

PISA 2022 Technical Report



20 Questionnaire Design and the Computer-Based Questionnaire Platform

Introduction

Questionnaires are a critical component of the PISA survey, providing important information about the context in which students learn and live as well as demographics and other reporting information. When coupled with the cognitive results, the questionnaires can provide insights into relationships between background information and cognitive achievement. The mode of administration of the questionnaires has evolved across the PISA cycles. PISA administered questionnaires in paper-based format alone until PISA 2012 when an optional online School Questionnaire was introduced. Computer-based questionnaires were implemented more broadly in PISA 2015 and expanded in PISA 2018 to be the primary mode of questionnaire administration. In PISA 2022, computer-based questionnaires continued to be the primary mode of administration and all questionnaires except the Parent Questionnaire were available in computer-based format. The use of a computer-based questionnaire administration allowed for innovations to be introduced in the PISA 2022 cycle, as well as continuing to increase the data quality over PISA 2018.

Computer-based delivery was the standard and recommended administration format for the cognitive assessment and questionnaires in PISA 2022, and only four countries used paper-based delivery for all tests and questionnaires. Countries were required to administer the questionnaires in the same mode as the cognitive assessment, so countries that implemented the assessment on computer also administered the computer-based questionnaires. Also, countries were not permitted to switch the mode of administration between the Field Trial and the Main Survey, so all countries that conducted a Field Trial using the paper-based instruments also conducted the Main Survey using the paper-based instruments. Computer-based questionnaires were administered in two ways: through either the Student Delivery System (SDS) or an online questionnaire portal accessed by school administrators and teachers using their internet connection (online). The student questionnaires were delivered as part of the SDS and presented using participating schools' computers or laptops provided by the National Centre. The School Questionnaire and the optional Teacher Questionnaire were administered online.

Table 20.1 shows the compulsory and optional questionnaires that were administered in PISA 2022 and their administration mode.

This chapter first explains the PISA 2022 questionnaire design for the Field Trial and the Main Survey, then provides an overview of the process used to author the international master and the national questionnaires, and finally provides an overview of the technical design of the questionnaire platform.

Questionnaire Design

PISA emphasizes the importance of collecting context information from students and schools along with the assessment of student achievement. A Student Questionnaire (STQ) and a School Questionnaire (SCQ) cover a broad range of contextual variables. The content of these questionnaires – especially the content of the Student Questionnaire – changes considerably between cycles based on the major domain of the assessment, but the administration has remained stable: every student participating in the PISA assessment completes the STQ, and every school principal of the participating schools, one per school, completes the SCQ.

PISA has also included several international questionnaire options, i.e., additional instruments that countries could administer as an international option. For PISA 2022, it included a Parent Questionnaire (PAQ), Teacher Questionnaire (TQ), and optional questionnaires for the students: the Financial Literacy Questionnaire (FLQ), ICT Familiarity Questionnaire (ICQ), and Well-Being Questionnaire (WBQ). Table 1.2 (from Chapter 1) summarises the participation of countries/economies in the different international questionnaires.

The context questionnaires contribute to integral aspects of the analytical power of PISA as well as to its capacity for innovation. Therefore, the questionnaire design must meet high methodological standards, allowing for the collection of data that leads to reliable, precise and unbiased estimations of parameters for each participating country. In addition, the design also must ensure that important policy issues and research questions can be addressed in later analysis and reporting based on PISA 2022 data. Both the psychometric quality of the variables and indicators and the analytical power of the study must be considered when proposing and evaluating a questionnaire design. This is usually done by pre-testing all questionnaire content and innovations in the Field Trial one year prior to the Main Survey assessment. Accordingly, more material is tested in the Field Trial than will be implemented later in the Main Survey. Results are then discussed with the PISA expert groups and Main Survey material is selected.

The Field Trial and the Main Study questionnaire designs differ greatly in many respects. The goal of the PISA 2022 Field Trial questionnaires is to re-evaluate the quality of the context questionnaire items used in previous cycles as well as the quality of new items developed for this cycle and test methodological innovations, namely the within-construct matrix sampling of items. Moreover, the PISA 2022 Field Trial provided an opportunity for countries to test the questionnaire administration procedures. The main survey questionnaires must collect equivalent information across all students, schools, teachers, and parents to be used in reporting results, and thus the design needs to administer the same questions to all respondents.

