".

71. The verification can only begin once the completed TAS corresponding to the material sent has been received.

NEW COUNTRIES THAT PARTICIPATED IN PISA+ BUT NOT IN PISA 2003

72. For these countries, the procedure to follow is as explained above for new countries EXCEPT for the Reading material. For Reading, you will have been asked to send a sample of two units to cApStAn by mid-September

73. The two Reading units to be submitted are: R067 *AESOP* and R111 *Exchange Students*.

74. Once these units will have been checked you will receive a confirmation that your material is up to date. In case your materials prove NOT to correspond to your final versions from PISA+, you will receive further instructions on how to solve this issue (depending on its nature).

75. Cognitive items administered in previous cycles of PISA and selected for linking must **not** undergo changes or new adaptations. (See standard 4.1 in Exhibit 13.) Any change introduced in order to correct spelling or grammar errors, or because the item had poor statistics, would result in that item no longer being considered as a link item. If you think the changes are important, then you may make the judgment that having better functioning items for the current assessment is worth more than the value of the current items being used for linking. In that case you will need to list these changes in the TAS for link items and to send the concerned units together with the TAS to the verification team for verification/approval of these changes.

PREPARE NATIONAL SCHOOL COORDINATOR (SC) AND TEST ADMINISTRATOR (TA) MANUALS

RECEIVE ENGLISH AND FRENCH SOURCE VERSIONS OF SC AND TA MANUALS

76. English and French source versions of the SC and TA manuals (as separate documents as well as a combined SC/TA manual (the SA Manual)) will first be released to National Centres at the beginning of October.

77. All changes made by the Consortium in the MS version of the Manuals (compared to the FT version) will appear in 'track changes' mode in both the English and French sources.

78. If the roles of school coordinator and test administrator are to be undertaken by the same person in most or all of the schools, NPMs should use the SA manual. If these roles will at least predominantly be undertaken by separate people, then separate SC and TA manuals should be prepared.

79.   In the discussion below, it is assumed that the roles of SC and TA will be undertaken by separate people, and that separate manuals will be prepared for each.

80.   For the PISA 2006 Main Study, the translation and verification of the TA notes to be included in the TA (SA) manual will occur as part of the Questionnaire procedures (see section related to the Questionnaire preparation).

SUMMARY OF CHANGES BETWEEN FIELD TRIAL AND MAIN STUDY MANUALS

81.   There are a small number of changes to procedures between the Field Trial and Main Study that require updates to the Manuals:

- For the Main Study, PISA Quality Monitors working on behalf of the Consortium will visit a selection of schools in each country.
- There will only be one Student Questionnaire Form for the Main Study. Column 10b of the Field Trial STF (the questionnaire form) has been removed.
- There will be 13 'regular' test booklets, (1-13). All countries will administer all of these booklets.
- For the Main Study the Session Code which is entered onto the Student Tracking Form and the Session Report must be a two-digit code, not a single digit. This is to ensure uniformity of the data across all countries.
- There are some changes to the Student Tracking From for countries participating in the 'CBAS' international option. In the source version manuals, students selected for CBAS will be identified with the text "CBAS" in column 12b. They will be assigned one of the regular booklets (1-13) rather than the 'C booklets' that were assigned in the FT.
- The break between the two hours of the test is now specified as lasting for no more than 5 minutes.
- There have been some improvements made to the test administration script:
  ⇒ Inconsistencies in relation to the use of sealed envelopes containing the test booklet and questionnaire have been addressed
  ⇒ Instructions for the student to write the date on the front cover of the test booklet have been added
  ⇒ Other refinements to the language in the script have been made.
- There are a small number of changes to the Session Report. For example, the table for the recording of session times, covering questions 4-6 of the Session Report has been updated to reduce data entry errors.
- A number of other adaptations will need to be made to make sure that instructions given to the School Co-ordinators and Test Administrators are consistent with decisions made by the NPM (for instance concerning the testing schedule).

82.   It is possible that some updates will be required to codes in the following tables that were agreed prior to the Field Trial. Shortly before the Mildura meeting, the Consortium will contact each national centre to finalise these tables for the main study.

- Study Programme Table (SPT);
- Language Table (LNT);
- Country Table (CBT).

83.   It is not expected that countries will need to make further changes to codes and instructions relating to the coding of students with special education needs, or the coding of non – participants (columns 8 and 9 of the Student Tracking Form). If further changes to these codes are anticipated, refer to paragraphs 140 to 154 of the *Field Trial NPM Manual* for an explanation of these columns and codes.

84.   You are encouraged to prepare national version(s) of your SA or SC and TA manuals immediately from the beginning of November when the source versions are released with possible changes entered after the Mildura meeting. This will help to spread the load of the translation and verification work. It is also advantageous because it requires early consideration of the test administration procedures as they will apply at the national level. Procedural issues can be properly considered and resolved, and incorporated into the training of test administrators and school coordinators well in advance of the testing period.

85.   As there are only a few changes to the manuals, it is expected that you will work from the manuals that you prepared for the Field Trial when you are preparing your Main Study manuals.

86.   The equivalence of the manuals with the international source versions is the subject of the PISA Standard 4.4 displayed in Exhibit 14 below.

Exhibit 14: Adaptations to manuals, PISA Standards

> **PISA Standard 4.4 Adaptation of Test Administrator Manual and School Coordinator Manual**
>
> **Note:** The quality assurance requirements for this standard apply to instruments that are in an assessment language used as a language of instruction for more than 5 per cent of the target population.
>
> **Standard 4.4.** The Test Administrator Manual and the School Coordinator 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 of the manual.

NEGOTIATE PROPOSED ADAPTATIONS WITH THE CONSORTIUM

87.   The Consortium will provide a Manuals Adaptation Spreadsheet (MAS) for the recording of adaptations to the manuals. A copy of this spreadsheet will be distributed at the beginning of November, at the time that the source version manuals are released.

88.   The MAS will detail the updates that have been made to each section of the source version manuals.

89.   The national adaptations that were already agreed in your FT version do NOT need to be re-entered in the MAS. Only 'new' adaptations need to be entered. You will be asked in the *Manuals Adaptation Spreadsheet* to indicate where required parts of the SC and TA source manuals are located in your national manuals. This will assist in the verification process.

90.   Any additional procedures proposed for the Main Study, should be described in the MAS. Where procedures proposed in the source version manuals are removed from the national manuals, for example because some of the roles of the TA and/or SC as described in the source versions will be undertaken at the national centre, the consequences of these changes to the procedures described in the manuals should be thoroughly described in the MAS.

91.   Where a substantial new adaptation to procedures is proposed, NPMs may be required to provide to the Consortium English translations of those sections of the manuals affected so that a judgement on the impact of the change on the test procedures can be made prior to reaching agreement on the adaptation.

92.   Once completed, you will submit the MAS to the Consortium for negotiation of the proposed adaptations.

SUBMIT NATIONAL VERSIONS OF THE MANUALS TO THE CONSORTIUM FOR VERIFICATION

93.   For the Main Study, manual verification will be limited to a thorough verification of the following sections of the manuals:

From the SC or SA Manual:

⇒ The criteria for student eligibility. (The paragraph in section 2.3 of the source version SA manual, and section 2.2 of the source version SC manual that explains the lower and upper limit eligible birth dates).

⇒ The number of students to be sampled from each school. (From the same paragraph as above).

⇒ The definitions, codes and instructions related to the coding of the STF with respect to Study Programmes, Special Education Needs, and Non-Participation. (Sections 2.6-2.9 of the SA Manual; Sections 2.5-2.8 of the SC Manual). These sections are also added to the TA Manual as an appendix.

⇒ The sample Student Tracking Forms that appear as appendices at the back of these manuals.

From the TA or SA Manual:

⇒ The Test Administration Script.

⇒ The General Directions (As for the Field Trial, the verification of the General Directions - that are read to the students prior to the test - is conducted at the time of verifying the common booklet parts, This is discussed further in relation to preparing common booklet parts below. You will insert the verified General Directions into your TA or SA manual.)

⇒ The Session Report Form.

⇒ The sample Student Tracking Forms that appear as appendices at the back of these manuals.

⇒ The Explanatory Notes on Questionnaire Items, (the 'TA Notes') used by the TA/SA to assist students when responding to questions from the Student Questionnaire. (As already noted, the translation and verification of these notes will now be undertaken in the process of preparing the Questionnaires. You will insert the verified TA Notes into your TA or SA manual).

94.   Verification of these sections of the manuals will provide quality assurance in relation to the PISA Standards related to test administration, in particular Standard 6.1, see below.

Exhibit 15: Test Administration Procedures, PISA Standards

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.

95.   The national versions of these sections of the manuals need in general to very closely match the international source versions, with limited and easily identifiable adaptations. The role of the verifier in thoroughly checking these sections will therefore correspond closely to his or her role in verifying the test units and questionnaires.

96.   Where any of these sections are removed from the national manuals, for example, where the preparation of the list of eligible students is conducted via a letter to principals, the separate documents or letters that contain the information removed from the manuals will be verified. In this case, the document or letter will need to be back-translated into English and

sent to the Consortium for agreement. A linguistic verification of the national document or letter will then be made against the English back-translation.

97.   The same requirement for back-translation into English followed by linguistic verification will also apply in situations where there are substantive differences between the source version and the national version of these key components, for example the addition of columns to the Student Tracking Form relating to national options.

98.   Verification of the Manuals can only be performed when the verifier receives both your revised versions and your agreed *Manuals Adaptation Spreadsheet*.

99.   Following verification, it is recommended that you have your manuals proof-read independently so as to spot typos or spelling errors within these documents.

PREPARE A 'UH' VERSION OF THE TA OR SA MANUAL IF IMPLEMENTING THE UH BOOKLET

THE UH BOOKLET

100.   There will be a 'one-hour booklet' (The 'UH Booklet') that countries have the option of implementing for the Main Study. Unless otherwise agreed, this booklet can only be used in 'special education schools' where all students would have been excluded if the regular booklet was to be administered.

101.   A shorter version of the student questionnaire will also be prepared, to be administered to students who complete the UH Booklet.

102.   Administering the UH Booklet will require some modifications to the procedures for the administration of the 'regular' booklets, for example instructions relating to the timing of the test and questionnaire session. A separate UH version of the Booklet Shell, including a modified version of the General Directions has been supplied. A UH version of the test administration script has also been released. These documents are available from the PISA website.

103.   As the conditions for administering the UH booklet are likely to be substantially different between countries, substantial additional adaptations may be needed to the 'regular' administration manuals to make them suitable for your national circumstances. The consortium accepts that considerable flexibility may be required to the administration manuals to make them suitable.

104.   For this reason, the processes of reaching agreement regarding adaptations, and of verifying the UH manual is **limited to test script and the General Directions only**. For these components, you will need to either document your adaptations on the Manuals Adaptations Spreadsheet provided, or to provide an English backtranslation of your national version. You are NOT required to document other adaptations and send them to the consortium for agreement or verification. However, if you wish to document any further adaptations that you have made, or if you wish to supply an English translation of your manual, the consortium is very happy to provide feedback on this material to assist you in developing your manual.

105.   Further details of this booklet are provided in Chapter 6 of this manual (to be provided later in 2005).

PREPARE BOOKLET COVERS AND OTHER 'COMMON PARTS' – E.G. GENERAL DIRECTIONS, EFFORT SURVEY

106.   There are a number of elements that appear in each of the test booklets. These include:

- the cover page. Note that the Student Questionnaire will have a similar cover-page as the test booklet;

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- the general directions (that are read to the students prior to the test). The General Directions are also inserted into the TA or SA manual;
- a short effort survey and;
- a formula sheet.

107. "Old" Countries that had dropped the Formula Sheet and the references to Mathematic and Reading items in the FT booklets need to reinstate:

- the Formula sheet itself;
- the reference to "combination of science, mathematics and reading questions" in the opening paragraph of the General Directions
- the reference to the formula sheet at the end of the General Directions

108. The revised Common Booklet Parts will be dispatched on October 12. The revision will appear in track changes mode in both source versions.

109. Countries are encouraged to start revising the common booklet parts right after the dispatch and to submit it for verification to cApStAn together with the completed Booklet Adaptation Spreadsheet. New adaptations and changes made in the common booklet parts need to be recorded on the BAS.

110. **Countries NOT testing in English or French** do **NOT** need to re-enter the national adaptations that were already approved for the FT. However, **countries testing in English or French** do need to re-enter the national adaptations that were already approved in the FT with the mention "approved for the FT".

PREPARE THE NEW SCIENCE UNITS

ASSEMBLE AND REVISE THE NATIONAL VERSIONS OF THE TEST UNITS, DOCUMENTING ALL NEW ADAPTATIONS

> **Retrieve your FT version of the items selected for the Main Study and use your FT statistics to identify items that may need revision**

111. A spreadsheet listing all units selected for the MS will be made available before the NPM meeting in Mildura It will assist you in preparing your item pool before revision. Note that many of the units will undergo further review after Mildura. Therefore, units from the bundle distributed in Mildura should **not** be considered as being ready for revision.

112. The revisions made by the test developers in the test material retained for the Main Study (compared with the source version used in the FT) will be listed in the Test Adaptation Spreadsheet, and will appear in "track changes" mode in the ENG and FRE source versions of the test *units* circulated by November 26.

113. For this reason (and also because the test units are the only place where the modifications made in both the items and scoring instructions will appear side-by-side), it is important that all revision work is conducted using a national version in *unit* format rather than trying to work directly in cluster or booklets format.

114. It is strongly recommended that you :

- re-construct national files of the selected units by cutting and pasting from the most complete available source. In most cases, the best source will be the Field Trial booklets, and the Field Trial Coding Guides, since it is likely that the 'old' unit files from your archives may not have been updated with all edits and corrections that were implemented in the cluster and/or booklet versions;
- use your statistics from the FT to identify possible remaining bugs in this national version of the retained units and list the corrections that may be needed;

- enter in your units all changes made by the Consortium's test developers, and correct any other bug identified through your FT statistics after having received the ENG and FRE source versions;
- submit for verification your revised version of test materials in unit format;
- upon return of the materials, edit them according to the comments received from the verifier; check that any possible last minute errata list circulated by the Consortium did not go unnoticed; have your revised material proof-read by independent eyes to spot typos or spelling errors that may have been introduced while entering the corrections;

115. Particular attention should be paid to the review of your national statistics for the retained items. Make sure that all items that appeared to have some flaw in your FT national version (such as a significant differential item functioning, a too-high fit, a too-low discrimination index, a negative point biserial coefficient for the correct answer(s) or a positive point biserial coefficient for incorrect answers, or unordered ability indexes for the various response categories in extended open response items) are identified and thoroughly explored by domain experts familiar with test development and psychometric analyses, in order to detect possible remaining errors in the translation of stimulus, item, or coding instructions.

116. Listing the cases where corrections may be needed might be very useful, but please wait until you receive the new ENG and FRE source versions in order to enter them together with the changes made by the Consortium's test developers, to avoid possible discrepancies between your and their edits.

117. The ultimate aim of the revision and verification process is to make sure that your national version(s) are as fully equivalent as possible to the ENG and FRE source versions. The ultimate aim of the adaptation approval process is to make sure that when deviations from the source materials are needed in order to adapt to cultural or other national specificities, they do not jeopardise the overall international equivalence of the assessment instruments.

118. The source versions should therefore be considered as the reference for any change or correction introduced in the materials: changes will only be beneficial if they contribute to *increase the equivalence of your national version(s) with the source versions*. Thus, refrain from over-revisions just aimed at finding more 'elegant' , 'literary' or 'efficient' words and syntactical structures. Such modifications might affect the item difficulty in unexpected ways, perhaps introducing flaws in items that had no problem in the FT.

SUBMIT NATIONAL VERSIONS OF THE TEST UNITS TO THE CONSORTIUM FOR VERIFICATION

119. Your material should be submitted for verification in unit format, together with the related *TAS*. Note that the *TAS* should be sent directly to the verification team, and do not require prior approval by ACER. Please document in the *TAS* all changes that you intend to implement in each test unit. Changes that merely reflect amendments made by the test developers in the source versions do not need to be mentioned. Also indicate in the spreadsheet any possible 'new' adaptations.

120. **Countries NOT testing in English or French** do **NOT** need to re-enter the national adaptations that were already approved for the FT. However, **countries testing in English or French** do need to re-enter the national adaptations that were already approved in the FT with the mention "approved for the FT".

121. Verification of test materials will be performed only if the accompanying adaptation spreadsheet has been received by the verification team. The submission dates for this material should be in accordance with those negotiated on the *Preferred Verification Schedule (page 27)*.

122. Following verification, the material (including the *TAS*) will be returned with the verifier's comments and suggestions to the national translation team, for implementation at the national centre.

123. Where the national centre disagrees with the suggested edits they should discuss this with their verification team. Unresolved issues will be referred to the international test developers.

124. It is highly recommended that you have your revised material proof-read independently so as to spot typos or spelling errors that may have been introduced while entering the corrections.

CONSTRUCT NATIONAL VERSIONS OF TEST BOOKLETS

125. Once the national versions of the test units have been finalised they should be assembled into test booklets following the instructions provided in Chapter 6 (provided later in 2005) and according to the *BAS*. The NPM should check whether all errata that have been circulated by the Consortium since the units dispatch have been included. Information about errata will be available on the PISA Website.

