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**DIRECTORATE FOR EDUCATION  
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**Governing Board**

**LONGER TERM STRATEGY OF THE DEVELOPMENT OF PISA**

**20th meeting of the PISA Governing Board**

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## LONGER-TERM STRATEGY OF THE DEVELOPMENT OF PISA

### Introduction

1. The original data strategy on which PISA was based suggested that, after the completion of the first three assessments in 2000, 2003 and 2006, the cycle would repeat itself with three-yearly assessments in the areas of reading, mathematics and science [see doc. ref. **DEELSA/ED/CERI/CD(97)4**, which provides the original data strategy on which PISA was based]. However, in light of newly emerging policy priorities and the experience gained with PISA so far, the PISA Governing Board began in March 2004 to review the objectives and design of the PISA data strategy for the period 2009 and beyond.

2. At its last meeting on 7-9 March 2005, the PISA Governing Board discussed a first strategy paper addressing the longer-term development of PISA, which been prepared on the basis of an informal consultation of Member countries on future perspectives for PISA [doc. ref. **EDU/PISA/GB/SDG(2005)1**]. This strategy paper had set out options to innovate - rather than substantially alter - the design of PISA, seeking to maximise synergies with other OECD and non-OECD data sources and ensuring that PISA would remain manageable, draw on up-to-date methodologies, and stay within its existing financial framework.

3. Following this meeting, a formal consultation of Member countries was then undertaken to determine national priorities for the further development of PISA [doc. refs. **EDU/PISA/GB/SDG(2005)2** and **3**]. Country responses to this consultation fell essentially into three groups:

- A group of countries who preferred to maintain PISA as a “lean” instrument, based on the existing design and administration on a three-yearly basis;
- A group of countries wishing to expand PISA but administer the survey on four-yearly cycle; and
- A small group of countries wishing to reduce the scope or maintain the scope of PISA but implement the survey on a four-yearly cycle.

4. The PISA Strategic Development Group<sup>1</sup>, then met on 27-29 June 2005 to review the individual country responses<sup>2</sup> as well as a summary of country positions on the various dimensions of the strategy [doc. ref. **EDU/PISA/GB/SDG(2005)4REV**] and prepared proposals for their consolidation as well as a range of other recommendations for the development of the longer-term development of PISA [doc. ref. **EDU/PISA/GB/SDG/M(2005)2**].

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<sup>1</sup> Current members: Lorna BERTRAND (United Kingdom), Gerard BONNET (France), Satya BRINK (Canada), Giacomo ELIAS (Italy), Felipe MARTINEZ (Mexico), Jules PESCHAR (The Netherlands), Alette SCHREINER (Norway), Elois SCOTT (United States), Peter Vari (Hungary), Ryo WATANABE (Japan). Chair: Jochen SCHWEITZER. Special advisor: Eugene OWEN

<sup>2</sup> Individual country responses can be found on the Electronic Discussion Group of the PISA Governing Board.

5. These proposals and recommendations were then sent to countries with a request for review and approval. During this written consultation, countries generally welcomed the proposals and recommendations from the Strategic Development Group but also raised a number of issues, which included requests:

- For greater clarity on the implications of the modular design for analysis and reporting (with the concern that international comparability will become more complex with different sets of countries included in different sets of analyses and indicators).
- To separate the grade-based component from the development of additional context questionnaires and the link to the teacher survey (currently, these are all integrated in one module).
- To open the discussion on the most appropriate age group for the assessment of a younger age cohort, with 11 years offered as another possibility to the age of 9 years, that had so far been discussed.
- To carefully assess the implications of any changes to the PISA test design and objections to reducing individual assessment time through expanded sample sizes.
- For more conceptual and methodological work on new assessment domains before closing off the possibility to develop these.
- To clarify why the proposal to expand the context questionnaires should imply giving more weight to learning strategies and questions on student destinations etc.
- To consider whether all modules should already be developed for PISA 2009 or whether to sequence the development of these modules in some way.
- To clarify the need to maintain the Open Forum.
- To clarify the value of linking the TAG closer to the PISA Governing Board.
- To review the balance between data development and analysis and the roles and responsibilities of the different actors involved in this work, including the possibility to facilitate publications under different authorship.

6. At its meeting on 19-20 September 2005, the PISA Strategic Development Group took these issues up and introduced the following main changes to the proposed data strategy:

- A “time dimension” has been incorporated into the development of the optional modules, such that these would now be progressively introduced over multiple assessments, rather than at once in the 2009 assessment.
- The revised paper gives greater emphasis to pursuing innovation within the existing assessment areas as well as the development of new assessment areas.
- The revised paper now deals with the implications of the modular design for analysis and reporting.
- The revised design of Module 3 separates the grade-based component from the link to the teacher survey.
- The strategy paper opens up possibilities for changing the target age for the younger age group.

- The management structure has been revised further with the aim to establish closer linkages between the PISA Governing Board and the Technical Advisory Group. In particular, a report from the Technical Advisory Group would now be presented to the PISA Governing Board prior to each meeting that would clarify the implications of technical issues on policies, analytic outcomes and the financing of PISA.
7. The revised strategy, as presented in this document, is organised as follows:
- The first part of the paper describes the revised future PISA data strategy, including an updated summary of country responses to the written consultation.
  - The second part examines how the core and optional modules would be linked to the key analytic objectives of PISA, namely to facilitate international comparisons on: 1) the quality of learning outcomes; 2) equality in learning outcomes and equity in learning opportunities; 3) the effectiveness and efficiency of educational processes; and 4) the impact of learning outcomes on social and economic well-being.
  - The last part of the document presents possible modifications to the PISA management structure.
8. The PISA Governing Board will need to:
- **REVIEW** and **FINALISE** the longer-term strategy for PISA.

### **Design of the future PISA data strategy**

9. During discussions and a written consultation, countries explored modifications to the overall design of the strategy, including the choice of subject areas and target populations to be assessed, the balance between assessment and analysis, and the implementation and frequency of successive assessments.

10. Areas where a majority of countries had expressed interest in changes to the PISA design included (presented in descending order of country ratings): the addition of a younger age cohort to PISA in order to compare growth in student performance (considered relevant or very relevant by 84% of the 28 responding OECD countries); giving more emphasis to student-level contextual data (considered relevant or very relevant by 82% of respondents) or even reducing assessment time to extend the student context questionnaires (considered relevant or very relevant by 57% of the respondents); the integration of a grade-based assessment component (considered relevant or very relevant by 64% of the respondents); the development of ICT literacy as a new assessment domain (considered relevant or very relevant by 61% of respondents); and developing contextual data on teachers and teaching by linking PISA and the OECD teacher survey (considered relevant or very relevant by 59% of the respondents).