The following sections discuss the main differences between the PISA 2022 Field Trial and the Main Survey design for both the paper-based and computer-based questionnaires.

Student-Administered Questionnaires

In the field trial, approximately 1,992 students per country respond to the computer-based questionnaires and approximately 900 students per country respond to the paper-based questionnaires. These numbers were increased in the main survey to approximately 6,300 students per computer-based country and 5,250 students per paper-based country. In addition, countries/economies opting to administer the Financial Literacy assessment sampled an additional 1,650 students. Because of the differences in the tools available for authoring a computer-based questionnaire versus a paper-based questionnaire, the design of the computer-based and paper-based questionnaires administered to students were different.

Computer-based design

Field trial

The field trial Student Questionnaire design for PISA 2022 allowed for the maximum number of potential items to be tested, experiments on different wording and formats of similar questions, and the piloting of the new within-construct matrix sampling methodology. To accomplish these goals, the Student Questionnaire design included two overlapping virtual booklets, each of which included a subset of items with different wording for version comparison experiments that were administered to only half the students taking that booklet. This resulted in four major paths through the questionnaire: Booklets 1a, 1b, 2a, and 2b. The field trial Student Questionnaire design is shown in Figure 20.1 and describes the constructs included in each of the booklets and experiments. The field trial Student Questionnaire was authored as one form and each student had an equal chance of being assigned to one of the four paths.

Figure 20.1. Field trial computer-based design for Student Questionnaire

Student Questionnaire			
Common items: basic demographics (age, gender), educational career, migration and language exposure, ESCS (home possessions, guardians)			
Booklet 1: ESCS: Parental education and occupation (parent/guardian versions)		Booklet 2: ESCS: Parental education and occupation (trend mother/father versions)	
Common items: ESCS (food insecurity and subjective socioeconomic status)			
Booklet 1: <ul style="list-style-type: none"> • Educational career • School culture and climate • Out-of-school experiences • Parent/guardian involvement and support • Social and emotional characteristics (vignettes) • Health and well-being • Postsecondary preparedness and aspirations • Future aspirations 		Booklet 2: <ul style="list-style-type: none"> • Migration and language exposure • Organisation of student learning at school • Mathematics teacher behaviours • Exposure to mathematics content • School culture and climate • Subject-specific beliefs, attitudes, feelings, and behaviours • Out-of-school experiences • Organisation of student learning at school • Creative Thinking 	
Booklet 1a: Social and Emotional Characteristics (agreement)	Booklet 1b: Social and Emotional Characteristics (frequency)	Booklet 2a: <ul style="list-style-type: none"> ○ Mathematics teacher behaviours (version A) ○ Exposure to mathematics content (version A) ○ Subject-specific beliefs, attitudes, feelings, and behaviours (version A) 	Booklet 2b: <ul style="list-style-type: none"> ○ Mathematics teacher behaviours (version B) ○ Exposure to mathematics content (version B) ○ Subject-specific beliefs, attitudes, feelings, and behaviours (version B)
Common items: Future aspirations, Global crises, PISA preparation and effort			
Financial Literacy Questionnaire			
ICT Familiarity Questionnaire			
WBQ			

The PISA 2022 field trial Student Questionnaire also tested the implementation of the within-construct matrix sampling for the first time in PISA. Certain PISA constructs are measured using 6 to 12 individual items. However, to decrease the amount necessary for responding to each instrument, each student is administered only 5 of the items from a construct. To this effect, each student received a random selection of the items in a construct, so students received different combinations of the items from the construct. The computer platform used a combination of the student questionnaire random number and the position

of the question screen within the questionnaire form to determine which items to show so that students were shown items in different positions on each screen (e.g., a student did not always see items 1, 2, 4, 5, and 7 on every matrix-sampled screen). The master version of the field trial questionnaire identified all the questions for which the within-construct matrix sampling would be applied.

The optional questionnaires for students: Financial Literacy (FLQ), ICT Familiarity (ICQ), and Well-being (WBQ) were administered following the Student Questionnaire and were available only as computer-based instruments. These optional questionnaires each consisted of a single form with no virtual booklets or version comparisons. The field trial version of the FLQ and ICQ contained more content than needed for the main study in order to evaluate the quality of new items. The WBQ was administered unchanged from PISA 2018. Within-construct matrix sampling was not applied to any questions in the optional questionnaires.