126. In the construction of test booklets, take note of PISA Standard 10.3 below, concerning layout and pagination.

Exhibit 16: Layout and pagination, PISA Standards

Standard 10.3 The layout and pagination of all cognitive test material must be the same as the source version.

SUBMIT FINAL NATIONAL VERSIONS OF TEST BOOKLETS TO THE CONSORTIUM FOR FINAL OPTICAL CHECK.

127. After assembling the booklets, hard copies or .pdf files of these booklets should be submitted to the National Committee for final endorsement, and then sent to the verification team for a "Final Optical Check". This is a check of layout related issues, as well as a check that key corrections (as ruled by the Consortium) have been correctly implemented. Note that the FOC should NOT be considered as being a new complete verification or proof-reading of the material. Please understand that both these two final steps are important and must be completed BEFORE the material is sent to the printer.

128. After having received the FOC report, last edits suggested by the verifier would need to be entered *before* printing.

129. National versions of the separate Coding guides would need to be assembled according to the source versions that will be first dispatched in January and include all possible last edits circulated by the test developers after the February meeting.

130. *New* countries will also need to submit to the verification team, for Final Optical Check, hard copies or .pdf copies of the Math, Reading and Science Coding Guides. *Old* countries will only need to submit for FOC the Science Coding Guide.

PREPARE NATIONAL QUESTIONNAIRES

PREPARE TABLE OF COUNTRY AND REGION CODES

131. For the PISA 2006 Main Study, standard codes will be used for the country of birth questions in the Student Questionnaire. This will reduce data entry and recoding errors, and will streamline international recoding following data submission.

132. In most cases, the table that lists country and region names and their codes will be the same as that used in the Filed Trial. The Main Study Student Questionnaire will need to be modified to incorporate the agreed country names and their codes.

133. Prior to questionnaire adaptation, the Consortium will contact each national centre to finalise the Country Table (CBT) [5] for the main study.

134. Note also that the data entry codes for Student Questionnaire items relating to language will be those agreed to in the Language Table, and those for study programmes will appear in the Study Programme Table, refer to paragraph 29.

RECEIVE ENGLISH AND FRENCH SOURCE VERSIONS OF QUESTIONNAIRE MATERIAL

135. The questionnaire material will be released in its final form to NPMs on December 8. The material will be used for the preparation of national versions of:

- The student questionnaire
- The school questionnaire.
- The Information Communication Technology (ICT) Familiarity component (International Option component of the Student Questionnaire)
- The "Parent Questionnaire" (PQ) (International Option Instrument)

136. The Student questionnaire will be provided in the following formats:

New for PISA 2006 Main Study

- A "All-Notes" version which provides information for NPMs and translators about issues associated with particular items. The Notes version will also indicate whether the item was used in the PISA 2003 Main Study, and if so any modifications that have been made to the item since then.
- A version with "TA notes" only, which will be used for the revision, translation and verification.
- A "No Notes" version in .pdf format.

137. The ICT component, School and Parent questionnaire will be provided in two formats: a "Notes" version and a "No Notes version".

138. Accompanying the questionnaire material will be the ***Questionnaire Adaptations Spreadsheet (QAS)***, where all questionnaire items will be listed, and all cases where national adaptations are expected by the questionnaire developers will already be highlighted. Adaptations made to the TA notes will also be recorded in the QAS.

REVISE THE NATIONAL QUESTIONNAIRES, DOCUMENTING ALL PROPOSED ADAPTATIONS

139. The source versions of the Questionnaires are likely to undergo substantial changes compared to the FT versions. A small number of the items may be entirely new, and therefore will need to be double-translated and reconciled into your national language(s). National adaptations may be needed for the new items, and changes to retained items may be suggested after reviewing your FT statistics. All of these new adaptations will need to be agreed upon with ACER, and must be recorded in the QAS.

140. For this reason we suggest that the review of your Questionnaire statistics and the revision of your Questionnaires start only when the new source versions become available, but is given priority at that moment, in order to provide sufficient time for the adaptations approval process.

141. It is strongly recommended that you check your FT Questionnaires statistics to identify possible errors in your national versions of the School and Student Questionnaires; revise your Questionnaires against the new source versions; and submit your *Questionnaire Adaptations Spreadsheets* to ACER for negotiation of agreement.

New for PISA 2006 Main Study

142. The TA notes will need to be translated when revising the Student Questionnaire.

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[5] The Country Table (CBT) is one of the documents of the National Profile, refer to Exhibit 3.

NEGOTIATE PROPOSED ADAPTATIONS WITH THE CONSORTIUM

143.   Please indicate in the *Questionnaire Adaptation Spreadsheets* all national adaptations that you intend to implement in each Questionnaire, particularly highlighting any new adaptations made since the FT. For national adaptations that were already agreed with ACER in your FT version, please indicate 'Agreed in the FT' next to the adaptation.

144.   If adaptations to the Questionnaires require changes to *KeyQuest*, for example the addition of new variables, these changes should be recorded in the appropriate columns of the adaptation forms. This will be explained further upon dispatch of the QAS. Refer to the instructions for filling out the QAS contained within the document "National Adaptations to the PISA 2006 Context questionnaires".

145.   A Consortium expert will consider the adaptations documented on the QAS, and agree, not agree (giving reasons), or request further information regarding each adaptation.

146.   The consideration of adaptations to questionnaire items is likely to be an iterative process of communication between the national centre and the Consortium. NPMs should factor this into their scheduling plans and ensure that adequate resources are in place for a rapid turnaround of requests from the Consortium for further information.

147.   Following the resolution of all issues related to the adaptation of the Questionnaires, an agreed QAS will be returned to the NPM.

SUBMIT QUESTIONNAIRE INSTRUMENTS AND QAS TO VERIFICATION TEAM

148.   Once an agreed QAS has been returned to the national centre, the NPM should then submit the national questionnaire instruments and agreed QAS to the international verification team. The submission dates for this material should be in accordance with those negotiated on the *Preferred Verification Schedule (paragraph 51)*. **Verification of Questionnaires will be performed only after the QAS has been agreed**.

149.   The verification of the Student Questionnaire will also include the TA notes. Please submit to the verification team the version of the Student Questionnaire including TA notes as provided by the consortium.

150.   The submission dates for this material should be in accordance with those negotiated on the *Preferred Verification Schedule (see paragraph 51)*.

IMPLEMENT FEEDBACK FROM VERIFICATION PROCESS

151.   Following verification of the Questionnaire instruments, the verification team will return the material with the verifier's comments and suggestions to the national translation team, who will edit the questionnaires according to the comments received from the verifier and check that any possible last minute errata list circulated by the Consortium did not go unnoticed. It is recommended that you have your revised material proof-read independently so as to spot typos or spelling errors that may have been introduced while entering the corrections.

152.   Disagreements on suggested edits should be submitted to the verification co-ordinator who if necessary would seek further advice from the Questionnaire developers.

SUBMIT FINAL NATIONAL VERSIONS OF QUESTIONNAIRES TO THE CONSORTIUM FOR FINAL OPTICAL CHECK.

153.   After implementing the corrections suggested by the verifier, all TA notes will need to be removed from the verified word version of Student Questionnaire to parallel the model provided by the consortium. Then hard copies or pdf copies of the finalised national versions of the questionnaire instruments should be submitted to the National Committee for final endorsement, and then sent to the verification team for a "Final Optical Check" (i.e. verification of the layout, instructions to the student, rendering of the graphic material, etc). Note that the FOC should NOT be considered as being a new complete verification or proof-

New for PISA 2006 Main Study

reading of the material. Please understand that both final steps are important and must be completed BEFORE the material is sent to the printer.

154. In the construction of the questionnaires, take note of PISA Standard 10.4 below, concerning layout and formatting.

Exhibit 17: Layout and formatting of questionnaires, PISA Standards

> **Standard 10.4** The layout and formatting of the questionnaire material will be equivalent to the source version.

SUBMITTING MATERIALS

155. The verification of the materials will be done at ACER, for the English-speaking countries (Australia, Canada (English), Hong Kong (English), Ireland, Qatar (English), United Kingdom, New Zealand, and USA). For all other countries, the verification will be done at cApStAn:

Exhibit 18 to

156. Exhibit 20 indicate the initial contact persons who will deal with specific aspects of the verification exercise, both at ACER and at cApStAn. Materials should be submitted to cApStAn using the address pisa.verif@capstan.be, and materials should be submitted to ACER using the address pisa@acer.edu.au.

Exhibit 18: Contact persons for English Speaking Countries

Item	Contact Person	Organisation
Preferred Verification Schedule	Wei Buttress	ACER
Manuals Adaptation Spreadsheets, National versions of SA, TA and SC Manuals	Martin Murphy	ACER
Questionnaire Adaptation Spreadsheet, National versions of questionnaires	Maurice Walker	ACER
Test Adaptation Spreadsheets, Common Booklet Parts Adaptation Spreadsheet, Test Material	Ross Turner	ACER
Hard copies or .pdf files of Questionnaires for Final Optical Check	Maurice Walker	ACER
Hard copies or .pdf files of Booklets for Final Optical Check	Ross Turner	ACER

Exhibit 19: Contact persons for all other countries

Item	Contact Person	Organisation
Preferred Verification Schedule	Steve Dept Andrea Ferrari Ben Meessen	cApStAn
Manuals Adaptation Spreadsheets	Martin Murphy	ACER
National Versions of TA and SC Manuals, and approved Manuals Adaptation Spreadsheets	Steve Dept Andrea Ferrari Ben Meessen	cApStAn
Questionnaire Adaptation Spreadsheets	Maurice Walker	ACER
National Versions of Questionnaires, and approved Questionnaires Adaptation Spreadsheets	Steve Dept Andrea Ferrari Ben Meessen	cApStAn
Tests Adaptation Spreadsheets, Common Booklet Parts Adaptation Spreadsheet, Test Material	Steve Dept Andrea Ferrari Ben Meessen	cApStAn
Hard copies or .pdf files of Booklets and Questionnaires for Final Optical Check	Steve Dept Andrea Ferrari Ben Meessen	cApStAn

Exhibit 20: Additional Contact Information

Item	Contact Person	Organisation
Changes to the Preferred Verification Schedule (should be first negotiated with your verification team)	Wei Buttress	ACER
Queries related to languages of instruction and general problems in the development of national versions	Béatrice Halleux	Consultant
Queries related to access to the materials in the PISA website, to graphics, styles, formatting of the materials, etc.	Wei Buttress	ACER

PROVIDING COPIES OF YOUR FINAL NATIONAL VERSION(S) TO ACER

157. Please make sure that when your national version(s) of the material are finalised, the following material is sent to pisa@acer.edu.au:

- Hard copies of all test and questionnaire instruments as used in the field (Not photocopies of these materials).;
- Electronic versions in BOTH .PDF and Word format of FINAL (post-FOC) versions of ALL Materials - Test Booklets, Questionnaires, Coding Guides, TA and SC Manuals, and the instruments related to International Options that you undertook.

158.   The hard copies are required to assist with data cleaning, and may also be used as the basis for negotiating print quality for future PISA cycles.

159.   ACER will maintain an archive of all of your electronic versions, accessible via the PISA web pages to cApStAn and to the national centre. The .PDF versions will assist with data cleaning, and with post-FOC checks of the layout of items. The Word versions will be kept to ensure that the final versions of materials needed to reconstruct test units are available on the secure PISA website for future PISA cycles.

CHAPTER FOUR: SELECTION OF THE STUDENT SAMPLE

INTRODUCTION TO STUDENT SAMPLING

160.   This chapter focuses on the selection of the sample of students from the schools that have been sampled to participate in PISA.

161.   Ideally schools will have been contacted well in advance of the testing to inform them that they have been sampled, to identify a school coordinator, to provide the school community with informational materials, to discuss and negotiate testing dates and so on. These matters are discussed in Chapter 2.

162.   However, it is very important that the student sample represent current enrolments. Students should be selected from lists that are accurate and complete. This means that the list should not be prepared too far in advance of the testing.

163.   The instructions for preparing the lists should be sent to the School Co-ordinator about 8 weeks before testing is to begin in the country. The individuals who prepare the lists should also be instructed to return the lists to the NPM at least 6 weeks before testing is to begin. This will permit the NPM to select the student samples and send the *Student Tracking Form* (discussed below) that lists the selected students back to schools at least 2 weeks prior to testing. This schedule may be affected by school vacations and holidays. NPMs should be aware of the impact of these events and modify the schedule accordingly.

SEND THE INSTRUCTIONS FOR PREPARING A LIST OF ELIGIBLE STUDENTS TO SCHOOLS

164.   Exhibit 21 is an example "Student Listing Form" with instructions to schools about how to prepare their lists of eligible students. NPMs may use this form or develop their own instructions. Please note the following:

- *PISA-Eligible* students are students in grades 7 or higher born within the population definition defined on *Sampling Form One* (refer to the *School Sampling Preparation Manual*) and agreed by the Consortium.
- The list should contain **all** eligible students, including those who may not be tested due to a disability or limited language experience.
- Any exclusion from the assessment of students who cannot be tested must be done **after** the student sample is selected.
- In countries where the Study Programme varies among the eligible students within the school, the Study Programme should also be included on the list. Refer to the SC and SA manuals for details about providing the Study Programme information.
- If you are selecting an additional grade based sample as an international option the PISA-eligible students should be listed first, followed by the students enrolled in the target grade who are *not* PISA-eligible.
- However, if your grade sample is class based then two separate lists of students should be prepared for sampling procedures into different copies of KeyQuest. **Seek further advice from ACER if you are planning to implement this option.**
- It is recommended that schools be asked to retain a copy of the list in case the NPM needs to call the school with questions.
- While it is assumed that the lists of students will contain names, these are not critical to the sampling process as long as the lists contain a unique student identifier. A student identification number assigned by the school, for example, is an acceptable way to identify each student.

165.   It is important that all students be listed, including students who will be excluded from testing because of a disability or limited experience in the language(s) in which the test is being offered. **It is very important that exclusions be minimal and that all students be given the opportunity to take part in PISA unless they are incapable of doing so.**

166. At the same time, the number of 15 year-olds on the list of students should not differ significantly from the enrolment figure (SCH15ENR) on sampling form 12. If it does, the NPM should check with the school that the number of 15 year-old students is correct.

Exhibit 21: Example of Student Listing Form

STUDENT LISTING FORM

School ID: _____   Country Name: _____

School Name: _____   List Prepared By: _____

Address: _____   Telephone #: _____

_____   Date List Prepared: _____

_____   Total # Students Listed: _____

DIRECTIONS: PLEASE COMPLETE COLUMNS A, B, C, D AND E FOR EVERY STUDENT <BORN IN 1990>.
Include students who may be excluded from other testing programs, such as students with disabilities or limited language experience. Detailed instructions and information about providing computer-generated lists are on the other side of this page.

(A) Student's Name (First Middle Initial Last)	(B) Grade	(C) Sex (M / F)	(D) Birth Date (mm/yy)	(E) Study Programme

Exhibit 21: Example of Student Listing Form cont.

A. **Instructions for Preparing a List of Eligible Students**

1. Please prepare a list of ALL students <born in 1990. . . NPM must insert eligibility criteria> using the most current enrolment records available.

2. Include on the list students who typically may be excluded from other testing programs (such as some students with disabilities or limited language experience).

3. Write the name for each eligible student. Please also specify current grade, sex, and birth date for each student.

4. Enter the Study Programme code for each eligible student

5. If confidentiality is a concern in listing student names, then a unique student identifier may be substituted. Because some students may have the same or similar names, it is important to include a birth date for each student.

6. The list may be computer-generated or prepared manually using the PISA Student Listing Form. A Student Listing Form is on the reverse side of these instructions. You may copy this form or request copies from your National Project Manager.

7. Send the list to the National Project Manager (NPM) to arrive no later than **<NPM insert DATE>**. Please address to the NPM as follows: **<NPM insert name, fax number, email address, mailing address>**

B. **Suggestions for Preparing Computer-generated Lists**

   1. Write the school name and address on list.

   2. Number the students.

   3. Include the date the printout was prepared.

   4. Define any special codes used.

   5. Include preparer's name and telephone number.

Suggestions for Sending Data Files

<NPM to insert instructions, if appropriate>

167. Once NPMs have received the lists of eligible students back from each school, the student sample should be selected. The standards for student sampling are as follows:

Exhibit 22: Student Sampling

> **PISA Standards 1.2, 1.6, 1.8 and 1.12 Student Sampling**
>
> **Standard 1.2**   Students participating in the test must be *PISA-eligible students*.
>
> **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 *PISA-Eligible students*.
>
> **Standard 1.8**   The student sample size must be a minimum of 4,500 assessed students for *PISA participants* and 1,500 assessed students for *additional adjudicated entities*, or the *PISA Defined Target Population* where the *PISA Defined Target Population* is below 4,500 and 1,500 respectively.
>
> **Standard 1.12**   The overall student response rates must be above 80 per cent of sampled students.