11. With regard to the frequency of successive assessments, countries were divided between continuing to administer PISA on a three-yearly basis and changing the gap between successive assessments to four years. 46% were in favour of the continuation of the current three-yearly cycle, although 18% of these noted that they would also find a four-yearly administration cycle acceptable. One country (4%) voted for each two three-yearly assessments to be followed by one four-yearly assessment<sup>3</sup>. 50% of the countries were in favour of changing the frequency to four years, although 11% of these countries noted that they would also find a three-yearly administration cycle acceptable.

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<sup>3</sup> Also one of the communities of Belgium voted for this option. However, since the other community voted for the three yearly cycle with acceptance of 4 years, both communities have been classified under this option for the purpose of calculating percentages.

12. Nevertheless, while there was considerable interest among some countries to change the basic design and/or frequency of PISA assessments, a sizeable group of countries strongly opposed any such design changes as well as changes to the frequency of PISA assessments on the basis of which they had joined PISA in 1997. Since these are aspects where the PISA ground rules require consensus among delegates to make any changes [doc ref. C(1997)176], the Strategic Development Group has now established a strategy that:

- Maintains the basic design and frequency of the current PISA cycles and builds on the success of PISA through improvements within the survey's existing design and structure.
- Pursues changes and extensions in the form of additional *modules* that would be designed, implemented and financed by interested countries, with the options technically compatible so that countries could choose to participate in as many modules that are relevant to their national context.

13. The PISA Governing Board could consider the outcomes of each module at the completion of each assessment cycle and, at that point, decide whether to maintain these optional or to integrate them into the core PISA instruments for subsequent cycles. In other words, it is proposed that any new aspects to PISA be pursued as an option first before being proposed for integration into the core of subsequent PISA assessments<sup>4</sup>.

14. To facilitate such an ongoing evaluation and development process, and to strengthen relationships between PISA and other OECD and non-OECD data sources, countries could consider establishing the Strategic Development Group as a permanent advisory group to the PISA Governing Board.

15. The set of modules described below was established to reflect the choices that countries made during the written consultation. It was assumed that areas which less than half of the countries considered relevant would only be pursued in the form of national options rather than being part of the international study design which interested countries would collectively develop, finance and implement through internationally agreed procedures.

16. The PISA analysis and reporting plans would be primarily designed around the core module, with results from the optional modules reported separately either in specific sections of the main reports or in separate reports.

17. Several of the proposed optional modules would require considerable further development and the Strategic Development Group therefore suggests to introduce these progressively over multiple assessments. The proposed timing is summarised in the table below and described in more in subsequent sections of the document.

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<sup>4</sup> In some areas, the outcomes and their utility for policy purposes may not become apparent for immediately so that there may be lag of more than once assessment cycle before these would be implemented

**Table 1: Timing and sequencing for the development of the optional modules**

	<b>Optional Module 1:</b> Computer delivered assessment and assessment of ICT literacy	<b>Optional Module 2:</b> Comparing progress in education systems	<b>Optional Module 3:</b> Linking student performance with the instructional context
<b>2009</b>	<p>Review experience gained with CBAS in PISA 2006.</p> <p>Examine psychometric compatibility of performance data obtained through paper-and-pencil assessments and computer-delivered technologies.</p> <p>Develop framework for assessing ICT literacy.</p>	<p>Explore three levels of linkages between PISA and IEA studies, ranging from the co-ordination of the assessment frameworks, through the co-ordination of the target populations, up to the co-ordination of the samples and cohorts.</p> <p>If link with IEA studies does not satisfy analytic objectives of OECD countries or is not cost-effective, establish data strategy to survey younger cohort, which involves, identifying the most appropriate target age for the younger age group, establishing the subject areas for which progress is to be measured, and defining the methods for measuring progress.</p>	<p>Develop comparisons of the instructional context of learning outcomes through the establishment of a supplementary grade/class-based assessment (<b>Module 3A</b>).</p> <p>Extend the student and school context questionnaires on instructional context, and collect system-level data (<b>Module 3B</b>).</p> <p>Extend the sampling procedures to facilitate link with OECD survey on teachers, teaching and learning, as well as the exploration of other data collection methods and in-depth studies seeking to relate student performance and teacher data (<b>Module 3C</b>).</p>
<b>2012</b>	<p>Develop computer-delivered assessments in the regular PISA assessment areas (<b>Module 1A</b>).</p> <p>Establish an assessment of ICT literacy (<b>Module 1B</b>).</p> <p>Develop adaptive assessment technologies (<b>Module 1C</b>).</p>	Implement assessment of younger age cohort.	Continue with linking student performance data with the instructional context.
<b>2015</b>	Continue to implement ICT delivery and assessment of ICT literacy.	Continue to implement assessment of younger age cohort.	Continue with linking student performance data with the instructional context.

18. Beyond these modules, the Strategic Development Group has recommended that the OECD should facilitate bilateral or multilateral co-operation among countries in further areas of development, including the articulation of international and national test components with the aim to allow countries to relate performance in the internationally assessed competency areas to performance in areas that are considered important nationally, including the establishment of multi-lateral assessment components among countries with common cultural or educational interests.

### *Core module*

19. The basis for future PISA assessments would be a *core module* to be administered by all countries that would:

- Remain focussed on assessing the cumulative yield of education at the age of 15 years, as the highest age at which participation in formal education in OECD countries is still largely universal, and which provides a reference point that is definable and external to education systems such that student performance can be compared across countries in valid and reliable ways.

- Continue to assess to what extent education systems succeed in ensuring that young adults acquire some of the key competencies and dispositions believed to contribute to the foundations for further learning and a successful transition into adult life (to this end, PISA would remain focussed on the capacity of students to use what they have learned in the subject areas of language, mathematics and science, rather than being limited to assessing the reproduction of subject matter knowledge in these areas).
- Continue to be administered on a three-yearly basis, starting again with reading as the major assessment area in 2009.
- Build on and improve on the existing frameworks and instruments in order to reflect scientific innovation, to improve the relevance of the assessments to participating countries, to optimise the measurement of trends in all three areas, and to better match the difficulty of the PISA tests to the national ability distribution in countries with particularly high or low performance.
- Include one developmental assessment domain in each assessment that would be chosen and developed by participating countries. This could be an assessment of cognitive performance, like the assessment of problem-solving competencies had been in the PISA 2003 assessment, or the direct or indirect assessment of student dispositions to learning, such as the self-assessment of learning strategies in 2000, or the assessment of student attitudes towards science in 2006. The development of this additional assessment domain would be pursued through a corresponding developmental track.
- Include questionnaires to contextualise and interpret observed performance differences and to provide policy-makers with a better understanding of cross-country differences in the performance of students and schools, including a student questionnaire, a school questionnaire, and an optional parent questionnaire.

20. Drawing on the findings of the INES Network A's technical review panel, bidders would be encouraged to seek technical improvements for PISA in areas such as the balance between major and minor assessment areas; the amount of individual assessment time; the PISA test design; the balance between assessment and contextual components; and the measurement of performance and the quality of trend data. However, the PISA Governing Board would assess any proposed technical improvements against their implications in terms of the extent to which they ensured the coherence of the PISA database and allowed to maintain consistent trend lines.