The computer-based Student Questionnaire Une Heure (STQ-UH) booklet consisted of a subset of questions from the Student Questionnaire designed to take approximately 20 minutes for a student to complete. If students received the STQ-UH, they did not receive any of the other optional questionnaires even if their country had elected to participate in those options.

Main survey

For the main survey, the number of items in the Student Questionnaire was reduced significantly as decisions were made about which version of each of the experimental wording questions collected the highest quality data and which of the other new questions collected the highest quality data on other constructs. The main survey Student Questionnaire consisted of one booklet of items that was administered to all students. In creating the main survey questionnaire, the sequence of items was updated because items from two virtual booklets were combined into one virtual booklet. Within-construct matrix sampling was still applied to those questions where the field trial analysis showed that high-quality scales could be constructed from the matrix-sampled items.

The design for the optional Financial Literacy, ICT Familiarity, Well-being, and Parent Questionnaires remained the same as in the Field Trial with one form per questionnaire and the number of items administered in the FLQ and ICQ was reduced slightly to eliminate items that were deemed to not function well, and to reduce the time needed to complete each questionnaire.

Paper-based design

Field trial

A paper-based Student Questionnaire was administered in the four countries that chose the paper-based mode of delivery for both the questionnaires and the cognitive assessment. The paper-based Student Questionnaire took up to 41 minutes of assessment time and included a subset of the items from the field trial computer-based version. The paper-based version did not include questions on the creative thinking module, eliminated some of the version comparison experiments, and had a reduced item pool for a few modules. The field trial paper-based Student Questionnaire was administered in two overlapping booklets as shown in Figure 20.2. Students were randomly assigned to one of the two booklets during the survey administration. Within-construct matrix sampling could not be applied to the paper-based version, so students taking the questionnaire on paper received all items in a question instead of a random subset. This did not increase the response time since the paper-based version had fewer items than the computer-based version.

Where possible, questions were administered in the same format and layout in both the paper-based and computer-based questionnaires. However, some questions had to be changed from drop-down or slider response format to open-ended format to accommodate data collection in the PBA mode.

Figure 20.2. Field Trial Paper-based Design for Students

Paper-based Student Questionnaire	
Common items: <ul style="list-style-type: none"> • Basic demographics (grade, age, gender) • Educational career • Migration and language exposure • Organisation of student learning at school • ESCS: home possessions 	
Booklet 1: <ul style="list-style-type: none"> • ESCS: Parental education and occupation (new parent/guardian versions) • Educational career • Mathematics teacher behaviours (version A) • School culture and climate • Exposure to mathematics content • Subject-specific beliefs, attitudes, feelings, and behaviours • Participation in additional mathematics instruction • Social and emotional characteristics (agreement) • Social and emotional characteristics (vignettes) 	Booklet 2: <ul style="list-style-type: none"> • ESCS: Parental education and occupation (trend mother/father versions) • ESCS: Food insecurity and subjective socioeconomic status • Migration and language exposure • Educational Career • School Culture and Climate • Mathematics teacher behaviours (version B) • Out-of-school experiences • Parental involvement and support • Social and emotional characteristics (frequency) • Health and well-being • Post-secondary preparedness and aspirations
Common items: Global crises, PISA preparation and effort	

International option questionnaires were not available to paper-based countries, so the FLQ, ICQ, and WBQ were not administered to these participants. In addition, no paper-based country chose to administer the STQ-UH questionnaire.

Main Survey

For the main survey, items that were removed from the field trial version of the computer-based student questionnaire were also removed from the paper-based version. The paper-based student questionnaire content was combined into one 35-minute booklet that was administered to all students. When combining the questions from multiple booklets, the sequence was questions was updated as well.

School Questionnaire

Each school that participated in PISA completed one School Questionnaire to provide contextual information on the environment in which students learn. Since the school questionnaire was answered by approximately 28 schools in the Field Trial, there was not a large enough sample size to administer two booklets of material in the field trial and still evaluate the quality of the items in each country. Therefore, the design of the school questionnaire remained consistent between the field trial and the main survey for both computer-based and paper-based administration, with slightly more material administered in the field trial than in the main survey.