168. Unless otherwise agreed, the student sample must be selected using KeyQuest, the PISA data management software prepared by the Consortium. The sampling procedures are outlined briefly below and explained fully in the Data Management Manual.

169. NPMs must receive approval from the Consortium, specifically from Keith Rust, if they want to select students using other software, refer to PISA Standard 15.1 below.

Exhibit 23: Student Sampling using KeyQuest, PISA Standards

> **Standard 15.1.** For efficient and effective quality assurance provision, unless otherwise agreed upon, the Consortium will draw the school sample for the Main Study, and KeyQuest will be used to draw the student sample.
>
> Agreement with the Consortium will be subject to the principle that the sampling methods used are scientifically valid and consistent with PISA's documented sampling methods. Where a PISA Participant reaches agreement with the Consortium to draw a school sample, or to not use KeyQuest to draw the student sample, the National Centre shall cover all costs associated with determining the accuracy of the sample for Quality Assurance purposes.

170. KeyQuest produces a Student Tracking Form for each school. The Student Tracking Form is the central administration document for the study. It is the complete list of the student sample. Once booklets have been assigned to students, the Student Tracking Form becomes the link between the students, the Assessment Booklets and the Student Questionnaire that they receive. After the testing, information about the session is entered on the Student Tracking Form. The Student Tracking Form is sent back to the National Centre with the test instruments and is used to make sure that all materials are accounted for correctly.

171. KeyQuest samples students from the information in the *List of Schools*. In the process of sampling it uses a number of instruments to verify information on the *List of Schools*. These are:

- The Study Programme Table (SPT)
- *Sampling Form KeyQuest* (SFKQ). SFKQ is a file that is prepared by the Consortium and sent to you at the time that your school sample is selected. It is an extract of your School Tracking Form (Sampling Form 12). It is imported into KeyQuest exactly in the format that it is sent to you (i.e. it does not require any revision from you prior to importing it).
- The List of Students (**if** this has been imported into KeyQuest prior to sampling. This is discussed below).

172. Prior to sampling you will need to prepare your STF for national use. This includes adding your national codes and labels (e.g. Study Programmes, SEN, exclusions) as agreed on your Manuals Adaptation Spreadsheet (cf. Chapter 3). You may also need to translate the labels on the Student Tracking Form into your national language.

173. The Student Tracking Form data **may** have to be updated following sampling but prior to printing, and **will** also be updated after testing.

174. This process is illustrated by Exhibit 24 and explained further below.

Exhibit 24:Student Sampling

Student Sampling Tasks
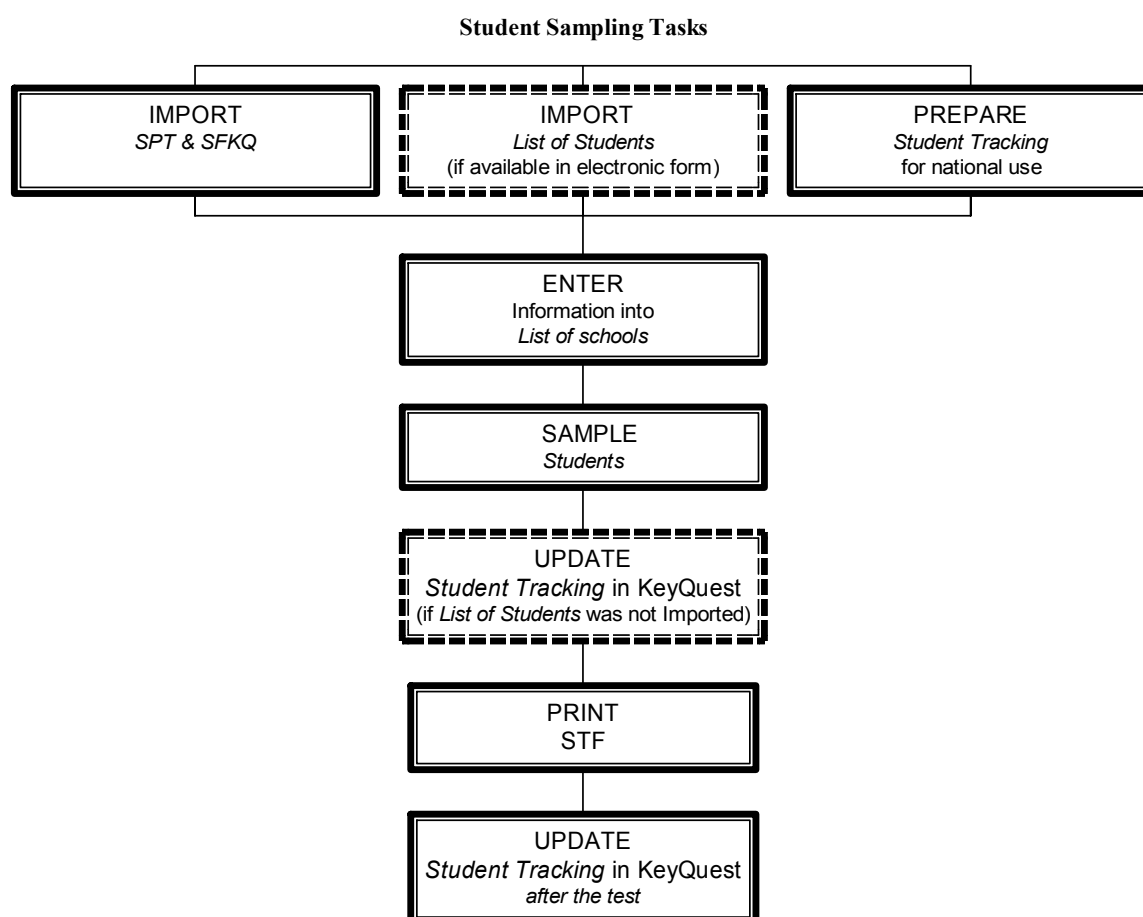
175. There are two ways of drawing the sample of students for a school in KeyQuest.

176. Method 1: With the first method, the sample is drawn before any individual student details are entered into KeyQuest. If this method is used, the information of the sampled students collected from the list of all eligible students that was returned by the school coordinator must be manually entered into the Student Tracking Form after the sample has been drawn.

177.   Method 2: If the National Project Centre receives lists of students from schools in an electronic format, then it is worth importing these data into the **List of Students** instrument in KeyQuest. If this method is used, the data from the List of Students will automatically be pasted into the Student Tracking Form when the sample is drawn.

178.   You can choose either method for each participating school. Note that **both methods require the complete information for the participating school to be entered into the List of Schools.** The following paragraphs describe the different steps to draw the student sample according to the two methods outlined.

METHOD 1: DRAWING THE STUDENT SAMPLE WITHOUT FIRST ENTERING INDIVIDUAL STUDENT DETAILS INTO KEYQUEST.

179.   Import into KeyQuest the *Study Programme Table* (SPT) and *Sampling Form KeyQuest (*SFKQ), and prepare the *Student Tracking* Instrument in KeyQuest for national use. Refer to the Data Management Manual for details about the importing process.

180.   Once the list of all eligible students is received from the school enter required information into the *List of Schools*, and draw the sample (every task is described fully in the Data Management Manual).

181.   The Student Tracking Form can be generated after student sampling but will show only **line numbers** indicating the students that have been sampled from the list of students obtained from the school. For example, if the first line number is 3, then the third student on the list from that school has been sampled, and the first and second students on the list have not been sampled.

182.   The information of the sampled students, collected from the list of all eligible students that was returned by the school coordinator, must now be directly entered into the **Student Tracking instrument** in KeyQuest.

METHOD 2: IMPORTING THE LIST OF ALL ELIGIBLE STUDENTS INTO KEYQUEST AND THEN DRAWING THE STUDENT SAMPLE.

183.   Import into KeyQuest the *Study Programme Table* (SPT) and *Sampling Form KeyQuest (*SFKQ), and prepare *Student Tracking* Instrument in KeyQuest for national use. Refer to the Data Management Manual for details about the importing process.

184.   Once the list of all eligible students is received from the school import the details of the eligible students from the school into the *List of Students* instrument in KeyQuest. Ensure that the number of students listed on the List of Students for a school matches the total number of students entered on the List of Schools for that school.

185.   Now enter the required information into the *List of Schools*, and draw the sample (every task is described fully in the Data Management Manual).

186.   You can now generate the Student Tracking Form in KeyQuest (see the Data Management Manual for details). As you have entered student details into the List of Students before drawing the sample, these details will automatically be pasted onto the Student Tracking Form. Note that this transfer of details happens **only** at the time the sample is drawn (so any subsequent changes made to the List of Students in KeyQuest are not carried through to the Student Tracking Form).

187.   Any student details missing from the Student Tracking Form after sampling (e.g. because the List of Students in KeyQuest was not used or the details entered were incomplete) must be keyed into the **Student Tracking instrument** in KeyQuest. Note that it is not compulsory to enter the name of the student onto this form, but countries are welcome to do so if that is more convenient for them. All other fields from the List of Students must be entered into the Student Tracking Form for the sampled students.

CHAPTER FIVE: ACTIVITIES PRIOR TO THE TESTING PERIOD

INSTALL MAIN STUDY VERSION OF KEYQUEST

188. In January 2006, the main study version of KeyQuest will be dispatched to all national centres. You will need to install this software and familiarise yourself with it prior to using it to draw student samples (refer to Chapter 4). Full details of the functionality of KeyQuest are explained in the *KeyQuest Manual*.

HIRE AND TRAIN TEST ADMINISTRATORS

189. PISA has established the following criteria for Test Administrators (TAs):

Exhibit 25: Test Administrators, PISA Standards

> **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.
>
> It is preferred that administrators are not staff of the school

190. This Standard was established for a variety of reasons including the following:
- To minimise burden on the participating schools;
- To establish the credibility of PISA as valid and unbiased; and
- To encourage uniformity in the administration of assessment sessions.

191. It is preferable that the TA not be a staff member of any schools in the PISA sample. Even so, it is recognised that this is not always possible. For example, it is permissible for a staff member from one school to be the TA in another school. It is recommended that TAs not belong to the staff of any school where they will administer PISA. Again, it is recognised that this is not always possible. Therefore, it is permissible for a staff member from within the school to be the TA as long as this person is not a <reading>, science or mathematics instructor of the sampled students.

192. PISA does not require that TAs meet specific academic or professional requirements. Yet, they should be familiar with schools and how they operate. They should also be familiar with standardised testing procedures. In some countries TAs will have to be fully qualified teachers.

193. Before the beginning of PISA testing in each country, NCs should hold a training session for the TAs. It is a PISA Standard that all TAs receive in-person training, as shown in Exhibit 26 below. The procedures that will form the basis of the training will be outlined in your national TA (or SA) manual, and will have been negotiated and agreed upon as part of the process for negotiating your national adaptations to the source version manuals.

Exhibit 26: Test Administrator Training, PISA Standards

> **Standard 6.2.** Test Administrators must be trained according to agreed procedures.
>
> **Standard 6.3.** Test Administrators must be trained in person.

MAKE ARRANGEMENTS FOR THE VISIT OF THE NATIONAL CENTRE QUALITY MONITOR (NCQM)

194.   Prior to the start of your testing period, a representative of the Consortium will visit your national centre. He or she will interview you about your preparations for the main study. He/she will also train the PISA Quality Monitors for their task of visiting schools and monitoring the test administration (see above). These activities should both be conducted within 1-2 days.

195.   The process of the NCQM visit and the training of PQMs will be presented to you at the Mildura meeting.

196.   Well prior to the time of the visit, the NCQM who will visit you will be in contact, requesting a date for the visit and possibly requesting assistance with regard to the visit, for example suggested hotel accommodation, assistance with visas if required, and so on.

197.   In preparation for this visit you will also be asked to provide:

- A suitable space for the training of PQMs
- A complete list of schools, their test dates, and the names of the Test Administrators and School Coordinators

198.   Exhibit 27 is the PISA Standard relating to the visit of the NCQM.

Exhibit 27: National Centre Quality Monitoring, PISA Standards

> **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.

CHAPTER SIX: ASSEMBLY OF TEST INSTRUMENTS AND MATERIALS

INTRODUCTION

199.   All of the test items and questionnaire instruments are available from the secure pages of the PISA web site. The site contains English and French master versions of the test and questionnaire items and also English master versions of the instrument booklets. A CD-ROM of all materials has also been sent to each National Centre.

200.   The master instrument copies show how the final booklets should be formatted. PISA Standards related to the content, layout, pagination and formatting of PISA instruments are shown in Exhibit 16 and Exhibit 17.

201.   In this section we describe how the items, units and clusters are allocated to the test and questionnaire instruments.

TEST ASSEMBLY

Exhibit 28: Test Booklet Design for the PISA 2006 Main Study [6]

Booklet	Cluster			
1	S1	S2	S4	S7
2	S2	S3	M3	R1
3	S3	S4	M4	M1
4	S4	M3	S5	M2
5	S5	S6	S7	S3
6	S6	R2	R1	S4
7	S7	R1	M2	M4
8	M1	M2	S2	S6
9	M2	S1	S3	R2
10	M3	M4	S6	S1
11	M4	S5	R2	S2
12	R1	M1	S1	S5
13	R2	S7	M1	M3
UH	Science	Readg	Maths	

202.   Exhibit 28 shows the booklet and questionnaire design for the PISA 2006 Main Study. The following notes refer to this design.

•   There are 13 'regular' booklets in the test design which all countries implement. There is also an optional 'UH Booklet', one hour in length, which some countries will

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[6] The design shows the allocation of clusters to booklets; S_1 indicates Science cluster 1, and so on.

implement in special educational needs settings. Refer to paragraph 100 and following of this manual for further details concerning this booklet.

- Each of the units in the item pool has been allocated to a test cluster. For the regular booklets there are 7 Science clusters ($S_1 - S_7$), 4 Maths clusters ($M_1 - M_4$) and 2 Reading clusters ($R_1 - R_2$). For the UH booklet there is half an hour of Science material and a quarter hour each of Reading and Mathematics.

- The clusters are organised into the 13 booklets in such a way that each cluster appears in each of the four positions of the booklet. This is to balance the effect of booklet position across the booklets.

203. The allocation of the items and units to clusters and booklets is as shown in Appendix 3 of this manual.

204. In formatting translated or adapted test booklets, it is essential for countries to follow as far as possible the layout in the English master instrument copies, including allocation of items to pages. The Consortium recognises that it often happens that a translated document is longer than the original, and this has been allowed for as far as possible in the pagination of the master instruments. Changes must be avoided in the page set-up of the test booklets — which would oblige the student, for example, to turn a page to read the questions, whereas in the source version text and questions appear side by side. If necessary, use a slightly smaller or bigger font than the one in the original, if this enables you to keep the same page set-up as that of the source version.

QUESTIONNAIRE ASSEMBLY

205. The Questionnaire instruments for the Main Study include the School Questionnaire and the Student Questionnaire as well as the international options: Computer Familiarity (ICT), and Parent Questionnaire (PQ). If a country chooses an international option it should be administered to ALL students.

206. For the main study there is only one form of the student questionnaire.

207. Unless approval has been given by ACER to do otherwise, all items on the School and Student Questionnaires should be included. In addition, countries may be using the material provided as international options (The Information Communication Technology (ICT) questionnaire and/or the Parent Questionnaire. They may also have additional questionnaire material that they wish to include.

COMBINING INTERNATIONAL AND NATIONAL OPTIONS INTO THE SAME QUESTIONNAIRE BOOKLET

208. The ICT questionnaire component may be placed in the same booklet as the Student Questionnaire. However, countries administering additional questionnaire instruments as national options should consider administering separate booklets, one with STQ and another one for national options. The reason for this is that limitations on the size of the ACCESS database make it difficult to include national options in the same data entry form in KeyQuest as the Student Questionnaire. Having them in separate booklets will save in the double handling of booklets during data entry.

209. Where more than one instrument appears in the same booklet (e.g. Student Questionnaire and ICT), the instrument should be divided into corresponding sections. The items may be numbered sequentially *within* the booklet but the numbers need to be recorded in the Questionnaire Adaptation Spreadsheet and the variable names in KeyQuest should be left **unchanged** (Refer to the Data Management Manual).

210.   If more than one questionnaire instrument is administered in the same session, please adjust the administration instructions in the TA Manual accordingly, and ensure that the main Student Questionnaire is administered before the international or national options. The format of the student questionnaire and international options should follow as far as possible the formatting of the source versions which have been provided.

CHAPTER SEVEN: PRINTING, PACKAGING AND SHIPPPING

OVERVIEW

211.   National Centres will package and ship assessment materials. In order to protect test security it is strongly recommended that the Assessment Booklets and Student Questionnaires be sent to the Test Administrators rather than to the schools. If these materials are sent to the participating schools, the NPM must ensure that test security is not compromised.

212.   There are three primary concerns to be considered by NPMs in making plans for printing, packaging and shipping PISA materials. These three concerns are:

- That the test items be secure at all times
- That the print quality is of a high standard, and
- That the test booklet and questionnaire assigned to a particular student are the ones that the student uses in the testing session.

213.   Prior to the Mildura meeting, the Consortium will have been in contact with you to negotiate your proposed print quality for the main study. This was discussed at paragraph 31.