***Optional Module One: Computer-delivered assessment and assessment of ICT literacy***

21. As part of PISA 2006, 13 countries are currently piloting instruments for the computer-based delivery of PISA assessments. Such instruments could pave the way not only for better coverage of aspects of the PISA frameworks that are very difficult to capture with static paper-and-pencil documents but also for improved efficiency of the assessment process, both in reducing operational costs and student response time and, in the longer term, by targeting the assessments more effectively across and within countries. The annex of this document outlines the expected gains as well as resource implications.

22. Only 19% of the respondents considered that the development of a stand-alone computer-delivered platform should become an integral part of the core PISA component (Question 8.1). However, adding to this the countries that stated that a computer-delivered platform should be considered on the basis of the technical infrastructure that exists in schools or on a web-based platform (Question 8.2),

bringing the proportion of countries interested in further work in this area to 81%<sup>5</sup>. Only 19% considered that work in this area would not be a priority (Question 8.3).

23. The optional *Module One* would, over time, establish a computer-delivered assessment as well as an assessment of ICT literacy through the following developmental phases:

- The first phase, proposed for the 2009 assessment, would include a review of experience gained through the PISA 2006 computer-delivered science assessment and relevant national computer-delivered assessments as well as an examination of the psychometric compatibility of performance data obtained through paper-and-pencil assessments and computer-delivered technologies;
- The second phase, also proposed for the 2009 assessment, would include an examination of the extent to which comparable performance estimates can be obtained from using existing national computer infrastructures for the delivery of future web-based PISA assessments, which 63% of the responding countries have made a condition for considering computer-based assessments in future PISA assessments.
- The third phase would consist in the development of a framework for assessing ICT literacy.
- If these initial phases are successful, the development of computer-delivered assessments in the regular PISA domains (*Module One A*) as well as the establishment of an assessment of ICT literacy (*Module One B*) could then both be explored. In other words, a decision on whether to pursue the implementation of a computer-based assessment of the PISA test domains, the development of a new ICT literacy assessment, or both would be postponed until the 2012 assessment.
- Should the ICT-delivered components become an integral part of the PISA data strategy, then their further extension to adaptive assessment components could be explored (*Module One C*). These would allow student performance at the top and bottom ends of the PISA assessment scales to be better captured, particularly in countries with high or low overall performance, and would also result in considerable reduction in individual student assessment time. This is proposed for the 2012 assessment.

24. The development of a computer-based assessment infrastructure (*Module One A*) has the potential to add value to PISA at a number of levels, including the potential to broaden the assessment domains and to elaborate PISA at the strategic level in the long term.

25. The pilot undertaken as part of the PISA 2006 science assessment has shown, for example, that certain kinds of scientific thinking can be assessed in computer-based form that cannot be assessed through time-limited pencil and paper tests. For example, scientific experiments can be simulated, and the approach taken by students to scientific reasoning and experimentation can be assessed. Students' capacity to design experiments, to control the interactions among variables, and to make and test predictions can be directly assessed. The response options presented to students in multiple-choice items can take a more varied and stimulating form, requiring students to think more critically and scientifically about the questions posed. In short, the capacity for interaction between the student and the test question is increased, thereby expanding the kind of scientific thinking that can be assessed. The pilot has also shown that the use of dynamic

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<sup>5</sup> One of the Belgian communities had stated that it would consider a computer delivered assessment if this could be based on existent school infrastructures. However, the other Belgian community had assigned this no priority. The latter response has been used for the calculation of percentages.

stimulus enables a number of contexts to be used and a number of scientific areas to be covered that would be impossible, or very difficult, with a paper-based test, *e.g.* change over time. Video can be used to represent real-time change, which is very difficult to achieve in a paper and pencil test. Similarly, motion can be very easily conveyed using video and animations. This enables various scientific areas, for example physics, chemical reactions, earth science and astronomical phenomena, to be demonstrated and assessed.

26. More generally, a computer-based assessment component can substantially reduce the reading load imposed by the test items. This means the test items target the underlying scientific knowledge better, and the reading hurdle imposed on students before they are able to demonstrate their science knowledge is much less of an impediment.

27. Experiences with the pilot also suggest that student motivation is increased. For many students, use of computers has become a normal part of their day-to-day life. Using a computer in a science test is motivating to the extent that it fits with students preferred mode of carrying out tasks.

28. Furthermore, behavioural data can be captured that cannot be collected using paper-based tests. For example, the time students actually take on an item, the sequence of actions they take as they interact with an item, the number of times they revisit an item and the way they navigate through a test, are all examples of information about test-taking behaviour that can easily be captured through the test administration software. This information can potentially be used in subsequent test construction, and may be useful information for interpreting student scores.

29. Finally, there are practical advantages of the computer-based assessment component that can help to improve the efficiency and reduce costs of the test administration process:

- The computer-delivered approach can be used to tailor the tests to align with the actual performance levels of students, thus avoiding situation where students are confronted with test items that are too easy (and thus potentially boring) for them, or with test items that are too difficult for them (and thus potentially frustrating) (*Module One C*). By matching the difficulty of the tasks given to students with their actual performance level, measurement can be improved and testing time reduced. This is of particular advantage in countries with overall high or low performance.
- Data entry costs for this part of the assessment are dramatically reduced. All data entry is automated; with data capture occurring through the software, and being transmitted electronically to the Consortium database. In addition, response coding costs for this part of the assessment are eliminated.
- Translation procedures are improved. The translation software which has been developed is web-based, which is a more efficient means of communication compared to the present situation. The capacity built in to the translation software for double translation, reconciliation of translations, and verification of translations will ensure better consistency.
- Quality assurance of the test instruments themselves are enhanced. The test instruments are compiled electronically, using standard programmed processes which apply identically to all participants, with a low risk of error.

30. With regard to the assessment of ICT literacy (*Module One B*), the framework for the assessment of ICT literacy that has been developed through the INES Network A as part of the call for tender for the PISA 2006 assessment [see Annex B of document [OECD/EXD/PCM/EDU\(2003\)28](#)] describes the analytical benefits an assessment of ICT literacy would entail.

***Optional Module Two: Comparing progress in education systems***

31. Beyond an examination of trends in learning outcomes over time (pursued through the core module) the policy relevance of PISA will be enhanced by adding to PISA's capacity to benchmark student performance across countries the possibility to compare learning progress within education systems, through assessing student knowledge and skills at different stages in the education system. This will be achieved through co-ordinated assessments of learning outcomes and associated contextual factors at different levels of education.

32. Such analyses would not need to be limited to examining growth in student performance: assessing multiple age levels could also provide insight into how students' motivation and learner characteristics evolve in different countries as students progress through education systems. Potentially, they could also provide insight into which instructional and systemic factors are associated with such gains in performance and changes in student attitudes towards learning.