Field Trial

The School Questionnaire in the Field Trial included trend and new material and took approximately 60 minutes to complete. This questionnaire was designed as one form without virtual booklets or version comparisons, and the same questions were administered in both the paper-based and computer-based versions. Data quality was improved in the computer-based version by using automated checks and routing. Certain questions in the computer-based version contained automated range limits that would not permit unrealistic values to be entered and soft checks to encourage the respondent to confirm responses

that were higher or lower than expected. In the computer-based version, when filter questions were implemented, routing rules could be used to automatically hide skipped questions from respondents. No automatic range checks are possible in the paper-based version, but rather these were implemented during data entry. Also, in the paper-based version, respondents saw printed instructions to skip certain questions based on their response to a filter question. The computer-based questionnaire also contained four questions where data was collected using sliders instead of the open-response format used in the paper-based questionnaire.

Main Survey

For the Main Survey, the number of questions administered in the School Questionnaire was reduced to 45 minutes of material. The same questions were administered to both the computer-based and paper-based administration countries. The same technical differences between the computer and paper-based administration were present for the main survey. As the main survey collects information from a larger sample than in the field trial, there are approximately 150 respondents per country to the School Questionnaire.

Teacher Questionnaire

The Teacher Questionnaire is administered to up to 25 respondents per school. The sampling process attempts to have an equal number of teachers of the major PISA domain (mathematics) and teachers of other subject areas. Additional information about the sampling of teachers can be found in Chapter 6. Certain items in the questionnaire are domain-specific and designed to collect information only from teachers of mathematics, and other questions are general and may be answered by all teachers of 15-year-olds. In the PISA 2018 cycle, the Teacher Questionnaire was designed as two independent forms (one for teachers of reading as a subject, and one for teachers of all other subject areas), and teachers were instructed to log into the version of the questionnaire that applied to them. Once a teacher logged into one form of the questionnaire, they were not able to switch to the other form, and so if a teacher was erroneously classified as a major-domain teacher then they would be asked to respond to questions that did not apply to them. This design was changed for the PISA 2022 cycle, and in this cycle the Teacher Questionnaire was administered as one form and teachers were asked to self-identify as teachers of mathematics or teachers of other subjects and questions were presented based on those responses. If a teacher erroneously marked that they were a teacher of mathematics, they could go back and change their answer and then route to the appropriate questions for their subject area.

Field Trial

The optional computer-based Teacher Questionnaire was designed as one form containing two overlapping virtual booklets of questions and took approximately 60 minutes to complete in the Field Trial. All teachers first answered a set of common questions about their background, including whether they are a maths teacher or not. Then teachers were routed to one of two blocks of questions: maths-specific questions for teachers who self-identified as teachers of mathematics or general questions for teachers who self-identified as not teaching mathematics. Figure 20.3 shows the Teacher Questionnaire Field Trial design.

Figure 20.3. Field trial computer-based design for Teacher Questionnaires (TCQ)

Teacher Questionnaire	
Common items: <ul style="list-style-type: none"> ○ Socio-demographic characteristics ○ Education, Certification, Teacher qualifications ○ Employment status, years of experience, grade assigned ○ Workload ○ Alignment of roles, content of teacher preparation ○ Support for learning and development ○ Self-reported impact of professional development on teaching practices ○ Use of specific ICT applications ○ Assessments, evaluation and feedback ○ Emphasis on ICT competencies ○ Job satisfaction 	
Administered to self-identified mathematics teachers: <ul style="list-style-type: none"> ○ Teacher qualifications ○ Mathematics curriculum ○ Disciplinary climate in mathematics ○ Use of digital devices in mathematics ○ Exposure to formal and applied mathematics tasks ○ Exposure to mathematics problems requiring reasoning ○ Structure of mathematics instruction ○ Cognitive activation in mathematics ○ Mathematics teacher feedback ○ Goals and views about teaching mathematics ○ Support for learning and development 	Administered to self-identified non-mathematics teachers: <ul style="list-style-type: none"> ○ Teacher qualifications ○ Self-efficacy ○ Students' engagement with their learning ○ Opportunity to learn ○ Attitudes toward immigrants ○ Teacher background – studying experience abroad
Common items: <ul style="list-style-type: none"> ○ Creative thinking ○ Teacher well-being ○ Classroom composition 	

Main Survey

The main survey Teacher Questionnaire design was unchanged from the field trial: it consisted of common questions administered to all teachers as well as distinct blocks of questions that were administered to either mathematics teachers or teachers of other subjects. The questionnaires in total still covered all policy modules proposed in the questionnaire framework for this cycle (see Chapter 5). However, the number of questions administered was reduced to eliminate those questions that had lower data quality and/or were not as critical for the purpose of PISA so that the total main survey questionnaire response time was approximately 45 minutes.