214.   There is no one way that materials should be printed and prepared for shipment and distribution. In this section, we suggest several different ways to prepare materials, recognising that each has advantages and disadvantages with regard to cost, burden, and efficiency. NPMs should choose the way that works best in their own countries, considering how they intend to implement PISA within their own educational systems.

215.   In making this determination, NPMs will want to consider the following:

- Where will the assignment of materials to individual students take place?
- From where will the materials be shipped and how secure is this place?
- To where will the materials be shipped and how secure is this place?
- Will test administrators be National Centre staff or staff of the selected schools?
- Will the Student Questionnaire usually be administered in the same session as the test items or in a separate session?
- Are there any constraints arising from the coding or data processing procedures that need to be considered?

PRINTING PISA MATERIALS

216.   The tests and questionnaires must be printed in separate booklets, so as to avoid the possibility of students returning to the test material during the questionnaire session. Having the tests and questionnaires as separate booklets will assist the data entry process as the questionnaires can be data-entered while the test material is being coded. It will also help protect the security of the test material, for example in the case where the tests and questionnaires are administered in separate sessions.

217.   As the test and questionnaire booklets are separate, care should be taken to make sure that the students receive the correctly identified booklets so that these can be matched without error for data entry.

218.   After all test materials have been printed, NPMs should send hard copies of all test and questionnaire instruments, as well as electronic copies of ALL instruments and manuals to ACER for archive, refer to Standard 16.4. The electronic archive will be accessible by the National Centre, as well as by the verification coordinator.

Exhibit 29: Provision of PISA instruments and materials, PISA Standards

> **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.

PACKAGING AND SHIPPING PISA MATERIALS

219. Another decision that NPMs will need to make is how to package the assessment materials in order to protect the security of the test items.

220. To further protect item security, the test booklets for a school could be packaged in a secure bundle – either sealed in plastic or some other form of packaging. If the packaging is transparent and has not been wrapped too tightly, TAs will be able to check easily in advance if the correct number of booklets is in the package, without opening it. Similarly, the booklets could be sealed in envelopes, one for each student in the assessment. The "best" approach for a country will depend on the factors cited above.

221. When the student sample is selected in KeyQuest, booklet numbers and Questionnaire Forms will automatically be assigned to students as KeyQuest generates the Student Tracking Form. Refer to Chapter 4 of this manual, and to the *Data Management Manual* for further details about the selection of the student sample using KeyQuest.

222. Three scenarios are described below as illustrative of acceptable approaches to packaging and shipping the assessment materials. Any questions should be directed to the Consortium (pisa@acer.edu.au).

- Country A plans to ship all assessment materials to the schools and to use school staff (not teachers of the students in the assessment) to conduct the testing sessions. The National Centre will print the test booklets and Student Questionnaire separately. The National Centre plans to label each instrument before packaging for shipment to the schools, with booklets and questionnaire forms allocated to students according to the assignment on the Student Tracking Form. They will then seal them in envelopes also labelled with the students' names and identification numbers.

- Country B also plans to ship materials directly to the schools but will use test administrators who are employed by the National Centre. Because of concerns about when the administration of the questionnaires will take place, Country B intends to print and package the test booklets and questionnaires in separately bound bundles. The order of the booklets in each bundle will be ordered as per the Student Tracking Form. To protect student confidentiality after the assessment has been completed, Country B will provide envelopes labelled with the students' names and identification numbers for students to put their assessment booklets into and seal once the assessment is over.

- Country C plans to use test administrators employed by the National Centre and will ship the materials to these test administrators. Since the Student Questionnaire will be administered during the same session as the test items, the Test Booklets will be packed together with the separate questionnaire booklets. The bundles will be sealed in plastic, so that the number of booklets can be checked without opening the packages (the plastic sealing will not be tight shrink-wrapping, which makes counting difficult). The test administrators will open the bundle assigned to a

school immediately prior to the session and will label the booklets with the students' names and ID numbers from the Student Tracking Form, according to the assignment of booklets pre-recorded on the Tracking Form.

223. NOTE: If a school's package of assessment materials is being sent directly to the school, you will need to inform the School Co-ordinator of this arrangement and stress to him/her that the package must be kept secure at all times and must not be opened until the test administrator arrives at the school on the day of the assessment. A fax form for the School Co-ordinator to send back to you to confirm that the package has arrived should be provided with the School Co-ordinator Manual.

224. Regardless of the approach to be used for packaging and shipping, for each session to be conducted the following materials should be sent either to the test administrator or to the school:

- Test booklets and student questionnaires for the number of students expected to be assessed;
- Student Tracking Form;
- 2 copies of the Session Report Form;
- Packing Form;
- Return shipment materials;
- Additional materials, e.g. rulers and calculators, as decided for local circumstances; and
- Additional School and Student Questionnaires.
- A bundle of extra booklets (one of each of the booklet types).

CHAPTER EIGHT: ACTIVITIES DURING AND FOLLOWING THE TESTING PERIOD

COORDINATE THE ACTIVITIES OF TAS

225. The coordination of the activities of TAs will be a significant task, involving the scheduling of testing dates, the provision of contact information about each school, the collection and return of test instruments and materials and the security of these materials while in the field, the organisation of travel and so on.

226. It is important that TAs are easily able to contact the national centre to clarify any questions they have about test procedures, and/or to seek assistance with any issues that arise in the course of their work. The TA needs to be able to communicate last minute changes to testing dates to the National Centre, as these may affect the quality monitoring activity (see paragraph 45).

MONITOR SCHOOL AND STUDENT RESPONSE RATES

227. During the testing period you will need to monitor the school and student response rates.

228. The PISA Standards in relation to school and student response rates are shown in Exhibit 30 below.

Exhibit 30: Response rates, PISA Standards

> **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.

229. Note that a school with less than 50% participation among the selected eligible and non-excluded students will not be considered as a participating school. If such a school has less than 25% participation among the selected eligible and non-excluded students, then the students in such schools will not be included in analysis. If such a school has more than 25% and less than 50% participation among the selected eligible students, the students in these schools will be retained for analysis, even though the school is considered a non-participant for the purposes of monitoring response rates.

230. Note that "selected eligible students" are those in the target population, and therefore participation measures are relative to only those students in the target population. For example, participation will be determined separately for the PISA-eligible portion and the grade-eligible portion of an international grade option sample in the same school. This could result in the school deemed as participating (50% or more of selected grade-eligible students participated) for the grade sample, but as a nonparticipating school for PISA if less than 50% of the selected PISA-eligible non-excluded students participate. Also note that a selected PISA-eligible student recorded in the database as not doing the cognitive part of the PISA assessment will be counted as a nonparticipant for the 50% and 25% participation measures, even if the student completed the background questions.

231. Student participation rates are calculated over all participating schools, whether sampled schools or replacement schools, and from the participation of students at the originally scheduled session and any follow-up session that may be required. The student

participation rate requirement must be met at the national level, not necessarily for each participating school.

232. Further discussion about school and student response rates are provided in the *School Sampling Preparation Manual*, and you should ensure that you are familiar with these requirements.

233. If during the testing period it appears that your response rates may be at risk of not meeting these standards, then extra resources or effort may be required in order redress this. Extra effort might be directed towards ensuring improved participation at follow-up sessions, the involvement of system level authorities to encourage higher participation at the school level, or other such strategies.

REVIEW CODING AND DATA ENTRY OPERATIONS, RECRUIT STAFF

234. The main study will require more coding and data entry staff than was required for the field trial. With the larger sample size, a larger space may be necessary for coding, more computing resources may be required for data entry, and so on. All countries will have to code material in all three PISA domains - Reading, Mathematics and Science for the main study. Review your experiences from the field trial to come up with estimates for how many coders you will need, how long it will take to code and so on. At the Mildura NPM meeting, the consortium will provide some estimates of the average time taken to code the field trial booklets and the likely implications for the main study to assist you as you prepare for the main study coding operation.

235. Countries that participated in the 'ISCO double coding' and 'Double entry quality assurance' international options for the field trial will be provided with initial feedback about these activities at the Mildura NPM meeting, and with a individual country reports early in 2006. You should consider this feedback while planning for the main study data entry operations.

236. Prior to the coder training meeting, the NPM chapter with all details regarding the coding operation, as well as the main study version of the *Data Management Manual* will be distributed to national centres. These documents will fully describe the procedures with regard to the coding and data entry operations.

ORGANISE FOR APPROPRIATE STAFF TO ATTEND CODER TRAINING MEETING

237. A training meeting will be conducted in February and will provide detailed information regarding coding and data entry procedures for the main study, as well as training in the coding of items. You should organise for appropriate staff to attend this training meeting. Standard 11.2 is the PISA Standard relating to attendance at this meeting.

Exhibit 31: Attendance at Coder Training, PISA Standards

> **Standard 11.2.** A representative from each National Centre will attend the international PISA coder training session for … the Main Study.

RECEIVE MATERIALS FOLLOWING THE ASSESSMENT

238. Following the assessment, all assessment materials should be accounted for and kept secure. Therefore, it is very important that strict receipt-control procedures be followed.

239.   The School Tracking Form that was supplied at the time your school sample was drawn must be completed with the participation status of schools, using the coding described in the School Sampling Preparation manual. This must be submitted to Westat within 4 weeks of the conclusion of testing in your country.

OVERSEE CODING AND DATA ENTRY OPERATIONS

240.   Coding and data entry will be among the topics at a training session to be held for NPMs in February 2006. Documents will be provided in advance of this training. The staff of the NC responsible for these tasks should attend this part of the training session.

241.   At the end of 2005, an additional chapter of this manual (Chapter Nine) will be provided which will provide detailed instructions regarding the open-ended coding of student responses.

AN OVERVIEW OF DATA MANAGEMENT

The full range of the data management tasks for the National Centre is illustrated below.

Exhibit 32 Major Data Management Tasks

National Centre Major Data Management Tasks
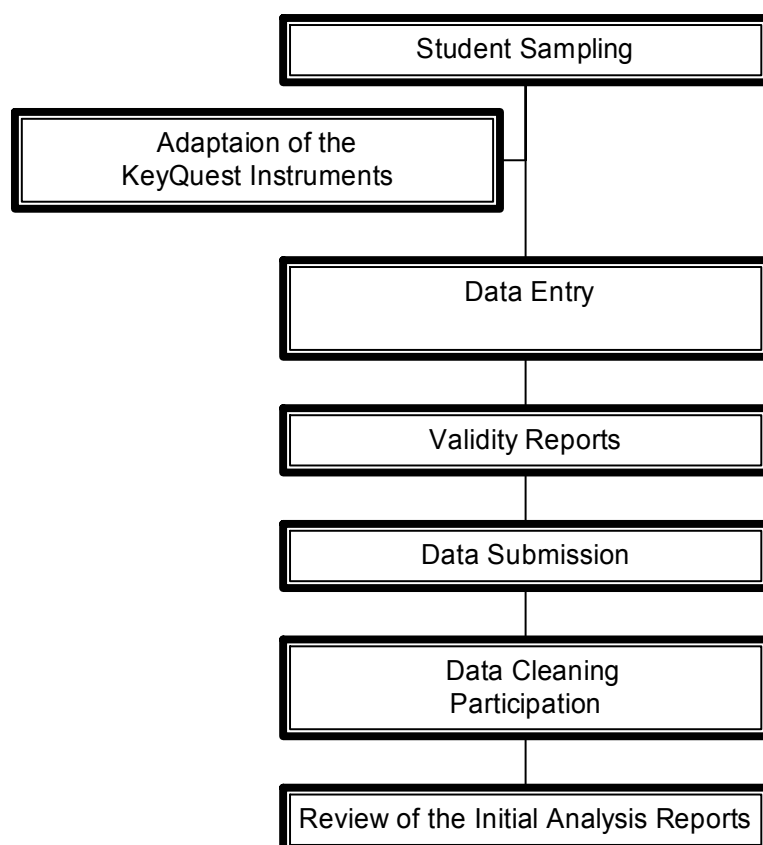
242.   At the beginning of the cycle, standards are set, test and background instruments are prepared to ensure comparability of results and schools are sampled using established and professionally recognised principles of scientific sampling. At this stage data management is involved implicitly.

243. Following the field trial, a set of *Field Trial Analysis Reports* are returned to national centres with information about the performance of items in your country (see paragraph 28). These reports need to be interpreted and analysed carefully, particularly with a view to the preparation of your main study instruments (see Chapter 3).

244. When the Consortium negotiates with National Centres about adaptations to the instruments and procedures to reflect national conditions on the one hand and to achieve comparability on the other, the data management team at ACER is involved directly. National Centres should also involve their data managers at this stage.

245. When ACER provides the KeyQuest data management software and all relevant manuals and documentation to National Centres, national data managers should begin implementation of the above adaptations. KeyQuest is generic software that can be configured to meet a variety of data entry requirements.

246. KeyQuest also allows for the initial data cleaning. National data managers should familiarise themselves with this procedures well before data submission. Many of the KeyQuest quality assurance procedures are more effective at the initial stages than at the end.

247. As with the field trial, after data are submitted by countries, ACER performs additional data cleaning at several levels. PISA requires that the data manager at the national centre actively participates at this stage. Initial analysis reports arising from the data cleaning are produced and sent to countries for review. PISA requires the NPM to review these reports and provide information about irregularities described in them.

SUBMIT DATABASE TO ACER

248. The database and related documents must be submitted in KeyQuest within 12 weeks of the end of the testing period.

249. Before submitting your data, you are required to run a series of validity checks, that are described in detail in the Data Management Manual. When necessary, you must correct any data errors detected through the validity checks. Hard or electronic copies of the cleaning reports must be submitted with the data files.

250. Submission of your data files via FTP access to ACER is preferred. Please contact ACER a day or two before you are ready to send the files for instructions on how to proceed. Exhibit 33 below shows the PISA Standards with regard to data submission.

Exhibit 33: Data Submission, PISA Standards

> **Standard 12.1.** Only one database must be submitted per PISA participant unless otherwise agreed.
>
> **Standard 12.2.** Data must be submitted in the KeyQuest format.
>
> **Standard 12.3.** Data for all instruments must be submitted. This includes
>
> cognitive data; questionnaire data; international option instrument data; multiple marking data; student tracking forms; session report data; programme tables; list of students (in KeyQuest or hard copy); list of schools.
>
> **Standard 12.4.** The National database must be submitted with full documentation that includes .
>
> - copies of validity reports specified in the Data Entry Manual
>
> - a questionnaire adaptations spreadsheet that reflects the adaptations made to KeyQuest

- a data questionnaire that will be developed by the Consortium for this purpose of data submission

Standard 16.1. National databases must be forwarded to the Consortium … within twelve weeks of the last day of testing for the Main Study unless otherwise agreed upon.

Standard 16.2. National Centres must execute data checking procedures as specified in the PISA Operation Manuals before submitting the database.

HAVE A DATA MANAGER AVAILABLE TO RESPOND TO QUERIES DURING DATA CLEANING

251.   You must organise for a data manager to be available, who will work actively with the consortium during the data cleaning process. Refer to Standard 16.3 below.

Exhibit 34: Availability of Data Manager, PISA Standards

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 an agreed upon three month period after the database is submitted,

- able to respond to Consortium queries within three working days, and

- able to resolve data discrepancies.

ARCHIVE YOUR MAIN STUDY MATERIALS

252.   Following the main study you will need to archive your materials. These need to be retained until at least the publication of the international report, refer to Standard 17.1 below.

Exhibit 35: Archiving materials, PISA Standards

Standard 17.1. National Centres must develop and maintain an electronic archive of all assessment materials as used for previous studies that include all items selected for linking. Materials to be archived include

- All administered Test Instruments, including National Options

- All administered Questionnaires, including National Options

- Test Administrator manuals and School Coordinator manuals

- Coding Guides

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.

253.   You should ensure that you are easily able to access your main study materials if requested. For example, you may need to access them to respond to queries that arise during data cleaning or data analysis. You will also need to submit a sample of booklets for the International Coding Review, discussed below.

COMPLETE AND SUBMIT THE MAIN STUDY REVIEW SURVEY.

254.   You will be asked to complete a Main Study Review, summarising your experiences with the main study. Along with the other quality monitoring activities, the Main Study Review contributes to the Consortium's overall assessment of the quality of the implementation of PISA in your country. In addition, the consortium is particularly interested to receive your feedback about your experiences in implementing the project, what worked well and what did not. These comments will be used to consider changes in subsequent cycles of PISA.

SUBMIT A SAMPLE OF YOUR BOOKLETS TO THE CONSORTIUM FOR THE INTERNATIONAL CODING REVIEW (ICR)

255.   As with previous cycles, the consortium will conduct an International Coding Review, where a sample of booklets from each country will be independently coded in order to provide further information about the reliability of coding. In the second half of 2006, you will be asked to send to the consortium a sample of your booklets. Further details about this exercise will be provided at a later stage.

CHAPTER NINE: MAIN STUDY CODING PROCEDURES

INTRODUCTION

256. This chapter provides details on the Main Study coding procedures. Item specific information on coding is provided in the Coding Guides. Complete details on data entry and management are included in the Data Management Manual.