33. Only 30% of the respondents considered the addition of an older cohort to PISA relevant or very relevant. (Question 3.1). In contrast, 84% of the respondents considered an assessment of a younger age cohort relevant or very relevant (Question 3.2).

34. 27% of the countries that were interested in a younger age group stated that the assessment of a younger age group should be made an integral part of the PISA assessment design (Question 3.2.1), 55% suggested that this should be accomplished by linking PISA with IEA assessments if these assessments can be made technically compatible (Question 3.2.2), while 27% suggested that the assessment of a younger age group should only be pursued through IEA assessments (Question 3.2.3)<sup>6</sup>.

35. The optional ***Module Two*** would seek to establish comparisons of student progress in education systems by benchmarking growth in student performance, possibly between the ages of 9 or 11 years (which were both mentioned as potential reference points for the younger age cohort during the written consultation), on the one hand, and 15 years, on the other. It would be conceivable to pursue the development of ***Module Two*** in the following phases:

- The development of Module 2 would begin with an examination of the extent to which PISA and the IEA studies could be meaningfully linked. This examination would explore three levels of linkages ranging from a co-ordination of the assessment frameworks, through the co-ordination of the target populations, up to the co-ordination of the samples and cohorts.
  - If co-ordination can only be achieved at the level of the assessment frameworks, then measures of performance growth could not be developed, but it may become possible to relate the description of student performance in both types of studies.
  - If the target populations could be co-ordinated as well, through the addition of a grade-based component in PISA and/or the addition of age-based sampling components in IEA studies, then it would be conceivable to establish measures of growth based on the comparison of synthetic cohorts. Such a link could aim for the psychometric measurement of progress, by embedding link items between the assessments of both age groups, or it could simply compare relative performance of countries on two different assessments that are both judged appropriate by countries for the respective age cohorts.

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<sup>6</sup> The reason why these percentages add up to more than 100 is that some countries (or regions thereof) gave multiple responses to this question. This will still need to be consolidated in consultation with the countries concerned.

- If it would also be possible to co-ordinate the cohorts assessed and to link the timing of both survey cycles correspondingly, then this would also allow the development of cohort growth measures, a requirement for any assessment of the impact of educational policies over time.
- If the results of this examination meet the analytic objectives of OECD countries, the two organisations would proceed to co-ordinate their surveys correspondingly and the outcomes would flow into the respective analyses and reports. If the results of this examination do not satisfy the analytic objectives of OECD countries or do not result in cost-effective solutions, they would establish a PISA strategy for collecting data for a younger cohort. This would involve identifying the most appropriate target age for the younger age group, establishing the subject areas for which progress is to be measured, and defining the methods for measuring progress. To allow for measures of cohort progress, assessments of 9-year-olds would be implemented simultaneously with assessments of 15-year-olds, such that the cohort of 9-year-olds would be 12 years old at the subsequent PISA assessment and 15 years old at the PISA assessment after that. If countries choose 11 years as the target population instead, the assessment of the younger cohort would be implemented one year prior to the PISA assessment, such that the cohort of 11-year-olds would be 12 years old at the subsequent PISA assessment and 15 years old at the PISA assessment after that.
- This timing would allow the assessment of a younger age cohort to be implemented from the 2012 PISA assessment onwards.

36. Adding a younger target population would not only satisfy the specific information needs of authorities and educators in charge of primary education; it would also greatly help with understanding the long-lasting impact of earlier education on achievement at the end of compulsory schooling. In this respect, a younger cohort may contribute even more to the explanation of PISA country level results than the inclusion of a grade-based component or a teacher questionnaire for the 15 years-old population. For many reasons, the PISA study is less suitable for the investigation of classroom-level circumstances and their relationship with achievement than for the exploration of school-level and system-level factors. In the previous PISA studies, it could be actually seen that some of the most interesting findings were related to *global* factors such as school climate, school intake, school organisation and educational system structure (for example, the contrast between comprehensive and tracked systems). One can similarly anticipate that collecting information on the global characteristics of the primary schools and primary school systems in each country would add important dimensions to the description of factors that contributed to shaping the achievement patterns observed at age 15.

37. Furthermore, for countries interested in having a “teachers and teaching practices” component in PISA, an age/grade module would probably be more effective at age 9 than at age 15. At the primary level, many of the problems that make it difficult to disentangle the effects on older students’ achievement of teachers and teaching practices from other environmental factors are more easily manageable. Most students usually have only one teacher; the definition of what is a “class” and a “school” is much more straightforward than at the secondary level; and the content of the instruction received during the few previous years of school attendance is both easier to identify and somewhat more uniform from country to country. Additional optional instruments (such as the current parent questionnaire, or possibly a teacher questionnaire) would, again, make much more sense at age 9 than at age 15. Finally, an age/grade option at age 9 would probably help in facilitating some form of co-operation between PISA and the IEA PIRLS assessment, in order to prevent duplication of studies.

38. One of the challenges of adding a younger cohort would be to ensure that the anchoring of the two sets of instruments is well conceived (both on theoretical and empirical grounds). This challenge would be the greater the larger the gap between the ages of the two assessments. This would require a

serious revision of the various PISA assessment frameworks, so that the targeting of the tests can be extended to younger populations, covering their still emergent capacities. Note that such a revision would have other positive outcomes as well. Some countries expressed concern that the PISA tests have insufficient “bottom” to measure accurately the proficiency of 15 years old students at very low levels of the scale, and that they do not cover enough “rudimentary” skills.

39. If instruments can be developed with appropriate anchoring between the two populations, it would become possible to compare the levels of proficiency of older and younger students and to develop an indicator of *average yearly progress* in the subject areas for which assessments are covered in both target populations. Such an indicator would only be a gross estimate, but it would be interesting *per se*, and also useful as a tool for the interpretation of the magnitude of the effects of other factors. For example, when indicating that a difference of one unit of HISEI (or of any other independent variable) is associated with a difference of, say, 42 score points in reading, it would greatly help the reader to know that 42 score points corresponds to the average progress that is estimated to occur across the PISA countries in, let’s say, one school year (or 6 months of schooling, or some other duration of school time).

40. Due to the fact that the PISA samples are based on age rather than on grades, the difference in achievement levels between the two populations would be easier to interpret in terms of relative efficiency of the various systems than when comparing two grade populations: it would be a measure of the gain obtained, on average, by comparable samples of students who spent six full school years in each system.

41. Of particular interest would be a comparison of the variance decomposition between the two sets of data. At the primary level, the value of the *between school variance component* is usually lower than at the secondary level, because in the majority of countries all primary school teach equivalent curricula, and between-schools tracking only occurs at the secondary level. Thus the variance in achievement between primary schools is a relatively good indicator of the magnitude of *mainly geographical and social aggregation phenomena* (i.e. the fact that rural and urban schools, or private and public schools, etc, do not enrol the same proportions of children from privileged families).