Parent Questionnaire

The optional Parent Questionnaire (PAQ) was administered on paper only. Only one Parent Questionnaire was completed for each student, and the questionnaire could be completed by either parent or the student's guardian. The PAQ included trend items as well as newly developed content. The field trial version of the Parent Questionnaire contained approximately 35 minutes of material so that new content could be considered for inclusion in PISA 2022. The main survey version of the Parent Questionnaire contained approximately 30 minutes of material.

Computer-based Questionnaire Platform

The computer-based questionnaires were designed and administered using the PISA Questionnaire Authoring Tool (QAT), a platform focused on the specific goal of production (i.e., the definition, authoring,

testing, translation, adaptation, and validation) of the Master and National versions of the questionnaires, the delivery of these questionnaires to the appropriate respondents, and the management of all administrative tasks relating to questionnaire delivery.

The QAT editor is used to create the questions, routing logic, and consistency checks used in the computer-based questionnaires of PISA 2022. It is an online editor that allows administrators to create a profile for each questionnaire for each country, and then allows users to add, delete, or edit a questions and routings within those questionnaires. Users edit the content and question format of items in the questionnaire in the Editor, then that structure is transformed by the platform into the formatted screens presented to users (the runtime version), and finally the translation of the text is integrated into the runtime to show the questions in each national language.

When users log into the QAT, they are taken to the home page shown in Figure 20.4. This page gives users access to the many features of the tool.

Figure 20.4. Questionnaire Authoring Tool home page

PISA 2022 Questionnaires Log out

HOME MONITORING AND DATA ACCESS ADMINISTRATION

View, edit and test questionnaires

Here you can preview, test and edit the questionnaires.

Please choose a questionnaire to view or edit: Master-School_Questionnaire_MS22

- [Questionnaire Authoring Tool](#)
- [Review and Test the Questionnaire](#)
- [Upload XLIFF for Preview](#)
- [Clear Testing Results](#)
- [Export Testing Results](#)
- [Export Spreadsheet](#)

Copy Items Between Questionnaires

Here you can copy items from one questionnaire to another

- [Copy Item Between Questionnaires](#)

Questionnaire Fonts and Appearance

Here you can change the fonts used in your questionnaires and make some adjustments to their appearance.

Please choose a questionnaire: [Validated] Israel-Arabic For ICT_Familiarity_Questionnaire

- [Update Fonts](#)

Other Links

- [Preview Translation Page](#)

QAT Questionnaire Editing Features

When users open the QAT Editor, they are presented with a view of the structure of an entire questionnaire. It is important to note, though, that this is not the view that respondents will see during the Field Trial and Main Study phases of PISA 2022, this tool is used to define the elements of the questions that will be displayed to respondents through a runtime. Figure 20.5 and Figure 20.6 show the main view of the QAT for a National Project Manager (NPM).

Figure 20.5. Questionnaire Authoring Tool: Main View (with a specific question example)