257. The record sheets used for multiple coding are included in Appendix 2.

OVERVIEW OF CODING REQUIREMENTS

258. The coding process involves several different steps, which are explained in detail in this chapter. NPMs need to:

- Recruit coders;
- Process booklets as they are returned from schools and prepare them for coding;
- Conduct training of coders and table leaders; and
- Single- and Multiple- code booklets according to the international design

RECRUIT CODERS

259. NPMs will need to recruit people to carry out the coding of the test booklets. In some countries pools of experienced coders from other projects may be able to be called on. In others, suitable people will need to be found. It will be an advantage if coders from the previous cycles of PISA or from the Field Trial conducted in 2005 can be used for the coding. All people who will code the test booklets must undergo the specific PISA training, regardless of whether they have had related experience on other projects.

260. In recruiting coders, it will be important to obtain people who can commit their time to the project for the duration of the coding.

NUMBERS OF CODERS REQUIRED

261. This chapter describes a coding design involving sixteen coders who will code both Science and Mathematics, and an additional four coders for Reading. These designs can be adapted, e.g. for a larger number of coders, or for coders that code a different combination of domains. However, it should be noted that **at least four coders are required in any single domain**. Proposals to adapt the coding design need to be sent to the consortium for agreement prior to implementation.

262. Because the coding will take place over an estimated period of at least 5 weeks, it is recommended that at least three back-up coders (two for Science and Mathematics and one for Reading) be trained and included in at least some of the coding sessions.

ADMINISTRATION STAFF

263. Additional staff will also be required to administer the coding operation, including having the batches of booklets organised according to the coding design, and ensuring that coders are provided with their allocated booklets at each stage of coding.

CODER QUALIFICATIONS

264. Coders do not need high-level academic qualifications, but they must have a good understanding of mid-secondary level studies in the relevant subject domains. They must also understand secondary level students and ways that students at this level express themselves. Teachers on leave, recently retired teachers and senior teacher trainees would all be potentially suitable coders. NPMs who are uncertain about the suitability of people they may be able to recruit for coding should discuss their situation with ACER.

265. Coding responses to open-ended items is mentally demanding, requiring concentration for long periods of time. It is recommended that coders work for no more than 6 hours per day on actual coding. If the day is organised in two three-hour sessions, at least one short break should be taken during each session, with a minimum of 30 minutes between sessions.

NEED FOR TABLE LEADERS/SENIOR CODERS

266. NPMs will need to designate persons with subject matter expertise, familiarity with the tests and preferably also experience in coding student responses to open-ended items, to act as 'table leaders' during the coding. Table leaders assist with the overall organisation of the coding, field and resolve queries relating to the Coding Guide, and have an important role to play in monitoring the quality of the coding. It is recommended to appoint three table leaders for the coding exercise, two to lead the Science and Maths coders, and one for Reading.

CODER RECRUITMENT KITS

267. To assist NPMs with the process of selecting coders, the consortium has prepared materials that may be used to screen applicants for coding positions. These are available on the MS_Resources_06 page of the website (under 'Marker Recruitment Kit'). These materials are similar in nature to the Coding Guides, but are much briefer. They are designed so that applicants who are considered to be potentially suitable can be given a brief training session, after which they will code some student responses. Guidelines for assessing the results of this screening exercise are also provided.

CONFIDENTIALITY FORMS

268. The Coder Recruitment Kits contain examples from actual PISA assessments. Before seeing or receiving any copies of PISA test materials, prospective coders are required to sign a confidentiality form, obligating them not to disclose the content of the PISA tests beyond the groups of coders and trainers with whom they are working. A sample confidentiality form is provided in Appendix 1 of this manual. NPMs should keep the signed confidentiality forms on file at their centre.

CODER ID NUMBERS

269. NPMs must assign a 3-digit ID number to each coder. The first digit of the assigned ID indicates the domains that the coder is eligible to mark. The assignment of digits to domains is as follows:

Exhibit 36: First digit of coder ID by domain combination

Domains that the coder will code	First digit of 3-digit Coder ID
Mathematics	1
Reading	2
Science	3
Maths & Reading	4
Maths & Science	5
Reading & Science	6
Maths & Reading & Science	7

270. Within each of these eight categories, the remaining two digits will usually begin at 01 and continue in sequence to the number of coders. Thus, if 16 coders are used that code the items for both Maths and Science, their ID numbers would go from 501 to 516. 4 coders who code just Reading would be allocated Ids from 201 to 204.

271. **The coder ID <u>must</u> be recorded for the multiple coded booklets**. Coder IDs are not a requirement for the single coding, but it is strongly recommended that these be recorded by booklet on the batch header sheets (refer to later in the chapter), to help keep track of booklets during the single coding.

PROCESSING BOOKLETS AND PREPARING FOR CODING

PROCESS BOOKLETS

272.   Booklets should be logged in rigorously as they are returned by the Test Administrators or as they arrive directly from schools. All booklets and questionnaires should be accounted for against the Student Tracking Form. Section 4.4 of the source version TA and SA manuals contained instructions for the TA or SA to bundle completed booklets and questionnaires with the Session Report for each separate session, and to run a check that the count of completed booklets corresponds with:

- the number of students recorded in question 5 of the Session Report as having attended that session
- the number of students with a session code (other than the optional '88' code for absent students) recorded against them in column 11 of the Student Tracking Form.

273.   To avoid time-consuming follow-ups during data cleaning, it is strongly recommended that these checks also be completed at the national centre, upon receipt of the completed materials back from schools.

274.   If any test booklet is missing from a school's returned package (including unused booklets), it is essential that every effort be made to retrieve it immediately.

275.   Check that all returned booklets and questionnaires are adequately identified. (If they are not, you will need to call on the Test Administrator to go back to the school to work with the School Co-ordinator to ascertain the ID numbers of the respondents.)

276.   Make copies of the Student Tracking Forms and file these carefully in School ID order in one or more ring binders especially for that purpose. If ID numbers have not been assigned with schools in alphabetical order by name, prepare an index of school name against school ID to keep with the binders. These binders will need to be kept handy for easy consultation.

277.   Once all materials are accounted for, the Student Tracking and Session Report forms, School Questionnaire and the Student Questionnaire forms can then be sent for data entry.

278.   Sort booklets by booklet number, maintaining School ID order in the sets of Booklet 1, Booklet 2, and so on.

SETTING ASIDE BOOKLETS FOR MULTIPLE CODING

279.   Countries are required to set aside 100 of each of booklets **1, 3, 5, 6, 8** and **10** [7] for multiple coding. NPMs must select a representative sample of schools in the selection of booklets for multiple coding.

280.   The main principle in setting aside the booklets for multiple coding is that the selection needs to ensure a wide spread of schools and students. Ideally, all schools will have returned the completed booklets before the selection takes place. In practice, it will probably be preferable to begin the coding before all completed booklets have reached the National Centre. It is suggested that no coding begin until at least half of the booklets have been returned.

281.   Most countries will be expecting around 400 of each booklet for coding (5250 / 13 booklets ≈ 400 students per booklet). This means that about one in four of booklets 1, 3, 5, 6, 8 and 10 should be set aside for multiple coding. If more than 5250 booklets are expected, divide the expected sample size by 13 to obtain the expected number of each booklet to determine what proportion should be set aside.

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[7] Multiple coding this subset of booklets will ensure that all items are included in the reliability study.

282.   Under this scenario, with each booklet in order by school ID, simply remove every fourth booklet and set it aside for multiple coding. If this process ends up with a few less than 100 booklets, randomly select some more booklets from the main pile to make up to 100. If you end up with a few more than 100, randomly remove the excess number of booklets from the pile set aside for multiple coding and return to the main booklet pile. This should ensure that the booklets for multiple coding cover the range of school IDs in your sample.

283.   If the coding is being undertaken at your centre in two main sequences – for example, after half of the schools have returned their booklets and then after all booklets have been received – please remember that booklets for multiple coding **must be selected from the full range of schools**. The ratio used for selecting the booklets from the schools included in the first main coding sequence must be based on the total number of booklets you expect to receive. Once you know the actual number of booklets received, the ratio used for selecting the booklets from the schools included in the second main coding sequence can be adjusted so that overall you set aside the correct numbers of booklets.

284.   The range of school IDs of the booklets set aside for multiple coding will be reported as one of the quality checks when analysing the coder reliability data.

MULTIPLE LANGUAGES

285.   Countries that administered PISA in more than one language should use the following guidelines for setting aside the booklets to be multiple coded:

286.   All languages that represent at least 20% of the target population must be included in the multiple coding exercise. Languages less the 20% should not be included.

287.   Where there is more than one language of at least 20%, the 100 of each booklet type that need to be set aside should be allocated in proportion to the language group.

288.   For example, country X tested in three languages, A, B and C representing 70%, 20% and 10% respectively of 15 year old students. Language C is not required for multiple coding as it is less than 20%. The 100 of each booklet type should include 70/90 * 100 = 78 books from language A, and 20/90*100 = 22 books from language B.

ADDITIONAL ADJUDICATED REGIONS

289.   Where you are administering PISA in additional adjudicated regions, the number of booklets to be set aside will depend on the organisation of coding operations in these regions and for the country as a whole. Consult with the consortium for the coding requirements if this situation applies in your country.

COUNTRIES IMPLEMENTING THE OPTIONAL UH BOOKLET

290.   Countries implementing the optional UH Booklet (refer to Chapter 6 for information about this booklet) will probably prefer to process this separately from the remaining booklets with respect to coding. There will be smaller numbers of students using this booklet and only a small number of items requiring coding. The allocation of items to the clusters of the UH Booklet is different, refer to Appendix 3. Coders may need to be reminded that the coding criteria for the items from Booklet UH should be applied in the same way as they are for all other clusters. There is no multiple coding required for this booklet.

PREPARE BATCH HEADER SHEETS

291.   Prepare batch header sheets to facilitate the tracking of booklets during coding. These batch headers should be pre-printed with spaces for the following to be recorded: Booklet number (e.g. Booklet 4); batch number; (see below); the number of booklets and the school IDs represented in the pile, and spaces for each coder to write his or her name, ID number and the date and time coded. If the information has not already been entered, the first coder who takes a pile of booklets should fill in the number of booklets and the school IDs represented in the pile on the header sheet. The completed header sheet should be bound with the pile of booklets throughout the coding, e.g. with an elastic band.

292.   100 of each of 6 booklet types (1, 3, 5, 6, 8 and 10**)** will be set aside for multiple coding in each country. Each of these will be divided into 4 batches of 25 booklets each[8]. Therefore 24 batch headers will be required for the booklets to be multiple coded.

293.   There are 13 different booklet types altogether. Divide each pile of booklets to be single-coded into sixteen batches with the same number of booklets in each batch. It does not matter if a school's booklets form the last booklets of one batch and the first booklets of the next batch. Assuming all booklets have been returned from schools, and a sample size of 5250 students, there should be approximately 400 of each booklet type NOT being multiple coded, and around 300 of each booklet type being multiple coded. Each batch should therefore contain around 400/16 = 25 booklets or 300/16 = 19 booklets. Attach a header sheet to each batch.

294.   If booklets will be prepared in two steps (so that coding can begin before all booklets are returned), then divide the booklets received at the first step into the same number of batches, with a smaller number of booklets per batch, and create a second set of batches for the remaining booklets prepared at the second step.

295.   The batch header sheets will also be used to keep a record of the quality monitoring activities undertaken.

PREPARING FOR CODER TRAINING

TRAINING AND CODING SEQUENCE

296.   Training and coding should be undertaken alternately one cluster at a time. This ensures that coders have recently been trained in the items next to be coded, and should therefore result in more accurate and consistent coding.

297.   The organisation of the single- and multiple- coding operations is explained in detail later in this chapter.

298.   Note that during the single coding, **it is a requirement that within each domain, all recruited coders code every cluster.** This ensures that each coder is prepared for the multiple coding activity that follows. It also helps to ensure that a student's booklet is coded by more than one coder, and that booklets from each school are coded by a range of coders, thus minimising the effects of coder harshness or leniency.

299.   Note also that the **student responses must be coded item by item[9].** That is, Item X is coded in all booklets in the pile provided to each coder before the next item requiring coding is considered. This maximises the potential for the consistent coding of each item in turn, and also avoids possible 'halo effects' where a coder is influenced by the responses of previous items from a student's booklet in the coding of the current item.

PREPARATION FOR TRAINING

300.   In preparation for the training, it is recommended that coders be asked to respond to all the test items in the domain(s) they will be coding. This helps them to become familiar with the content of the stimulus materials as well as the items themselves. It also helps them to appreciate problems that students might have in responding to some of the items.

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[8] These calculations assume a single language, or multiple languages that will be coded by the same group of coders. If a different coding team is required for a language, then the number of booklets to be multiple coded in that language needs to be divided into four equal piles.
[9] Items that have closely related parts may have all parts coded per student in the same 'pass' through the booklets.

301.   Prior to the training sessions, coders should be provided with the Coding Guides and requested to read through these in advance of the sessions. Given that the training and coding will proceed by cluster, this advance reading can be done in stages.

302.   The Arrecife training workshop materials should be used by NPMs as the basis for training the coders in their own country. These materials should be supplemented by local examples of actual student responses, as described below.

SELECTION OF LOCAL EXAMPLES FOR TRAINING

303.   NPMs will need to select some examples of responses from their own country to use as part of the coder training and quality monitoring. Please select up to 25 examples of each item, to illustrate a range of responses according to the Coding Guide. Try to have one or two examples of responses for each code in the Coding Guide for that item. However, there is no need to search for a long time for responses that occur rarely. For very straightforward items, fewer examples will suffice.

304.   The examples should then be placed into cluster sets, that is, all of Cluster 1 examples together, and so on, and sufficient copies made for each coder to have his or her own sets. These sets are to be used as practice material following the training with the materials provided by the consortium in the workshop booklets.

TRAINING FOR TABLE LEADERS

305.   Table leaders will need to be thoroughly familiar with both the test items and the Coding Guide ahead of the training. Table leaders will undertake the full coder training as trainees and will take part in the coding along with other members of their coder group (those who are assigned to their table). However, they will spend some of their time in checking codes assigned by members of their group, and in clarifying queries, documenting these if necessary for referral to the consortium.

306.   The table leaders will need to undergo additional training in the procedures required of them for reliability monitoring. They will need to be familiar with the additional practice materials and understand the pre-assigned codes for these exercises.

TRAINING

BEGINNING THE FIRST TRAINING SESSION

307.   To begin the first training session, it is recommended that NPMs provide an overview of the PISA project, the approach to assessment taken in the PISA frameworks and the extent of the sample in their country. It will also be useful to summarise the amount and nature of the test content, especially since the coders will have themselves recently completed the tests.

308.   Trainee coders should be informed of the expectation that they will be able to apply the Coding Guides with a high level of reliability. The role of table leaders should be explained, and it should be made clear to the trainees that reliability checks will be made as part of the coding process.

USING THE WORKSHOP MATERIALS

309.   During training sessions, coders should begin with the workshop materials used at the Arrecife training meeting. These materials include several sample responses for each item requiring coding. Using the Coding Guides, trainees will code the sample responses and the trainers will then review the codes assigned in an open discussion with the whole group of trainees. Trainees may ask questions during this process, the aim of which will be to achieve consensus on the code that should be assigned to each response.

310.   Immediately following training using the workshop materials, coders should undertake additional practice with the standard sets of locally assembled materials. Each of these practice sessions should be run as a formal exercise.

311.   During this exercise the coders should work without asking questions or consulting other coders. They should write their Coder ID on the front of their practice set and should show the codes they assign by circling the code alongside each item, as they would do if coding the items in actual student booklets.

312.   When the coders have completed this additional practice exercise, the trainers should review the codes assigned and conduct further discussion as necessary to ensure that the coders understand the rationale for the correct codes (those agreed by the trainers and table leaders). However, coders should not at this stage change the codes they actually assigned. The review can be done by item or by unit. This step must be completed before actual coding of the Main Study booklets is begun.

MONITORING THE PRACTICE CODING

313.   The trainers, assisted by table leaders, should collect the practice papers after each of the practice sessions and, as soon as possible, tabulate the codes assigned. The codes assigned by each coder should then be compared with the pre-agreed codes, with each matching code regarded as a 'hit' and each discrepant code regarded as a 'miss'. To reflect an adequate standard of reliability, the percentage of a coder's 'hits' to the total of 'hits plus misses' for an exercise should be at least 85%, and preferably rather higher than that. In the case of where two-digit codes are prescribed, this reliability should be assessed on the first digit.

314.   If results from this additional practice exercise indicate that the coders as a group are not yet achieving this level of reliability, then additional practice will need to be undertaken before the actual coding proceeds. Any actual coding that may have been done before the results of the practice become available will need to be reviewed.

315.   If results from the additional practice exercise indicate that one or two coders are having trouble in some areas, the trainers or table leaders will need to spend time with them to identify where the problems lie and to help them achieve a better understanding of the Coding Guide.

316.   If results from the additional practice exercises show that the same one or two coders are consistently unable to use the Coding Guide with sufficient reliability, then these coders should not be used for further coding. Any coding of actual booklets that they have already done will need to be reviewed.

CODING

317.   Following the administration of the practice exercises, and assuming that the trainers are satisfied with the quality and consistency of coding for the cluster covered in the training, coding of these items can proceed.