42. In many countries, the intraclass correlation becomes dramatically higher at the secondary level, indicating that other aggregation factors, such as differences between tracks and study programmes are at play in determining which students will attend which schools and the kind of instruction they will receive. This increase in between-schools variance is usually very large in countries with early curriculum differentiation. It can also be notable in some countries with officially comprehensive systems, but where “covert” selection is actually practiced across schools. Conversely, it is interesting to note that the between-schools variance tends to decrease somewhat in countries where all students share the same curriculum during the whole of ISCED 2 (particularly in some Nordic countries). It would be important to explore this issue further if a younger population is included in PISA, and to try to understand whether the latter phenomenon can be interpreted, in part, as a compensatory effect.

43. Another relevant comparison made possible by the two populations would concern the rich battery of attitude scales used in PISA, as well as student learning strategies.

44. As already mentioned, using an age/grade sampling design for the younger population would be rewarding (particularly in terms of analytic potential, but also in some cases in terms of cost-effectiveness and in terms of operational feasibility). In particular, in the (perhaps) majority of countries an age/grade design would involve only minor increases in the number of students to be sampled over and age-based design. Including a teacher questionnaire (be it linked or not to the individual students) would be much less problematic than at the secondary level, with relatively higher probability that the information collected has reliable relationships with achievement.

45. The proposed grade-based sampling design would have major advantages over the class-based designs used typically in IEA studies, since it would allow to adequately distinguish between the performance variation between students, classes within schools and schools.

***Optional Module Three: Linking student performance with the instructional context***

46. Countries have expressed interest in international comparisons of the effectiveness and efficiency of education systems. Such comparisons would be considerably enhanced by combining the current age-based design of PISA with a grade-based component.

47. 64% of OECD respondents consider the integration of a grade-based assessment component into the PISA design relevant or very relevant (Question 4). This corresponds to experience with PISA 2006, where almost half of the OECD countries are already implementing a grade-based sampling component to better relate PISA results to their national institutional structure, to examine between-school performance variation in greater detail, or to provide a better framework for interpreting school-level and student-level contextual data.

48. 82% of the countries also consider giving more emphasis to improving the collection of student-level contextual information (Question 5.1) and 59% giving more emphasis to developing contextual information on teachers and teaching by linking PISA and the OECD teacher survey as relevant or very relevant (Question 5.2). In contrast, providing emphasis to developing contextual information from parents, by integrating a parental questionnaire into the PISA design was found relevant or very relevant only by 44% of the respondents (Question 5.3). Relating PISA to a future strategy for assessing adult competencies was rated as relevant or very relevant by 52% of the respondents (Question 5.4).

49. The optional ***Module Three A*** would seek to develop comparisons of the instructional context of learning outcomes through the establishment of a supplementary grade/class-based assessment.

50. The optional ***Module Three B***, that would be open for countries participating in Module 3A, would involve an extension of the student and school context questionnaires, as well as the collection of system-level data, where possible through INES.

51. Those countries implementing module three A could also implement an optional ***Module Three C*** that would consist of extensions to the sampling procedures and context questionnaires to facilitate the link between PISA and the OECD survey on teachers, teaching and learning, as well as the exploration of other data collection methods and in-depth studies seeking to relate student performance and teacher data.

52. While the main emphasis of the 2009 OECD survey on teachers, teaching and learning will be on questions relating to the working environment for teachers, building on the policy issues identified in the OECD's thematic review *attracting, developing and retaining effective teachers*, the 2012 teacher survey will seek to extend the picture by capturing differences in national approaches to teaching and learning, which would lend themselves to the type of analyses proposed here. This would also provide sufficient time to explore how a link between PISA and a teacher survey could be pursued in methodologically appropriate and reliable ways.

53. In addition to analysing issues of educational effectiveness and efficiency through relating observed outcomes with relevant input and process variables at student, teacher and school levels, Module 3 could extend the picture with the collection of system-level background data on some key policy levers generally perceived to be conducive to raising effectiveness and efficiency. Finally, the module could further explore the distribution of decision-making responsibilities across the various stakeholders in the different areas of decision-making. This is an area where PISA 2000 began with the development of a relevant questionnaire module on which successive surveys have progressively built.

### **The utility of the proposed design to meet PISA's analytic objectives**

54. This section outlines how the core and optional modules of the future data strategy would speak to the key analytic objectives of PISA, namely to facilitate comparisons of:

- The quality of learning outcomes;
- Equality in learning outcomes and equity in learning opportunities;
- The effectiveness and efficiency of educational processes; and
- The impact of learning outcomes on social and economic well-being.

### *Comparing the quality of learning outcomes*

55. With the core module, PISA will continue to place the emphasis on cross-national comparisons of the cumulative yield of education towards the end of compulsory education, aiming to assess to what extent education systems succeed in ensuring that young adults acquire some of the key competencies and dispositions believed to contribute to the foundations for further learning and a successful transition into adult life. It is suggested maintaining this focus.

56. The core module will also devote efforts to examining the distribution of learning outcomes and to gain a better understanding of the individual, institutional and systemic attributes that are associated with performance differences between individuals, institutions and countries. This is an area where strengthening the interpretative framework of the PISA proficiency levels in future cycles could further enhance policy relevance and where Modules 3a and 3b will provide important new insights.

57. Finally, PISA has shown that there are major differences among countries in the extent to which student performance varies among schools, with performance variation between schools in some of the best performing countries amounting to less than 10 per cent of students overall performance variation - so that parents in these countries can rely on high and consistent performance standards across the entire education system - whereas in other countries two thirds of the OECD average performance variation originates at school and/or programme levels, often combined with only moderate overall performance. This is an aspect that is likely to gain in policy relevance, particularly as poor school performance is a growing policy concern in many countries, and the optional Module 3b will allow countries to better measure between-school variation in student performance and its relationship to the overall variation in student performance more reliably.

58. The 2009 assessment will provide the first full trend analysis in reading literacy over the period 2000-2009. The core module will allow examination of how improvements in the quality of educational outcomes in their country in the PISA assessment areas compare to improvements in other countries. This assessment of trends will not only be based on the two major assessments of reading in 2000 and 2009, but also draw on the two minor assessments of reading in 2003 and 2006. The latter is quite important since only four data points are likely to generate sufficiently reliable data on trends. Similar trend analyses would become available in 2012 for mathematics and in 2015 for science.

59. The period of nine years is also judged appropriate to examine the impact of policies introduced in the wake of PISA 2000, and it is therefore suggested that this time period will strengthen the analytic power of PISA through better relating PISA with the INES collection of system-level information, including information on the institutional context and the policy strategies countries pursue to raise performance levels. The longer-term strategy should therefore strengthen the links between PISA and

INES. Provisions could be made, through triangulation, to correlate system-level information on intended policies with perceptions about their implementation at student and school levels. This could be pursued as part of the core-module as well.

60. An assessment of where countries stand with equipping their children and citizens with key competencies will always remain an important objective for international assessments. However, beyond an examination of trends in learning outcomes over time, the policy relevance of international assessments will be enhanced by shifting some of the emphasis from benchmarking student performance across countries towards comparing learning progress within education systems. Module 2 is devoted to this aspect of the “quality” dimension of PISA.