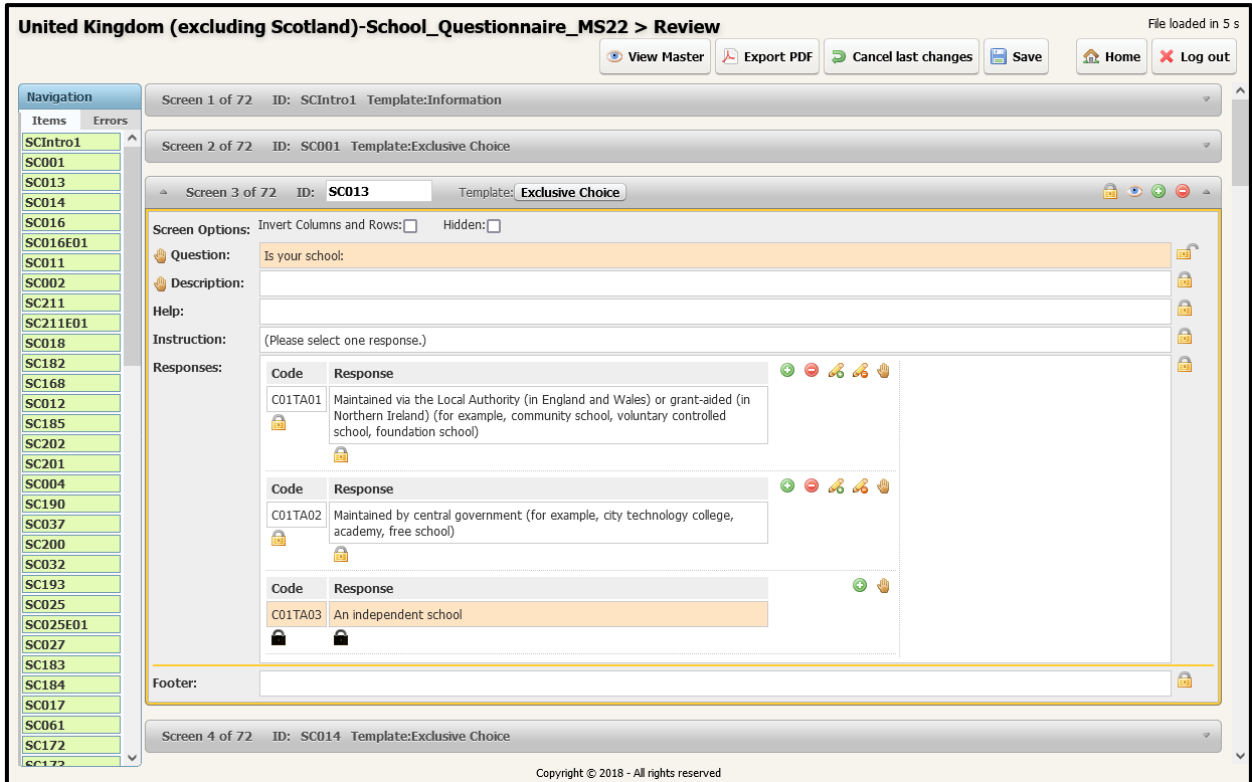
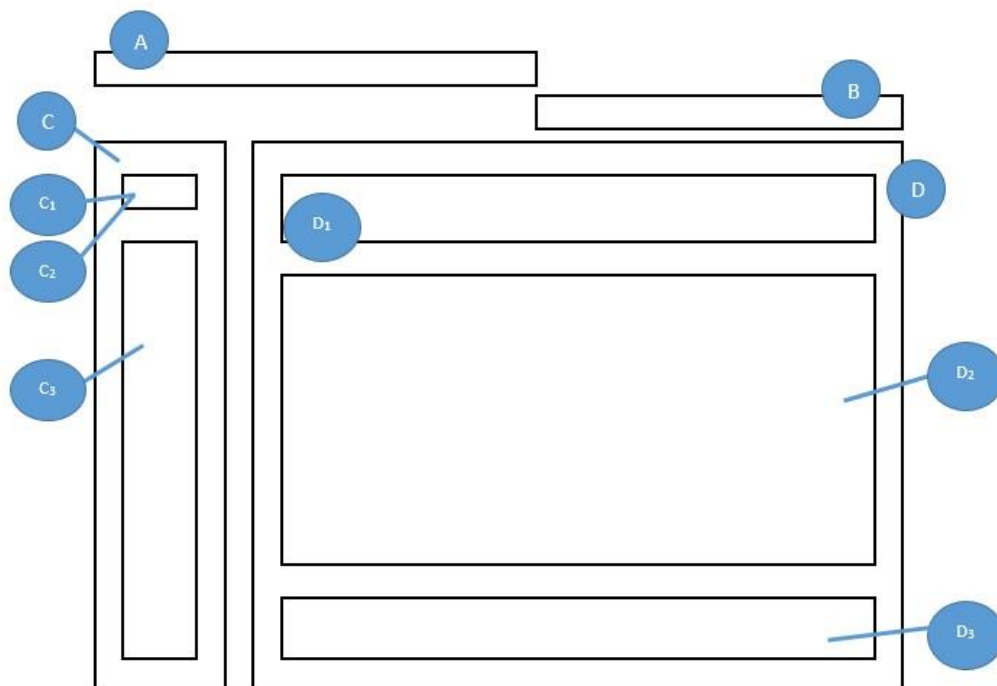