318.   Single and multiple coding designs, presented later in the chapter provide the recommended sequence of clusters to be coded.

319.   The multiple coding is carried out after the single coding has been completed, by which time all coders will have coded every cluster, and will be thoroughly familiar with the coding guides.

320.   During the actual coding of booklets, it will be preferable for coders to work quietly, referring queries to their table leader rather than to their neighbours. Table leaders should be prepared to advise coders in their group as the need arises, either individually or as a group if a particular query justifies this.

MONITORING CODER CONSISTENCY DURING CODING

321.   It is important for NPMs to know that coders are using the Coding Guides consistently at all stages of the coding. The steps described in this section represent the minimum level of monitoring activities required. Countries wishing to implement more extensive monitoring procedures during the single coding are encouraged to do so.

CHECKING BY TABLE LEADERS OF ACTUAL CODING

322.   As well as the supervision and assessment of the additional practice material, table leaders have a key role to play in spot-checking during the actual coding.

323.   Table leaders should spend some time during each session and at the end of each day 'spot' checking a sample of booklets or items that have already been coded, to identify problems for discussion with individual coders or with the wider group, as appropriate. If there were indications from the practice session(s) that a particular coder might be experiencing problems in using the Coding Guide consistently, then more of that coder's booklets should be included in the checking.

324.   At the beginning of the next day's coding, table leaders should review the results of the spot-checking with the coders. This activity should primarily be seen as a mentoring activity, but NPMs should keep in contact with table leaders to be aware of coders who are consistently not meeting criteria of adequate reliability. It will not be in the best interests of PISA as a whole or of the individual country's results if such coders are allowed to remain in the coder pool.

RECORD KEEPING

325.   Table leaders should initial and date the header sheet of each batch of booklets for which they have carried out spot-checking. Some items/booklets from each batch *must* be checked. Table leaders should keep a logbook of how many items of each coder's work they have checked, and the extent of hits and misses they have located in the codes assigned. NPMs should review this record regularly with the table leaders.

CODER QUERY SERVICE

326.   A coder query service is available for the situation where questions arise about coding particular items that cannot be resolved by the table leader. Table leaders should refer any such enquiries to the NPM, who should then direct the query to pisa@acer.edu.au.

THE RECORDING OF CODES

327.   There are five types of items, which are shown in Exhibit 11. 1 with their coding requirements for the study.

Item type	Nature of item	Coding needed
multiple choice	Standard 'choose one' from a set of given answers	None (response entered directly into computer)
complex multiple choice	Series of true/false or yes/no choices—one answer to be chosen for each element in the series	None (responses entered directly into computer)
closed constructed response	Short verbal or numerical response, correct answer clear-cut	None for some items (responses directly entered into computer); One coder for some items (to assign a right/ wrong code for data entry)
short response	Short verbal or numerical response, but a variety of possible correct answers	One coder, to assign codes with reference to the Coding Guide. A sub-sample of booklets multiple coded.
open constructed (extended) response	Longer verbal response, (e.g. 'explain your answer') or requirement to show work in solving mathematics, problem solving or science problem	One coder, to assign codes with reference to the Coding Guide A sub-sample of booklets multiple coded.

Exhibit 11. 1 PISA item types and coding requirements

HOW CODES ARE ASSIGNED DURING SINGLE CODING

328.   For single coding, the codes are recorded in the test booklets. On the right hand side of each test item that requires coding, there is a string of small code numbers. For single coding, the code assigned should be indicated directly in the booklet by circling the appropriate code number alongside the item. If a code has to be changed, the first code should be fully erased or clearly indicated as no longer applying. Note that the "*Not Applicable*" code is not included in the string of small code numbers.

HOW CODES ARE ASSIGNED DURING MULTIPLE CODING

329.   The multiple coding differs significantly from the single coding in that the codes assigned by the first three coders should not be shown in the booklets themselves. These coders will need to use the special purpose coding record sheets provided in Appendix 2 of this manual.

330.   The multiple coding record sheets are designed so that all the codes per student per booklet will be recorded on the same sheet. Coders show the codes they assign by circling a pre-printed code for each item.

331.   It is essential that the ID of the student whose booklet is being coded be written onto the student's multiple coding record sheet, together with the coder's ID number and the codes assigned.

SINGLE CODING DESIGN

INTRODUCTION

332.   The single coding design presented below involves 16 coders who will each code the clusters of both the Science and Maths domains, and an additional 4 coders who will code Reading. NPMs who propose to implement another design must submit their proposal to the Consortium for approval.

333.   The design presented below is organised so that all appearances of each cluster type are coded together. This arrangement entails coders working with several booklet types at the same time, and will require space for partly coded booklets to be stored while other booklets are being worked on. However, for the reasons described earlier, organising the coding this way has the substantial benefits of:

more accurate and consistent coding, (because training and coding are more closely linked)
- minimising effects of coder leniency or harshness (more than one coder codes each booklet; coders code across the range of schools sampled)

334.   Each cluster appears in four different booklet types within the 13 booklets of the test design. Coders should code each of the four appearances of a cluster before proceeding to the next cluster.

335.   Note, however, that it is permissible to undertake two main sequences of coding through the clusters, in order to begin the coding before all booklets have been returned to the National Centre.

SINGLE CODING

336.   The single coding design is presented as Exhibit 37 on the following page.

Exhibit 37: Single coding design: PISA 2006 Main Study

| | | Science and Maths Clusters | | | | | | | | | | | | | | | | | Reading Clusters | | | | |
| | | Batches | | | | | | | | | | | | | | | | | | Batches | | | |
Cluster	Booklets	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Cluster	Booklet	1-4	5-8	9-12	13-16
S1	1,9,10,12	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	R1	2	201	202	203	204
S2	1,2,8,11	516	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	R1	6	204	201	202	203
S3	2,3,5,9	515	516	501	502	503	504	505	506	507	508	509	510	511	512	513	514	R1	7	203	204	201	202
S4	1,3,4,6	514	515	516	501	502	503	504	505	506	507	508	509	510	511	512	513	R1	12	202	203	204	201
S5	4,5,11,12	513	514	515	516	501	502	503	504	505	506	507	508	509	510	511	512	R2	13	201	202	203	204
S6	5,6,8,10	512	513	514	515	516	501	502	503	504	505	506	507	508	509	510	511	R2	11	204	201	202	203
S7	1,5,7,13	511	512	513	514	515	516	501	502	503	504	505	506	507	508	509	510	R2	9	203	204	201	202
M1	3,8,12,13	510	511	512	513	514	515	516	501	502	503	504	505	506	507	508	509	R2	6	202	203	204	201
M2	4,7,8,9	509	510	511	512	513	514	515	516	501	502	503	504	505	506	507	508						
M3	2,4,10,13	508	509	510	511	512	513	514	515	516	501	502	503	504	505	506	507						
M4	3,7,10,11	507	508	509	510	511	512	513	514	515	516	501	502	503	504	505	506						

337.   Implementing this design involves the following steps.

   a)   The Science coders are trained in the coding of the items to be coded from cluster S1, and the Reading coders are trained on the R1 items.
   b)   Coders then work through the locally prepared practice exercises. The coding of these items is monitored by the trainers and table leaders as described earlier.
   c)   Coder 501 takes 'batch 1' of Booklets 1,9,10 and 12; Coder 502 takes batch 2 of these booklets, and so on through to Coder 516 who takes batch 16. With an overall sample size of 5250, each coder will have approximately $19 + 25 + 19 + 25 \approx 90$ booklets (refer to paragraph 293).
   d)   Coders then code all of the first S1 items requiring coding in the booklets that they have.
   e)   Next, the second S1 item is coded in each of the booklets held by the coder, followed by the third S1 item, and so on until all of the S1 items have been coded.
   f)   Whilst this science coding is occurring, the Reading coders can be coding the R1 cluster from Book 2. Coder 201 takes batches 1-4 of Book 2, coder 202 takes batches 1-8 and so on. (approximately $25 \times 4 = 100$ booklets)
   g)   Following the completion of this step, the batches of booklets 9,10 and 12 that the science coders had been using need to be set aside for the time being, as they are not required at the next step. The batches of Booklet 1 and 2 that were used respectively by the science and reading coders will be used at the next step, as will the batches of booklets 8,11 and 6.
   h)   Science coders undertake training and then practice with local examples in relation to cluster S2. The batches of booklets 1, 2, 8 and 11 are now distributed to coders. Coder 516 receives batch 1, 501 receives batch 2 and so on.
   i)   The batches of Booklet 6 are distributed to the Reading coders. They will be coding the same cluster, R1, as in the previous step, so no training is required for them at this stage. 204 receives batches 1-4, 201 receives batches 5-8 and so on.
   j)   The items requiring coding from these clusters are coded item by item as described above, until all items have been coded.
   k)   This training and coding sequence continues for the remaining rows in the design.
   l)   As a result of this procedure, the sixteen Science coders will have coded booklets from 11 batches, and the Reading coders will have coded booklets from all 16 batches. Each coder will have coded every cluster his/her domain, each booklet will have been coded by four separate coders, and each school's booklets will have been coded by 15 different coders.

338.   Exhibit 37 shows a suggested order for coding the clusters designed to minimise delays caused by coders from different domains requiring the same booklet. The order assumes that the coders from each domain will finish the coding of each cluster in approximately the same amount of time. In practice, the time taken for coding is likely to vary from cluster to cluster, coder to coder, and from country to country. It should be expected that there will be times where the one group of coders will be waiting for another group to finish with particular booklets, and this will need to be managed. The administration team will need to monitor the rate of coding during each step, anticipate these sorts of difficulties, and if necessary determine an appropriate course of action prior to the next step. For example, if some booklets are being used by the coders of the other domain, coders may need to be allocated the available batches of the required booklet types at the beginning of a step, and provided with batches of the remaining booklet type once it becomes available.

MULTIPLE CODING OF BOOKLETS SET ASIDE FOR RELIABILITY STUDY

INTRODUCTION TO MULTIPLE CODING

339.   In the multiple coding process some, **but not all** clusters of each booklet set aside for this exercise are coded by four separate coders. There are six booklet types to be multiple coded, with Booklets **1, 3, 5, 8** and **10** including science and mathematics clusters to be multiple coded, and Booklet **6** containing reading clusters to be multiple coded. All twenty coders used in the single coding process can (and should be) used in the multiple coding. A separate coding design is shown for the multiple coding of the maths and science clusters, and the multiple coding of reading.

340.   In the coding design for science and mathematics, the sixteen coders are divided into four teams of four at the first step. Each team completes the multiple coding of one of the booklet types set aside. At the second step, a selection of four of the sixteen coders, one from each of the groups established at the first step, will complete the coding of the final booklet.

341.   During the single coding, each coder will have coded items from every cluster in the design and should therefore be thoroughly familiar with the Coding Guides by this time. However, they may have most recently coded different clusters to those allocated to them for multiple coding. For this reason, coders should re-read the relevant Coding Guide for the clusters they will be multiple coding before beginning the coding. It is recommended that time be provided for coders to refresh their familiarity with the Guides and to look again at the additional practice material before proceeding with the multiple coding. Based on the experiences of the single-coding operation, a judgement will need to be made as to whether this review should be conducted by cluster, part-booklet, or by booklet.

342.   The multiple coding is to be done independently of other coders or the table leader. Coders should not consult each other about the Coding Guides during the multiple coding exercise.

343.   As described earlier, the first three coders record their codes on the Coding Reliability sheets, see Appendix 4, while the fourth coder records his or her codes in the booklets themselves.

344.   Copies of the Coding Reliability sheets should be prepared in advance of the coding. Each of the 600 booklets set aside for multiple coding will require three of these sheets, for the first, second and third coding respectively. To help keep track of progress, it is recommended that a different colour paper is used for each of the first, second and third coding sheets. The multiple coding of a booklet will be complete when three separate coding reliability sheets have been filled, and the appropriate clusters of the booklet itself has then been coded.

345.   As well as 'fourth-coding' the short response and open constructed response items from the clusters of the booklet assigned for multiple coding, the fourth coder must also single code any 'short constructed response' items from the booklet. (These are items that require a coder to assign a right/wrong code, but do not require any coder judgement, and therefore do not require multiple coding). The fourth coder must also code any remaining clusters from the booklet that require single coding only (refer to Exhibit 38).

346.   **The fourth coder must also record his or her coder ID on the front cover of the booklet.** This should be indicated in the appropriate'Office use only' box labelled 'MCS', 'MCM' and 'MCR' ('Multiple Coding of Science, Reading or Mathematics' respectively) below the student details box on the cover page.

347.   It is expected that countries will follow the appropriate coding design as described below. NPMs who propose to implement another design must submit their proposal to the Consortium for agreement.

Exhibit 38: Multiple coding design PISA 2006 Main Study

Multiple Coding (16 Science and Mathematics coders)

Step	Booklet	Coder IDs	Clusters for multiple coding	Clusters for single coding
1	1	501, 502, 503, 504	S1,S2	S4,S7
	3	505, 506, 507, 508	S3,S4	M4,M1
	8	509, 510, 511, 512	M1,M2	S2,S6
	10	513, 514, 515, 516	M3,M4	S6,S1
2	5	501, 506, 511, 516	S5,S6,S7	S3
3	6	Any coders available from 501-516		S4,S6

Multiple Coding (4 Reading coders)

Step	Booklet	Coder IDs	Clusters for multiple coding	Clusters for single coding
1	6	201,202,203,204	R1,R2	None

348.   Implementing the multiple coding design involves the three steps described below.

STEP 1

349.   The 100 Booklet 1s, (that have previously been divided into four batches each with 25 booklets - refer to paragraph 293) are rotated among coders 501, 502, 503 and 504, so that each of these coders will eventually have coded all 100 of this booklet. Similarly, the Booklet 3s are distributed and coded by coders 505-508; Booklet 8s to 509-512, and Booklet 10s to 513-516.

350.   The coding of items during the multiple coding process proceeds **item-by-item**, in the same manner as described above for the single coding stage.

351.   For the first three times a batch of booklets is coded, the codes should be circled on the separate multiple coding sheets, provided in Appendix 2 of this manual. After the final rotation, i.e. after all of the booklets have been coded by three of the four coders, the 'fourth-codes' should be recorded in the booklets as was done for the single coding.

352.   The fourth coder should then also code any 'closed constructed response' items (that did not require coder judgement, but did require a right/wrong coding by a coder) from the booklets. Exhibit 39: Items from the multiple coded clusters that require a single coding only.below is a list of these items from the clusters that need to be multiple coded.

Exhibit 39: Items from the multiple coded clusters that require a single coding only.

QUESTION NO IN BOOKLET	ITEM ID	FROM UNIT
Science		
B5-16	S413Q06	Plastic Age
B5-44	S416Q01	The Moon
B5-54	S514Q04	Development and Disaster
B5-56	S421Q01	Big and Small
B5-57	S421Q02	Big and Small
B5-58	S421Q03	Big and Small
Reading		
B6-32	R104Q01	Telephone
B6-33	R104Q02	Telephone
B6-35	R219Q01A	Employment
B6-35	R219Q01B	Employment
B6-35	R219Q01C	Employment
B6-35	R219Q01D	Employment
B6-41	R102Q05	Shirts
Mathematics		
B8-08	M598Q01	Making a Booklet
B8-14	M474Q01	Running Time
B8-19	M411Q01	Diving
B10-05	M446Q01	The Thermometer Cricket
B10-15	M496Q02	Cash Withdrawal

353. The fourth coder should then also single code the clusters from the booklet that are assigned for single coding in Exhibit 38.

354. Finally the fourth coder records his or her ID on the booklet cover (in either the 'MCS', 'MCM' or 'MCS' boxes, depending on which clusters were multiple coded from that booklet).

355. The rotations of the four batches, each with 25 Booklet 1s, between coders 501 – 504 are illustrated in Exhibit 40 below.

	501	502	503	504	Notes
1st rotation	Batch 1	Batch 2	Batch 3	Batch 4	First –codes recorded on reliability sheet
2nd rotation	Batch 2	Batch 3	Batch 4	Batch 1	Second –codes recorded on reliability sheet
3rd rotation	Batch 3	Batch 4	Batch 1	Batch 2	Third –codes recorded on reliability sheet
4th rotation	Batch 4	Batch 1	Batch 2	Batch 3	Fourth –codes recorded in booklet. 'Non-judgement' items also coded in booklet.
					Single coding of remaining clusters from booklet
					ID recorded on cover

Exhibit 40: Booklet rotation, multiple coding

356. Exactly the same rotation scheme is used by coders 505-516 in the multiple coding of Booklets 3, 8 and 10 respectively, as well as by coders 201-204 for the multiple coding of Booklet 5. (For the Reading coders there are no remaining clusters to be single coded, so once the multiple coded clusters have been completed, the 'non-judgement' items coded, and the ID is recorded, the job is completed for these coders).

357.   In the second step, one coder from each of the science coding groups formed in step 1 is allocated to a team for the multiple coding of **three** clusters from Booklet 5. It is important that the coders allocated are as shown in the design so as to allow for some linking between coders and clusters.