61. Finally, PISA 2006 is currently piloting a parental questionnaire in 16 countries. Such a parental questionnaire could generate an external opinion of the perceived quality of education and could bring with it significant gains in analytic power with modest cost and resource implications. However, it is not yet clear whether there is sufficient added value from pursuing this on an internationally comparative basis. Parents of the assessed students could, for example, shed light on: their expectations and aspirations of their children’s educational and attainment labour market outcomes, their overall strategy for their children’s education, their current and planned investment in their children’s educational future, parental influence at critical junctures of a student’s education (e.g. subject choice), parental attitudes towards subject areas and their perceived efficacy for deriving labour market outcomes, and parental involvement with the school. In fact, one of the thematic reports from PISA 2009 could examine how students’, schools’ and parents’ views on the quality of educational outcomes relate and how they match with the observed performance levels of students and schools.

### *Comparing equality in learning outcomes and equity in learning opportunities*

62. PISA 2000 and PISA 2003 already devoted significant attention to questions of equity, in terms of how the socio-economic background of students and schools influences learning outcomes and what policy levers are associated with these outcomes.

63. Given the high and increasing policy relevance of issues of equity, it would be conceivable to make questions of equality in learning outcomes and equity in learning opportunities one of the overarching themes for the core module of PISA 2009. Given increasing socio-economic diversity in OECD countries, and growing penalties for individuals with low competencies in labour markets and societies, it is likely that this will remain one of the key priorities for education policy development in the years to come and there are a number of reasons why the 2009 PISA assessment would be well placed to examine this area further:

- The reading competencies that will be a major area of the 2009 assessment will also represent an analysis of equity-related issues, because deficiencies in language competencies are widely regarded as the heart of equity-related problems in schools.
- In 2006, the OECD will have completed its thematic review of equity-related policies, including policies related to international migration, which could provide a useful policy framework for the development of the PISA 2009 assessment.
- While a comparison between PISA 2000 and PISA 2003 shows that, in a few countries, significant improvements in learning outcomes have been achieved over a relatively short period of time, second-order relationships, such as the impact of socio-economic background on student performance typically change at a much slower pace. The 2009 assessment would probably be the first opportunity to meaningfully explore the extent to which equity-related aspects of

educational performance have changed and to relate this to corresponding changes in policy and practice.

- The second OECD teacher survey (for details on benefits and costs, see documents **EDU/EC/CERI(2005)1** and **2**) which would collect its data in parallel to the 2009 PISA assessment, could provide useful insights on how schools and teachers respond to addressing heterogeneity in the student body with regard to student abilities, interests and socio-economic contexts.
- The first OECD assessment of adult competencies, tentatively scheduled for 2010-11, would provide evidence on the economic and social consequences of low performance that would provide important background for a review of the policy implications of PISA results, particularly the proportions of students achieving the lowest proficiency levels. It would also provide a useful external reference point for the PISA proficiency levels: currently, PISA makes judgements about what level of competencies is required for individuals to successfully participate in societies based on the features of reading, mathematics and science that are believed to be relevant in adult life. With results from the adult assessment, it will become possible to validate these judgements with evidence on the economic and social returns to performance at the different proficiency levels. This is closely related to the policy theme discussed next: the impact of learning outcomes on social and economic well-being.

64. In addition to these outcomes of the core module, Module 2 would make it possible to examine how the distribution of learning outcomes evolves at different levels of education; to what extent education systems succeed in moderating the impact of the economic, social and cultural capital of students and their families on performance as students grow older; and how learning pathways and institutional structures in different countries relate to such outcomes.

65. Addressing such issues successfully through PISA would require further improvements in the context questionnaires, most notably in the questions that capture the socio-economic background of students and schools. Such development would need to be prioritised in the 2009 and 2012 assessments.

### *Effectiveness and efficiency of education systems*

66. One of the main reasons why policy makers are interested in international comparisons of student performance is the insight they give in the differences in the performance of schools and education systems which reflect the effectiveness and efficiency of educational processes. Nevertheless, while showing important differences in the performance between education systems, international assessments have had limited success in providing insight into the policy levers associated with these differences. Building on the synergies of the different OECD survey instruments it may be possible to achieve improvements within the existing operational and financial constraints of PISA. Nevertheless, for reasons of feasibility the proposals here still focus more on system level differences in conjunction with collecting data on practices, rather than exploring questions of effectiveness at micro levels.

67. It would be conceivable to make the effectiveness and efficiency of educational processes the overarching theme for the PISA 2012 assessment. There are at least two reasons why the 2012 PISA assessment would be well placed to address this area. First of all, an analysis of questions of effectiveness and efficiency would lend itself particularly well to the subject area of mathematics, as the most school-bound subject covered by PISA, which will be the focus of the 2012 assessment. Second, providing a useful basis for analytic work in this area would require significant instrument development. 2012 may be the earliest point at which feasibility would have shifted the boundary between the “must haves” and “easy wins” sufficiently to obtain a critical mass in policy insights at reasonable costs.

68. Modules 3A, B and C will be devoted to addressing effectiveness and efficiency questions, by making it possible to relate observed outcomes with relevant input and process variables at student, teacher and school levels. Beyond this, it would also be possible to extend the picture with the collection of system-level background data on some key policy levers generally perceived to be conducive to raising effectiveness and efficiency. PISA would allow for the linking of such data on intended policies to their implementation at school level, as perceived by parents, teachers and schools and, of course, with observed learning outcomes.

69. Finally, future PISA surveys would allow to advance existing analyses with regard to what distribution of decision-making responsibilities across the various stakeholders in the different areas of decision-making appears to be most conducive to encouraging performance orientation and local responsiveness while, at the same time, ensuring that learning opportunities remain accessible on an equitable basis. This is an area where PISA 2000 began with the development of a relevant questionnaire module on which successive surveys have progressively built.

70. An assessment of the effectiveness of individual institutions would not be pursued by PISA.

***Impact of learning outcomes on social and economic well-being***

71. Little comparative evidence is available on the impact of competencies acquired at school on social and economic well-being at individual and societal levels; or the extent to which learning opportunities are connected coherently across educational institutions or between educational institutions and other forms of learning.

72. A close connection between school-based assessments and OECD's planned assessment of adult competencies should allow for a review of the competencies, aspirations and engagement of youth who are leaving initial education and are assuming responsibility in work and life, together with their impact on social and economic well-being. The latter could include individual outcomes such as successful integration into the labour market, employment status and earnings, participation in further learning, civic participation and education throughout the life cycle; as well as aggregate outcomes such as fostering economic growth and social participation.