Figure 20.6. Questionnaire Authoring Tool: Organisation of Main View



The organisation of the main view is the following:

Panel A: The Questionnaire Title contains the questionnaire label (country and type of questionnaire) and the questionnaire mode (i.e., the modes of the QAT are important to note as they define the rights of a current user. Depending on the mode, the access for modifying questionnaires in the QAT editor is locked or unlocked, allowing users to work independently).

Panel B. The Questionnaire Toolbar provides the following options:

- View Master – Opens the Master English version of the current questionnaire.
- Export PDF – Generates a PDF file of the current version of the questionnaire.
- Cancel Last Changes – Undoes any changes since the last time the user has saved their work on the questionnaire.
- Save – Saves the questionnaire to the database. When clicked, this action also provides a check for whether routing rules and consistency checks are correctly formatted, in the questionnaire. If the test fails, the user will receive a notification that there are currently errors in the questionnaire.
- Home – Redirects the user to the QAT homepage.
- Log Out – Disconnects the user from the QAT platform.

Panel C: The Navigation Panel lists contains the following elements:

- The questionnaire items (C₁) or
- A list of errors currently present in the questionnaire (C₂)
- Quick access to questionnaire screens (C₃)

Panel D: The QAT Editor displays the list of all questions (referred to as “screens”) and rules (referred to as “rules headers”) available for a questionnaire. When clicked, each part will expand or collapse a specific screen or rule window (D, D₁, D₂, D₃).

Questions Expanded View

When a specific screen is expanded in the QAT editor, additional features are available. Figure 20.7 shows the Expanded View information. Inside the expanded view, the user can edit the different parts of a questionnaire screen using the QAT editor: the question text, description, instruction, help, and response categories/options.

Figure 20.7. The expanded view information



The features available for users in the questionnaire screens include:

- A. Show/Hide Screen** button can expand or collapse a specific questionnaire screen or rule header.
- B. Screen Number** label shows the location of the screen in the sequence of questionnaire items out of the total number of questionnaire screens.
- C. Screen ID** displays the technical identifier of the screen and rule headers (i.e. SC025).
- D. Template** label displays the name of the template used for editing the questionnaire screen (see section about questionnaire templates for additional information).
- E. Lock/Unlock** button makes a questionnaire screen editable or not for a National Project Manager. This button is not available to NPMs.
- F. Preview** button opens a preview of an item, giving the user a view of how the question stem, response options, helps and instructions will be displayed.
- G. Add Screen** button inserts a new question or rule in the questionnaire just below the currently expanded item.
- H. Delete Screen** button will remove the question or rule from the questionnaire. Users who click this button will first receive a notification asking for confirmation of deletion.

Previewing Questionnaire Items

The questionnaire platform offers three preview options for reviewing and checking the quality of the questionnaires. The first option is a question preview panel that can be accessed from within the QAT Editor using the Preview button available in the expanded view of each question. In this preview mode users see only the screen for the individual item selected *with the English source text*. This preview tool is helpful for reviewing the general layout of the question and the IDs for each response field to better understand how data will be labelled. This preview tool is shown in Figure 20.8.

Figure 20.8. Preview of a question in the QAT

PISA 2022 List of items

Is your school a public or a private school?

(Please select one response.)

<p>A public school</p> <p><small>(This is a school managed directly or indirectly by a public education authority, government agency, or governing board appointed by government or elected by public franchise.)</small></p>	<p>SC013Q01TA01</p> <p><input type="radio"/></p>
<p>A private school</p> <p><small>(This is a school managed directly or indirectly by a non-government organisation; e.g. a church, trade union, business, or other private institution.)</small></p>	<p>SC013Q01TA02</p> <p><input type="radio"/></p>

Reset ◀ ▶

The second option is to preview the full national adapted questionnaire *in the English source version* using the “*Review and Test the Questionnaire*” link on the QAT homepage. This option lets users navigate through the entire questionnaire in a test environment to confirm the agreed-upon adaptations and routing are working appropriately before beginning translation.