358.   Exactly the same procedure and rotation scheme that was described for step 1 is used at this step, except that three clusters are required to be multiple coded rather than two. At the completion of the multiple coding, there is one cluster remaining from this booklet that must be single coded by the fourth coder.

STEP 3

359.   Finally, the science clusters S4 and S6 from the Booklet 6s that had been set aside for the multiple coding of reading need to be single coded. This task can be allocated to science and mathematics coders not required for step 2, or can be completed by the coders allocated to step 2 after they have completed this step.

ALTERNATIVE SINGLE- AND MULTIPLE- CODING DESIGNS

360.   For a number of reasons you may require a different coding design to those described in this chapter, for example a larger sample size requiring more coders, a different team of coders for a second or third language, or using coders who will code Mathematics separately to Science. In most cases, it should be straightforward to extend or adapt the designs from this chapter to one that suits your requirements, which maintains the principles of the designs presented here. For example, a separate team of Mathematics coders could be accommodated by separating out the Mathematics clusters from the single- and multiple- coding designs. (Managing the operation so that each booklet type is required by only one of the coding teams will clearly be more difficult in this case.) If an alternative design is required, use the designs from this chapter as the basis for developing a proposed alternative, and then send this to pisa@acer.edu.au for agreement.

PISA STANDARDS IN RELATION TO CODING

361.   The PISA Standards in relation to the coding operation are presented in Exhibit 41 below.

Exhibit 41: Coding – PISA Standards

> **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 … the Main Study.
>
> **Standard 11.3.** Both the single 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.

APPENDIX ONE: SAMPLE CONFIDENTIALITY AGREEMENT FOR MARKERS

CONFIDENTIALITY AGREEMENT

(OECD/PISA Coders)[10]

Name

Address

I, *agree in accepting employment as a Test Coder for the OECD/PISA project being managed by <National Centre>:*

1.   that I will assess objectively and impartially in accordance with the advice and procedures provided by <National Centre>;

2.   that I will immediately inform <National Centre> if I am or may be closely related to or associated with any student whose work I might be asked to code;

3.   that I will observe confidentiality and will not disclose or divulge by any means or in any way to any person not authorised to receive them:

      a)   any results obtained by candidates or schools;
      b)   the content of any PISA test booklet;
      c)   the content of any script from the test booklets or questionnaires;
      d)   the content of any script from the School Questionnaire;
      e)   the name of any student whose work I have coded; and
      f)   details of the coding criteria used in the project.

Signature ……………………………………………   Date ………………

---

[10] Adapt for other project staff as appropriate

APPENDIX TWO: MULTIPLE CODING RELIABILITY SHEETS

OECD PISA 2006 MAIN STUDY

RECORD SHEET FOR MULTIPLE CODING   <FIRST/SECOND/THIRD>CODING

Booklet 1:   Coder's name_____   Date_____/06

MCS ☐☐☐   Student ID ☐☐☐☐☐☐☐☐☐☐☐

StIDStr   StIDSch   StIDSt

Please enter __and check__ the full ID for the student, and keep this sheet with the booklet until you have coded all the designated items in the booklet.

You must code __the same item__ throughout all booklets assigned to you before moving to another item

Show the appropriate code by __circling.__

Question Number	Item Name	Item Label	Response Codes					Missing	N/A
Q3	GENETICALLY MODIFIED FOOD Q4	S508Q04	0	1				9	7
Q5	EARTH TEMPERATURE Q1	S269Q01	0	1				9	7
Q6	EARTH TEMPERATURE Q3	S269Q03	01	02	11	12		99	97
Q8	THE GRAND CANYON Q1	S426Q01	0	1				9	7
Q18	ACID RAIN Q2	S485Q02	0	1	2			9	7
Q20	ACID RAIN Q5	S485Q05	0	1	2			9	7
Q28	GREENHOUSE Q3	S114Q03	01	02	11	12		99	97
Q29	GREENHOUSE Q4	S114Q04	0	1	2			9	7
Q30	GREENHOUSE Q5	S114Q05	01	02	03	11	12	99	97
Q37	RADIOTHERAPY Q3	S495Q03	0	1				9	7

Booklet 3:   Coder's name_____   Date_____/06

MCS

Student ID

StIDStr   StIDSch   StIDSt

*Please enter **and check** the full ID for the student, and keep this sheet with the booklet until you have coded all the designated items in the booklet.*

*You must code **the same item** throughout all booklets assigned to you before moving to another item*

*Show the appropriate code by **circling.***

Question Number	Item Name	Item Label	Response Codes					Missing	N/A
Q3	MARY MONTAGU Q4	S477Q04	0	1				9	7
Q6	ALGAE Q2	S268Q02	0	1				9	7
Q8	AIRBAGS Q1	S519Q01	0	1	2			9	9
Q10	AIRBAGS Q3	S519Q03	0	1				9	7
Q15	EXPERIMENTAL DIGESTION Q4	S498Q04	0	1	2			9	7
Q19	PENICILLIN MANUFACTURE Q7	S524Q07	0	1				9	7
Q22	MAGNETIC TRAIN Q4	S510Q04	01	11	12			99	97
Q23	MILK Q1	S326Q01	0	1				9	7
Q24	MILK Q2	S326Q02	0	1				9	7
Q28	WILD OAT GRASS Q3	S408Q03	0	1				9	7
Q36	EXTINGUISHING FIRES Q6	S437Q06	0	1				9	7

MCS

Student ID

StIDStr   StIDSch   StIDSt

*Please enter **and check** the full ID for the student, and keep this sheet with the booklet until you have coded all the designated items in the booklet.*

*You must code **the same item** throughout all booklets assigned to you before moving to another item*

*Show the appropriate code by **circling.***

Question Number	Item Name	Item Label	Response Codes						Missing	N/A
Q2	GOOD VIBRATIONS Q2	S131Q02	01	02	03	11	12		99	97
Q3	GOOD VIBRATIONS Q4	S131Q04	01	02	03	04	11	12	99	97
Q4	DIFFERENT CLIMATES Q1	S465Q01	0	1	2				9	7
Q15	SUNSCREENS Q5	S447Q05	0	1	2				9	7
Q20	THE ICE MUMMY Q1	S458Q01	0	1					9	7
Q22	WATER Q1	S304Q01	0	1					9	7
Q24	WATER Q3A	S304Q03A	0	1					9	7
Q25	WATER Q3B	S304Q03B	0	1					9	7
Q28	BACTERIA IN MILK Q5	S428Q05	0	1					9	7
Q32	GREEN PARKS Q3	S438Q03	01	11	12				99	97
Q41	PHYSICAL EXERCISE Q5	S493Q05	01	11	12				99	97
Q47	PENGUIN ISLAND Q3	S425Q03	0	1					9	7
Q50	PENGUIN ISLAND Q4	S425Q04	0	1					9	7
Q52	DEVELOPMENT AND DISASTER Q2	S514Q02	0	1					9	7
Q53	DEVELOPMENT AND DISASTER Q3	S514Q03	0	1					9	7

RECORD SHEET FOR MULTIPLE CODING   <FIRST/SECOND/THIRD>CODING

Booklet 6:   Coder's name_____   Date_____/06

MCR

Student ID

StIDStr   StIDSch   StIDSt

*Please enter **and check** the full ID for the student, and keep this sheet with the booklet until you have coded all the designated items in the booklet.*

*You must code **the same item** throughout all booklets assigned to you before moving to another item*

*Show the appropriate code by **circling.***

Question Number	Item Name	Item Label	Response Codes					Missing	N/A
Q22	OPTICIAN Q3	R227Q03	0	1				9	7
Q23	OPTICIAN Q6	R227Q06	0	1				9	7
Q25	EXCHANGE Q2B	R111Q02B	0	1	2			9	7
Q27	EXCHANGE Q6B	R111Q06B	0	1	2			9	7
Q29	DRUGGED SPIDERS Q2	R055Q02	0	1				9	7
Q30	DRUGGED SPIDERS Q3	R055Q03	0	1	2			9	7
Q31	DRUGGED SPIDERS Q5	R055Q05	0	1				9	7
Q34	TELEPHONE Q5	R104Q05	0	1	2			9	7
Q35E	EMPLOYMENT Q1E	R219Q01E	0	1				9	7
Q36	EMPLOYMENT Q2	R219Q02	0	1				9	7
Q38	AESOP Q4	R067Q04	0	1	2			9	7
Q39	AESOP Q5	R067Q05	0	1	2			9	7
Q40	SHIRT Q4A	R102Q04A	0	1				9	7
Q43	SOUTH POLE Q1	R220Q01	0	1				9	7

RECORD SHEET FOR MULTIPLE CODING   <FIRST/SECOND/THIRD>CODING

Booklet 8:   Coder's name_____   Date_____/06

MCM

Student ID

StIDStr   StIDSch   StIDSt

*Please enter **and check** the full ID for the student, and keep this sheet with the booklet until you have coded all the designated items in the booklet.*

*You must code **the same item** throughout all booklets assigned to you before moving to another item*

*Show the appropriate code by **circling.***

Question Number	Item Name	Item Label	Response Codes							Missing	N/A
Q2	CAR DRIVE Q2	M302Q02	0	1						9	7
Q3	CAR DRIVE Q3	M302Q03	0	1						9	7
Q4	HEIGHT Q1	M421Q01	0	1						9	7
Q11	BICYCLES Q3	M810Q03	00	11	12	21				99	97
Q15	POP PYRAMIDS Q2	M155Q02	00	11	12	13	21			99	97
Q16	POP PYRAMIDS Q1	M155Q01	0	1						9	7
Q17	POP PYRAMIDS Q3	M155Q03	00	11	12	13	21	22	23	99	97
Q22	BRAILLE Q2	M442Q02	0	1						9	7
Q23	THIRD SIDE Q1	M462Q01	01	02	11	12	21			99	97

RECORD SHEET FOR MULTIPLE CODING   <FIRST/SECOND/THIRD>CODING

Booklet 10:   Coder's name_____   Date_____/06

MCM

Student ID

StIDStr   StIDSch   StIDSt

*Please enter **and check** the full ID for the student, and keep this sheet with the booklet until you have coded all the designated items in the booklet.*

*You must code **the same item** throughout all booklets assigned to you before moving to another item*

*Show the appropriate code by **circling.***

Question Number	Item Name	Item Label	Response Codes					Missing	N/A
Q6	THERMOMETER CRICKET Q2	M446Q02	0	1				9	7
Q8	CARBON DIOXIDE Q1	M828Q01	0	1				9	7
Q9	CARBON DIOXIDE Q2	M828Q02	0	1				9	7
Q10	CARBON DIOXIDE Q3	M828Q03	0	1				9	7
Q18	RUNNING TRACKS Q1	M406Q01	0	1				9	7
Q19	RUNNING TRACKS Q2	M406Q02	0	1				9	7

APPENDIX THREE: ALLOCATION OF TEST ITEMS TO CLUSTERS AND BOOKLETS

CLUSTER	UNIT NAME	UNIT ID	ITEM ID	SEQUENCE IN CLUSTER	BOOKLETS	QUESTION NO IN BOOKLET
M1	Car Drive	M302	M302Q01	1	B3, B8, B12, B13	B3-53; B8-01; B12-14; B13-37
	Car Drive		M302Q02	2		B3-54; B8-02; B12-15; B13-38
	Car Drive		M302Q03	3		B3-55; B8-03; B12-16; B13-39
	Height	M421	M421Q01	4		B3-56; B8-04; B12-17; B13-40
	Height		M421Q02	5		B3-57; B8-05; B12-18; B13-41
	Height		M421Q03	6		B3-58; B8-06; B12-19; B13-42
	Forecast of Rainfall	M710	M710Q01	7		B3-59; B8-07; B12-20; B13-43
	Making a Booklet	M598	M598Q01	8		B3-60; B8-08; B12-21; B13-44
	Bicycles	M810	M810Q01	9		B3-61; B8-09; B12-22; B13-45
	Bicycles		M810Q02	10		B3-62; B8-10; B12-23; B13-46
	Bicycles		M810Q03	11		B3-63; B8-11; B12-24; B13-47
	Seeing the Tower	M833	M833Q01	12		B3-64; B8-12; B12-25; B13-48
M2	A View with a Room	M033	M033Q01	1	B4, B7, B8, B9	B4-52; B7-35; B8-13; B9-01
	Running Time	M474	M474Q01	2		B4-53; B7-36; B8-14; B9-02
	Population Pyramids	M155	M155Q02	3		B4-54; B7-37; B8-15; B9-03
	Population Pyramids		M155Q01	4		B4-55; B7-38; B8-16; B9-04
	Population Pyramids		M155Q03	5		B4-56; B7-39; B8-17; B9-05
	Population Pyramids		M155Q04	6		B4-57; B7-40; B8-18; B9-06
	Diving	M411	M411Q01	7		B4-58; B7-41; B8-19; B9-07
	Diving		M411Q02	8		B4-59; B7-42; B8-20; B9-08
	Labels	M803	M803Q01	9		B4-60; B7-43; B8-21; B9-09
	Braille	M442	M442Q02	10		B4-61; B7-44; B8-22; B9-10
	The Third Side	M462	M462Q01	11		B4-62; B7-45; B8-23; B9-11
	Bricks	M034	M034Q01	12		B4-63; B7-46; B8-24; B9-12
M3	The Arrangement	M447	M447Q01	1	B2, B4, B10, B13	B2-40; B4-21; B10-01; B13-49
	Pipelines	M273	M273Q01	2		B2-41; B4-22; B10-02; B13-50
	Lotteries	M408	M408Q01	3		B2-42; B4-23; B10-03; B13-51
	Transport	M420	M420Q01	4		B2-43; B4-24; B10-04; B13-52
	The Thermometer Cricket	M446	M446Q01	5		B2-44; B4-25; B10-05; B13-53
	The Thermometer Cricket		M446Q02	6		B2-45; B4-26; B10-06; B13-54
	Telephone Rates	M559	M559Q01	7		B2-46; B4-27; B10-07; B13-55
	Carbon Dioxide	M828	M828Q01	8		B2-47; B4-28; B10-08; B13-56
	Carbon Dioxide		M828Q02	9		B2-48; B4-29; B10-09; B13-57
	Carbon Dioxide		M828Q03	10		B2-49; B4-30; B10-10; B13-58
	The Fence	M464	M464Q01	11		B2-50; B4-31; B10-11; B13-59
	The Computer Game	M800	M800Q01	12		B2-51; B4-32; B10-12; B13-60
M4	Map	M305	M305Q01	1	B3, B7, B10, B11	B3-41; B7-47; B10-13; B11-01
	Cash Withdrawal	M496	M496Q01	2		B3-42; B7-48; B10-14; B11-02
	Cash Withdrawal		M496Q02	3		B3-43; B7-49; B10-15; B11-03
	Tossing Coins	M423	M423Q01	4		B3-44; B7-50; B10-16; B11-04
	Containers	M192	M192Q01	5		B3-45; B7-51; B10-17; B11-05
	Running Tracks	M406	M406Q01	6		B3-46; B7-52; B10-18; B11-06
	Running Tracks		M406Q02	7		B3-47; B7-53; B10-19; B11-07
	Number Check	M603	M603Q01	8		B3-48; B7-54; B10-20; B11-08
	Number Check		M603Q02	9		B3-49; B7-55; B10-21; B11-09
	Stop the Car	M571	M571Q01	10		B3-50; B7-56; B10-22; B11-10