## Management structure for PISA

73. The Strategic Development Group considered the *design* of the current management structure, which is described in Annex A, broadly adequate but recommended the improvement of its *implementation*, most importantly by evaluating bids for future PISA assessments on how they would strengthen the capacity of the PGB to establish and monitor project priorities by improving information flows between the Consortium and the PGB, by ensuring that the expert groups represent the range of views among OECD countries on the issues involved, and by making the composition and work of the expert groups as well as the Technical Advisory Group more transparent. In particular, the Strategic Development Group recommended:

- Extending the “Forum” to the major domain of each assessment cycle.
- Appointing the Sampling Referee by the PGB and have it report directly to the PGB.
- Specify the expected analytic outcomes clearly in the terms of reference and require bidders to specify quality assurance procedures for each domain and the context questionnaires to respond to analytical demands and to avoid cultural bias.
- Enriching the composition of the PISA Technical Advisory Group to include content and questionnaire expertise, and have the TAG regularly report to the PGB.
- Maintaining the focus of National Project Managers on project implementation but allowing for more exchange between National Project Managers and the PGB.
- Establishing a closer link between the PGB and the Technical Advisory Group. To this end, technical issues that have policy implications will be brought to the attention to the PISA Governing Board. To this end, a report from the Technical Advisory Group would be regularly presented to the PISA Governing Board, clarifying the implications of technical issues and explaining the outcomes of technical decisions. The capacity to facilitate communication between the policy and technical levels would be an important criterion for the choice of the chair of the Technical Advisory Group.

74. Note that changes to the roles and operation of the PISA Governing Board, PISA National Project Managers, the Expert Groups, the Technical Advisory Group and the OECD Secretariat will require unanimity in the PISA Governing Board, as stipulated in the OECD Council decision **C(1997)176**. Other parts of the management structure, including the composition and role of expert groups, could be changed using the normal decision-making procedures of the Governing Board.

## ANNEX A: CURRENT MANAGEMENT STRUCTURE OF PISA

75. This section recapitulates the existing management arrangements, as established by Member countries [doc. ref. **DEELSA/ED/CERI/CD(97)4 and 6** and **EXD/PCM/EDU(2003)28**].

### **Management – current arrangements and issues for review**

76. The management model that it established for PISA the PGB, formerly known as the Board of Participating Countries (BPC), sought to capitalise on the strengths of OECD countries and existing infrastructures at national and international levels and to encourage co-operation and development with national educational and statistical agencies. The intention of the PGB was to combine:

- Access to political coverage at the level of the OECD;
- Ownership by participating OECD countries during project design, implementation, analysis and reporting; and
- The necessary power of decision making on a day-to-day basis, through a contracted Consortium of professional institutions that is selected by the PGB.

77. The project exists within the framework of the OECD legal and financial requirements of a decentralised project.

78. The following describes the roles and responsibilities of the different bodies in more detail and identifies issues that the participating countries may wish to review.

### ***PISA Governing Board (PGB)***

79. Through the PGB, countries determine, in the context of OECD objectives, the policy priorities for PISA and oversee adherence to these priorities during implementation. This includes the setting of priorities and standards for data development, analysis and reporting as well as the determination of the scope of work that will then form the basis for an international contractor.

80. The PGB also works with the OECD Secretariat to ensure compliance with the policy objectives and design parameters at milestones during the implementation of PISA. In addition to enabling participating countries to share substantively with one another the programme's decision-making and policy direction, the PGB enables participating countries to be fully informed of all aspects of PISA's implementation.

81. The PGB is composed of representatives of the countries participating in PISA. Members of the PGB, designated by the governments they represent, need to be knowledgeable about large-scale student assessments and their interface with policy and practice. To ensure PISA's overall coherence, continuity in the PGB's membership across survey cycles is considered highly desirable. The PGB elects its chair for a period of three years. The PGB also elects, on a rotational basis, three vice chairs for a period of three years.

82. Partner countries participating in PISA are represented in the PGB as observers. This status entitles them to all materials and documents related to PISA and to participate in discussions at meetings of the PGB and its other deliberations. However, partner countries are not permitted to vote, in cases where the PGB chooses to vote on an issue where unanimity cannot be achieved.

83. The PGB has established an Executive Group, consisting of the chair, the three vice chairs and the Secretariat, that facilitates the management of the programme. The Executive Group has an advisory role to the PGB and its recommendations need to be validated by the PGB through formal consultations.

84. In 2002, the PGB also established a Strategic Development Group (SDG) to advise the PGB on the establishment of a broader analytic agenda for PISA that would extend across the various future survey cycles and, in consultation with the INES Network A, on the strategic design and development of PISA. The Strategic Development Group takes an advisory role vis a vis the PGB which retains decision-making responsibility on these matters. Furthermore, all aspects requiring input from national authorities are dealt with through the PGB rather than through the Strategic Development Group. Members serve on the Strategic Development Group for renewable terms of 18 months and the PISA Governing Board will regularly review the composition of the group in light of changing priorities in the work programme. The Strategic Development Group elects its own chair and will be supported by the OECD Secretariat which will also convene and organise its meetings.

85. Finally, the PGB established an Editorial Group in 2002 to guide and monitor the preparation of the PISA thematic reports. The composition and working arrangements of the Editorial Group are similar to those of the Strategic Development Group.

86. The decision-making processes for PISA were established by the INES Network A in 1996 and formalised by the OECD Council in 1997 [doc. ref. C(1997)176]. Accordingly, the PGB shall seek consensus of all members in its deliberations and decisions. Decisions which are brought to a vote by either the chair or any of its members need to be adopted by a majority of participating members. Each year the PGB will prepare and approve by at least a two-thirds majority decision of the members the draft programme of work and budget for the following year. The PGB will, by a two-thirds majority decision of the members of the Board, also submit the annual estimates for expenditure to the OECD Budget Committee for adoption.

87. Any necessary regulations and rules for the application of the rules governing its operation, changes to the scale of country appropriations to the budget as well as changes to the project design and structure described in document **DEELSA/ED/CERI/CD(1997)4** need to be adopted by the PGB with a unanimous vote.

### ***National Project Managers***

88. Participating countries appoint National Project Managers to carry out the PISA surveys in the national context. These will interact with and report to the international contractor on all issues related to the implementation of the assessment in their country. Although National Project Managers will implement a coherent and well-defined project specified by the PISA Governing Board and the international contractor, they play a vital role in ensuring a high quality implementation and verifying and evaluating the survey results, analyses, reports and publications.

89. National Project Managers are the primary means of day-to-day contact between participating countries and the contractor and shall communicate with this contractor on all issues related to the implementation of PISA in their country.

90. At the national level, each country decides how it can best facilitate the communication and co-ordination needed for implementing data collection responsibilities as well as for interacting with international contractor(s).

### *National Committees*

91. Countries participating in PISA are expected to establish a national committee, drawn from the national educational and scientific community and experts involved in student assessment. These committees do, for example, provide advice to the national representatives to the PGB and to the National Project Manager on the appropriateness of the international data-collection instruments in the national context, on matters of quality control, and the dissemination of the results at the national level.