CLUSTER	UNIT NAME	UNIT ID	ITEM ID	SEQUENCE IN CLUSTER	BOOKLETS	QUESTION NO IN BOOKLET
	Chair Lift	M564	M564Q01	11		B3-51; B7-57; B10-23; B11-11
	Chair Lift		M564Q02	12		B3-52; B7-58; B10-24; B11-12
UHM	Computer Game	M800	M800Q01	1	BUH	BUH-25
	The Third Side	M462	M462Q01	2		BUH-26
	Chair Lift	M564	M564Q01	3		BUH-27
	Chair Lift		M564Q02	4		BUH-28
	Car Drive	M302	M302Q01	5		BUH-29
	Car Drive		M302Q02	6		BUH-30
	Car Drive		M302Q03	7		BUH-31
R1	Employment	R219	R219Q01A	1	B2, B6, B7,B12	B2-52; B6-35; B7-22; B12-01
	Employment		R219Q01B	1		B2-52; B6-35; B7-22; B12-01
	Employment		R219Q01C	1		B2-52; B6-35; B7-22; B12-01
	Employment		R219Q01D	1		B2-52; B6-35; B7-22; B12-01
	Employment		R219Q01E	1		B2-52; B6-35; B7-22; B12-01
	Employment		R219Q02	2		B2-53; B6-36; B7-23; B12-02
	Aesop	R067	R067Q01	3		B2-54; B6-37; B7-24; B12-03
	Aesop		R067Q04	4		B2-55; B6-38; B7-25; B12-04
	Aesop		R067Q05	5		B2-56; B6-39; B7-26; B12-05
	Shirts	R102	R102Q04A	6		B2-57; B6-40; B7-27; B12-06
	Shirts		R102Q05	7		B2-58; B6-41; B7-28; B12-07
	Shirts		R102Q07	8		B2-59; B6-42; B7-29; B12-08
	South Pole	R220	R220Q01	9		B2-60; B6-43; B7-30; B12-09
	South Pole		R220Q02B	10		B2-61; B6-44; B7-31; B12-10
	South Pole		R220Q04	11		B2-62; B6-45; B7-32; B12-11
	South Pole		R220Q05	12		B2-63; B6-46; B7-33; B12-12
	South Pole		R220Q06	13		B2-64; B6-47; B7-34; B12-13
R2	Optician	R227	R227Q01	1	B6, B9, B11, B13	B6-20; B9-55; B11-32; B13-01
	Optician		R227Q02	2		B6-21; B9-56; B11-33; B13-02
	Optician		R227Q03	3		B6-22; B9-57; B11-34; B13-03
	Optician		R227Q06	4		B6-23; B9-58; B11-35; B13-04
	Exchange	R111	R111Q01	5		B6-24; B9-59; B11-36; B13-05
	Exchange		R111Q02B	6		B6-25; B9-60; B11-37; B13-06
	Exchange		R111Q06A	7		B6-26; B9-61; B11-38; B13-07
	Exchange		R111Q06B	8		B6-27; B9-62; B11-39; B13-08
	Drugged Spiders	R055	R055Q01	9		B6-28; B9-63; B11-40; B13-09
	Drugged Spiders		R055Q02	10		B6-29; B9-64; B11-41; B13-10
	Drugged Spiders		R055Q03	11		B6-30; B9-65; B11-42; B13-11
	Drugged Spiders		R055Q05	12		B6-31; B9-66; B11-43; B13-12
	Telephone	R104	R104Q01	13		B6-32; B9-67; B11-44; B13-13
	Telephone		R104Q02	14		B6-33; B9-68; B11-45; B13-14
	Telephone		R104Q05	15		B6-34; B9-69; B11-46; B13-15
UHR	Employment	F219	R219Q01A	1	BUH	BUH-19
	Employment		R219Q01B	1		BUH-19
	Employment		R219Q01C	1		BUH-19
	Employment		R219Q01D	1		BUH-19
	Employment		R219Q01E	1		BUH-19
	Employment		R219Q02	2		BUH-20
	Drugged Spiders	R055	R055Q01	3		BUH-21
	Drugged Spiders		R055Q02	4		BUH-22
	Drugged Spiders		R055Q03	5		BUH-23

CLUSTER	UNIT NAME	UNIT ID	ITEM ID	SEQUENCE IN CLUSTER	BOOKLETS	QUESTION NO IN BOOKLET
	Drugged Spiders		R055Q05	6		BUH-24
S1	Genetically Modified Crops	S508	S508Q02	1	B1, B9, B10, B12	B1-01; B9-13; B10-44; B12-26
	Genetically Modified Crops		S508Q03	2		B1-02; B9-14; B10-45; B12-27
	Genetically Modified Crops		S508Q04	3		B1-03; B9-15; B10-46; B12-28
	Genetically Modified Crops		S508Q10N	4		B1-04; B9-16; B10-47; B12-29
	Earth's Temperature	S269	S269Q01	5		B1-05; B9-17; B10-48; B12-30
	Earth's Temperature		S269Q03	6		B1-06; B9-18; B10-49; B12-31
	Earth's Temperature		S269Q04	7		B1-07; B9-19; B10-50; B12-32
	Grand Canyon	S426	S426Q01	8		B1-08; B9-20; B10-51; B12-33
	Grand Canyon		S426Q07	9		B1-09; B9-21; B10-52; B12-34
	Grand Canyon		S426Q03	10		B1-10; B9-22; B10-53; B12-35
	Grand Canyon		S426Q05	11		B1-11; B9-23; B10-54; B12-36
	Grand Canyon		S426Q10S	12		B1-12; B9-24; B10-55; B12-37
	Extinction of the Dinosaurs	S527	S527Q01	13		B1-13; B9-25; B10-56; B12-38
	Extinction of the Dinosaurs		S527Q03	14		B1-14; B9-26; B10-57; B12-39
	Extinction of the Dinosaurs		S527Q04	15		B1-15; B9-27; B10-58; B12-40
	Extinction of the Dinosaurs		S527Q10N	16		B1-16; B9-28; B10-59; B12-41
	Extinction of the Dinosaurs		S527Q10S	17		B1-17; B9-29; B10-60; B12-42
	Acid Rain	S485	S485Q02	18		B1-18; B9-30; B10-61; B12-43
	Acid Rain		S485Q03	19		B1-19; B9-31; B10-62; B12-44
	Acid Rain		S485Q05	20		B1-20; B9-32; B10-63; B12-45
	Acid Rain		S485Q10N	21		B1-21; B9-33; B10-64; B12-46
	Acid Rain		S485Q10S	22		B1-22; B9-34; B10-65; B12-47
S2	Heart Surgery	S476	S476Q01	1	B1, B2, B8, B11	B1-23; B2-01; B8-25; B11-47
	Heart Surgery		S476Q02	2		B1-24; B2-02; B8-26; B11-48
	Heart Surgery		S476Q03	3		B1-25; B2-03; B8-27; B11-49
	Heart Surgery		S476Q10N	4		B1-26; B2-04; B8-28; B11-50
	Heart Surgery		S476Q10S	5		B1-27; B2-05; B8-29; B11-51
	Greenhouse	S114	S114Q03	6		B1-28; B2-06; B8-30; B11-52
	Greenhouse		S114Q04	7		B1-29; B2-07; B8-31; B11-53
	Greenhouse		S114Q05	8		B1-30; B2-08; B8-32; B11-54
	Cooking Outdoors	S521	S521Q02	9		B1-31; B2-09; B8-33; B11-55
	Cooking Outdoors		S521Q06	10		B1-32; B2-10; B8-34; B11-56
	Cooking Outdoors		S521Q10N	11		B1-33; B2-11; B8-35; B11-57
	Radiotherapy	S495	S495Q04	12		B1-34; B2-12; B8-36; B11-58
	Radiotherapy		S495Q01	13		B1-35; B2-13; B8-37; B11-59
	Radiotherapy		S495Q02	14		B1-36; B2-14; B8-38; B11-60
	Radiotherapy		S495Q03	15		B1-37; B2-15; B8-39; B11-61
	The Cheetah	S456	S456Q01	16		B1-38; B2-16; B8-40; B11-62
	The Cheetah		S456Q02	17		B1-39; B2-17; B8-41; B11-63
	The Cheetah		S456Q10N	18		B1-40; B2-18; B8-42; B11-64
	The Cheetah		S456Q10S	19		B1-41; B2-19; B8-43; B11-65
S3	Mary Montagu	S477	S477Q02	1	B2, B3, B5, B9	B2-20; B3-01; B5-60; B9-35
	Mary Montagu		S477Q03	2		B2-21; B3-02; B5-61; B9-36
	Mary Montagu		S477Q04	3		B2-22; B3-03; B5-62; B9-37
	Mary Montagu		S477Q10S	4		B2-23; B3-04; B5-63; B9-38

CLUSTER	UNIT NAME	UNIT ID	ITEM ID	SEQUENCE IN CLUSTER	BOOKLETS	QUESTION NO IN BOOKLET
	Algae	S268	S268Q01	5		B2-24; B3-05; B5-64; B9-39
	Algae		S268Q02	6		B2-25; B3-06; B5-65; B9-40
	Algae		S268Q06	7		B2-26; B3-07; B5-66; B9-41
	Airbags	S519	S519Q01	8		B2-27; B3-08; B5-67; B9-42
	Airbags		S519Q02	9		B2-28; B3-09; B5-68; B9-43
	Airbags		S519Q03	10		B2-29; B3-10; B5-69; B9-44
	Airbags		S519Q10N	11		B2-30; B3-11; B5-70; B9-45
	Airbags		S519Q10S	12		B2-31; B3-12; B5-71; B9-46
	Experimental Digestion	S498	S498Q02	13		B2-32; B3-13; B5-72; B9-47
	Experimental Digestion		S498Q03	14		B2-33; B3-14; B5-73; B9-48
	Experimental Digestion		S498Q04	15		B2-34; B3-15; B5-74; B9-49
	Experimental Digestion		S498Q10N	16		B2-35; B3-16; B5-75; B9-50
	Experimental Digestion		S498Q10S	17		B2-36; B3-17; B5-76; B9-51
	Penicillin Manufacture	S524	S524Q06	18		B2-37; B3-18; B5-77; B9-52
	Penicillin Manufacture		S524Q07	19		B2-38; B3-19; B5-78; B9-53
	Penicillin Manufacture		S524Q10N	20		B2-39; B3-20; B5-79; B9-54
S4	Magnetic Hovertrain	S510	S510Q01	1	B1, B3, B4, B6	B1-42; B3-21; B4-01; B6-48
	Magnetic Hovertrain		S510Q04	2		B1-43; B3-22; B4-02; B6-49
	Milk	S326	S326Q01	3		B1-44; B3-23; B4-03; B6-50
	Milk		S326Q02	4		B1-45; B3-24; B4-04; B6-51
	Milk		S326Q03	5		B1-46; B3-25; B4-05; B6-52
	Milk		S326Q04	6		B1-47; B3-26; B4-06; B6-53
	Wild Oat Grass	S408	S408Q01	7		B1-48; B3-27; B4-07; B6-54
	Wild Oat Grass		S408Q03	8		B1-49; B3-28; B4-08; B6-55
	Wild Oat Grass		S408Q04	9		B1-50; B3-29; B4-09; B6-56
	Wild Oat Grass		S408Q05	10		B1-51; B3-30; B4-10; B6-57
	Wild Oat Grass		S408Q10N	11		B1-52; B3-31; B4-11; B6-58
	Wild Oat Grass		S408Q10S	12		B1-53; B3-32; B4-12; B6-59
	Extinguishing Fires	S437	S437Q01	13		B1-54; B3-33; B4-13; B6-60
	Extinguishing Fires		S437Q03	14		B1-55; B3-34; B4-14; B6-61
	Extinguishing Fires		S437Q04	15		B1-56; B3-35; B4-15; B6-62
	Extinguishing Fires		S437Q06	16		B1-57; B3-36; B4-16; B6-63
	Extinguishing Fires		S437Q10N	17		B1-58; B3-37; B4-17; B6-64
	Solar Panels	S415	S415Q07	18		B1-59; B3-38; B4-18; B6-65
	Solar Panels		S415Q02	19		B1-60; B3-39; B4-19; B6-66
	Solar Panels		S415Q08	20		B1-61; B3-40; B4-20; B6-67
S5	Spoons	S256	S256Q01	1	B4, B5, B11, B12	B4-33; B5-01; B11-13; B12-48
	Good Vibrations	S131	S131Q02	2		B4-34; B5-02; B11-14; B12-49
	Good Vibrations		S131Q04	3		B4-35; B5-03; B11-15; B12-50
	Different Climates	S465	S465Q01	4		B4-36; B5-04; B11-16; B12-51
	Different Climates		S465Q02	5		B4-37; B5-05; B11-17; B12-52
	Different Climates		S465Q04	6		B4-38; B5-06; B11-18; B12-53
	Different Climates		S465Q10S	7		B4-39; B5-07; B11-19; B12-54
	Antibiotics	S478	S478Q01	8		B4-40; B5-08; B11-20; B12-55
	Antibiotics		S478Q02	9		B4-41; B5-09; B11-21; B12-56
	Antibiotics		S478Q03	10		B4-42; B5-10; B11-22; B12-57

CLUSTER	UNIT NAME	UNIT ID	ITEM ID	SEQUENCE IN CLUSTER	BOOKLETS	QUESTION NO IN BOOKLET
	Antibiotics		S478Q10N	11		B4-43; B5-11; B11-23; B12-58
	Sunscreens	S447	S447Q02	12		B4-44; B5-12; B11-24; B12-59
	Sunscreens		S447Q03	13		B4-45; B5-13; B11-25; B12-60
	Sunscreens		S447Q04	14		B4-46; B5-14; B11-26; B12-61
	Sunscreens		S447Q05	15		B4-47; B5-15; B11-27; B12-62
	Plastic Age	S413	S413Q06	16		B4-48; B5-16; B11-28; B12-63
	Plastic Age		S413Q04	17		B4-49; B5-17; B11-29; B12-64
	Plastic Age		S413Q05	18		B4-50; B5-18; B11-30; B12-65
	Plastic Age		S413Q10N	19		B4-51; B5-19; B11-31; B12-66
S6	The Ice Mummy	S458	S458Q01	1	B5, B6, B8, B10	B5-20; B6-01; B8-44; B10-25
	The Ice Mummy		S458Q02	2		B5-21; B6-02; B8-45; B10-26
	Water	S304	S304Q01	3		B5-22; B6-03; B8-46; B10-27
	Water		S304Q02	4		B5-23; B6-04; B8-47; B10-28
	Water		S304Q03a	5		B5-24; B6-05; B8-48; B10-29
	Water		S304Q03b	6		B5-25; B6-06; B8-49; B10-30
	Bacteria in Milk	S428	S428Q01	7		B5-26; B6-07; B8-50; B10-31
	Bacteria in Milk		S428Q03	8		B5-27; B6-08; B8-51; B10-32
	Bacteria in Milk		S428Q05	9		B5-28; B6-09; B8-52; B10-33
	Bacteria in Milk		S428Q10N	10		B5-29; B6-10; B8-53; B10-34
	Green Parks	S438	S438Q01	11		B5-30; B6-11; B8-54; B10-35
	Green Parks		S438Q02	12		B5-31; B6-12; B8-55; B10-36
	Green Parks		S438Q03	13		B5-32; B6-13; B8-56; B10-37
	Green Parks		S438Q10N	14		B5-33; B6-14; B8-57; B10-38
	Green Parks		S438Q10S	15		B5-34; B6-15; B8-58; B10-39
	Forest Fires	S466	S466Q01	16		B5-35; B6-16; B8-59; B10-40
	Forest Fires		S466Q07	17		B5-36; B6-17; B8-60; B10-41
	Forest Fires		S466Q05	18		B5-37; B6-18; B8-61; B10-42
	Forest Fires		S466Q10N	19		B5-38; B6-19; B8-62; B10-43
S7	Physical Exercise	S493	S493Q01	1	B1, B5, B7, B13	B1-62; B5-39; B7-01; B13-16
	Physical Exercise		S493Q03	2		B1-63; B5-40; B7-02; B13-17
	Physical Exercise		S493Q05	3		B1-64; B5-41; B7-03; B13-18
	Clothes	S213	S213Q01	4		B1-65; B5-42; B7-04; B13-19
	Clothes		S213Q02	5		B1-66; B5-43; B7-05; B13-20
	The Moon	S416	S416Q01	6		B1-67; B5-44; B7-06; B13-21
	The Moon		S416Q10N	7		B1-68; B5-45; B7-07; B13-22
	The Moon		S416Q10S	8		B1-69; B5-46; B7-08; B13-23
	Penguin Island	S425	S425Q03	9		B1-70; B5-47; B7-09; B13-24
	Penguin Island		S425Q05	10		B1-71; B5-48; B7-10; B13-25
	Penguin Island		S425Q02	11		B1-72; B5-49; B7-11; B13-26
	Penguin Island		S425Q04	12		B1-73; B5-50; B7-12; B13-27
	Penguin Island		S425Q10S	13		B1-74; B5-51; B7-13; B13-28
	Development and Disaster	S514	S514Q02	14		B1-75; B5-52; B7-14; B13-29
	Development and Disaster		S514Q03	15		B1-76; B5-53; B7-15; B13-30
	Development and Disaster		S514Q04	16		B1-77; B5-54; B7-16; B13-31
	Development and Disaster		S514Q10N	17		B1-78; B5-55; B7-17; B13-32
	Big and Small	S421	S421Q01	18		B1-79; B5-56; B7-18; B13-33
	Big and Small		S421Q02	19		B1-80; B5-57; B7-19; B13-34
	Big and Small		S421Q03	20		B1-81; B5-58; B7-20; B13-35

CLUSTER	UNIT NAME	UNIT ID	ITEM ID	SEQUENCE IN CLUSTER	BOOKLETS	QUESTION NO IN BOOKLET
	Big and Small		S421Q10S	21		B1-82; B5-59; B7-21; B13-36
UHS	Spoons	S256	S256Q01	1	BUH	BUH-01
	Bacteria in Milk	S428	S428Q01	2		BUH-02
	Bacteria in Milk		S428Q03	3		BUH-03
	Bacteria in Milk		S428Q05	4		BUH-04
	Bacteria in Milk		S428Q10N	5		BUH-05
	Big and Small	S421	S421Q01	6		BUH-06
	Big and Small		S421Q02	7		BUH-07
	Big and Small		S421Q03	8		BUH-08
	Big and Small		S421Q10S	9		BUH-09
	Heart Surgery	S476	S476Q01	10		BUH-10
	Heart Surgery		S476Q02	11		BUH-11
	Heart Surgery		S476Q03	12		BUH-12
	Heart Surgery		S476Q10N	13		BUH-13
	Heart Surgery		S476Q10S	14		BUH-14
	Forest Fires	S466	S466Q01	15		BUH-15
	Forest Fires		S466Q07	16		BUH-16
	Forest Fires		S466Q05	17		BUH-17
	Forest Fires		S466Q10N	18		BUH-18