### *Expert Groups*

92. Substantive input from Member countries is imperative in ensuring that the PISA assessments are internationally valid and take into account the cultural and curricular context of the countries in which they are implemented. The PISA management structure foresees that the international contractor, that will have ultimate responsibility for the implementation of PISA, works to ensure that participating Member countries are actively engaged in the development of the assessment instruments by establishing expert groups drawn from participating countries. These expert groups are expected to link the policy objectives specified by the PISA Governing Board with substantive and technical expertise and, under the guidance of the international contractor, to establish consensus on subject matter and technical issues among countries within the overall objectives and framework of the PISA strategy.

93. The international contractor works with participating countries on nominations for the expert groups, encouraging wide country representation. At the same time, the establishment of the expert groups requires countries to delegate authority among themselves so as to keep the size of expert groups manageable and minimise costs. The limited size of the expert groups does not mean that only a limited number of countries will participate in the development of the project; rather, all countries are expected to contribute to developmental activities and to review the results of all components of the project although not necessarily each country will participate in each developmental activity. The international contractor proposes nominations to the Secretariat, which appoints the experts in consultation with the PISA Governing Board. Meetings of expert groups will be called and sponsored by the international contractor. Provisions for this have been made in the proposed budget. The Secretariat will decide on its own participation in expert groups on a case by case basis in consultation with the international contractor.

94. In addition to the expert groups, an Open Forum for the main assessment area of each PISA assessment provides further opportunities, in particular for countries that are not represented on the relevant expert group, to participate in the development of the PISA assessments.

### *Technical Advisory Group*

95. The international contractor must ensure the technical quality of the Project. The Technical Advisory Group assists this objective. As opposed to the subject matter expert groups, it has a permanent role across survey cycles and includes, among other experts, those individuals who have a leading operational role in the project operations such as, for example, major subcontractors. Thus, the Technical Advisory Group constitutes a forum through which the main actors implementing the project interact both among themselves and with those whose additional technical expertise is sought.

96. The international contractor proposes nominations for the Technical Advisory Group to the Secretariat, which appoints the experts in consultation with the PISA Governing Board.

97. The alternative of setting the Technical Advisory Group up as an entirely external review panel was not envisaged in the management structure for PISA. However, the PISA Governing Board draws on additional scientific expertise for review purposes as needed.

98. The international contractor raises technical issues that have policy implications with the Secretariat which, in turn, raises these with the PISA Governing Board as necessary.

99. Meetings of the Technical Advisory Group are called and sponsored by the international contractor. Provisions for this have been made in the proposed budget.

100. Technical issues that have policy implications will be brought to the attention to the PISA Governing Board. To this end, a report from the Technical Advisory Group would be regularly presented to the PISA Governing Board, clarifying the implications of technical issues and explaining the outcomes of technical decisions. The capacity to facilitate communication between the policy and technical levels would be an important criterion for the choice of the chair of the Technical Advisory Group.

### ***Sampling referee***

101. The international contractor must ensure the integrity of national samples. For this purpose the PISA Governing Board appoints a Sampling Referee for which the international contractor will provide nominations. The international contractor will decide on the quality of the samples and their implications on the use of country results in the international reports on advice from the Sampling Referee.

### ***OECD Secretariat***

102. The OECD Secretariat, as agent of the PGB, is responsible for PISA's overall management. This entails preparing the terms of reference for each survey cycle under the guidance of the PGB; engaging contractors to implement specified activities; and, monitoring the contractor(s) for quality assurance purposes and the project on a day-to-day basis. The OECD Secretariat also is responsible for building consensus among participating OECD countries at the policy level - through the PGB - both during the preparation of the terms of references and at milestone points of the surveys.

103. The OECD Secretariat serves as the Secretariat of the PGB and as the interface between the PGB and the contractors during all stages of PISA. It is a further responsibility of the OECD Secretariat to provide the PGB with a progress report on no less than a biannual basis as well as with a report on financial and contractual management on an annual basis.

104. The OECD Secretariat produces the analyses, based on the statistical components provided by the contractor(s), and is responsible for preparing the international report in collaboration with the OECD countries, through the PGB, and the contractors. It is also responsible for overseeing the thematic reports, which are published under the responsibility of the OECD. The OECD Secretariat edits and revises draft reports submitted by contractors to ensure their suitability with respect to the interests of OECD countries in data and analysis that are responsive to their needs for information on policy and practice.

105. OECD countries agree on a set of general rules for the inclusion/exclusion of country results in international reports. The OECD Secretariat arbitrates disagreements between participating countries and the sampling referee under guidelines established by the PGB.

***International contractor charged with the implementation***

106. The design and implementation of the surveys, within the framework established by the PISA Governing Board, is the responsibility of contractors selected through an open international call for tender. The main responsibilities of the contractor are to:

- Prepare, and after receipt of comments from the PGB and OECD Secretariat, revise and complete assessment instruments;
- Ensure the quality of the translation of all items relevant to the assessment of the three substantive domains plus all items or data-collection instruments in the national language(s) used in each participating country;
- Work with countries to define the target population and draw the samples;
- Establish survey procedures and operations, including field trialling and data collection in each of the three substantive domains and the context questionnaires;
- Perform data verification and establish quality-control mechanisms;
- Co-ordinate scaling and preparation of data products to be distributed to participating countries and to other contractors;
- Create and manage the appropriate Subject Matter Expert Groups, notably in science;
- Co-ordinate with National Project Managers in participating countries and the OECD Secretariat;
- Provide technical and analytical support to the OECD Secretariat during the preparation of the international report, including the preparation of all tables and technical documentation;
- Provide reasonable technical and analytical support to the authors of thematic reports;
- Prepare, and after receipt of comments from the PGB and OECD Secretariat, revise and complete a framework for the collection of background or explanatory information on participating students, schools and perhaps teachers;
- Develop questionnaires based on this framework;
- Field trial, analyse and revise the field trial questionnaires;
- Develop an analysis and reporting plan that encompasses data collected through PISA;
- Develop a detailed conceptual strategy that discusses at least two thematic areas (following the PGB's priorities), how they will complement each other, and how each will contribute to an improved understanding of the policies and practices that affect educational outcomes;
- Describe the process for developing the thematic reports (*e.g.*, the processes for identifying and selecting authors, revision, quality control, and consensus building);
- Analyse the data required to complete and then prepare in draft at least two thematic reports that are suitable for formal review by the PGB and the OECD Secretariat;

- Co-operate with the OECD Secretariat during the development of the initial international report, including providing descriptions, tables, or any results that might be relevant;

107. The international contractor is also responsible for securing the skills and expertise necessary to conduct the specified activities; some possible means for doing so include using its own staff, making arrangements with government entities and contracting out some of the activities. In carrying out the project, the international contractor will ensure that:

- Functional expertise is built into the project as needed, for example, by utilising appropriate sub-contractors;
- Participating Member countries are actively engaged in the development of the assessment instruments through the expert groups; and
- Consensus of participating Member countries is reached at the operational and technical level through National Project Managers.