The third option is to preview the national questionnaire in the language of administration. This tool integrates the translation file that the country has worked on separately into the questionnaire runtime. This allows users to see the questionnaire as it will be administered to students, school administrators, or teachers. Users access this preview by clicking “*Upload XLIFF for Preview*” from the home page of the QAT and then upload their translation file (XLIFF format) as shown in Figure 20.9.

Figure 20.9. Upload XLIFF for Preview feature in the QAT

Browse... Portugal-School_Questionnaire_MS22_por-PRT.xlf

PDF Preview Edit Columns Close

The Upload XLIFF for Preview feature allows NPMs to view their translated questionnaire materials in a runtime environment identical to what questionnaire respondents would see in either the Student Delivery System (SDS) or in the online questionnaire. NPMs may also use create a translated PDF version of their questionnaires.

The XLIFF previewer has an “Edit Columns” tool that allows users to adjust the width of response columns for each question and language version individually to ensure that translated text is not truncated. The features of this tool are shown in Figure 20.10. For PISA 2022, this tool was used only by PISA Administrators.

Figure 20.10. Upload XLIFF for Preview – Edit Columns feature

United Kingdom (excluding Scotland)-School_Questionnaire_MS22

Select an item▼

Load English (United Kingdom (excluding Scotland)) eng-ZZZ (Read Only)
 Space Response Columns Evenly

Load English (United Kingdom (excluding Scotland)) eng-QUK

Save English (United Kingdom (excluding Scotland)) eng-QUK layout

Which of the following definitions best describes the community in which your school is located?

(Please select one response.)

A village, hamlet or rural area (fewer than 3 000 people)	SC001Q01TA01 <input type="radio"/>
A small town (3 000 to about 15 000 people)	SC001Q01TA02 <input type="radio"/>
A town (15 000 to about 100 000 people)	SC001Q01TA03 <input type="radio"/>
A city (100 000 to about 1 000 000 people)	SC001Q01TA04 <input type="radio"/>
A large city (with over 1 000 000 people)	SC001Q01TA05 <input type="radio"/>

SC001

Question templates

The QAT editor is a template-based questionnaire authoring system that supports the creation of multilingual content (this includes left-to-right and right-to-left texts, and extended character sets for Arabic, Chinese, Hebrew, Japanese, Korean, Russian, Thai, etc.), the design of the rules-based routings driving the questionnaire flow, and the enforcement of the quality of the answers via consistency checks. In PISA 2018, national centres entered their translations directly into the QAT and so the support of the languages within the system was important; however, in PISA 2022 the national centres entered the English back-translation of their agreed-upon content adaptations in the QAT and then the QAT generated electronic translation files (XLIFFs) that could be used by standard computer-assisted translation tools.

All PISA 2022 questions were authored using one of the following screen templates available through the QAT editor:

- Drop Down (Table)
- Drop Down
- Exclusive Choice
- Multiple Choice

- List of Text Inputs
- Free Text Input
- List of Exclusive Choice (Table)
- List of Multiple Choice (Table)
- Multiple List of Text Inputs (Table)
- Scale Question Type
- Information

Additionally, there were two templates for defining rules that were used within the questionnaires:

- Consistency Check Rule
- Routing Rule

A short description of each template is provided below, with examples in Figure 20.11 through Figure 20.24.

Figure 20.11. Information Template

PISA 2022 List of items

Dear <school administrator>,
 Thank you for participating in this study. This questionnaire asks for information about:

- School background information
- School management
- Teaching staff
- Assessment and evaluation
- Targeted groups
- School climate

This information will help illustrate the similarities and differences between groups of schools in order to better establish the context for students' test results. For example, the information provided may help to establish what effect the availability of resources may have on student achievement – both within and between countries.
 The questionnaire should be completed by the principal or designate. It should take about 45 minutes to complete.
For some questions specific expertise may be needed. You may consult experts to help you answer these questions.
 If you do not know an answer precisely, your best estimate will be adequate for the purpose of the study.

Please note that the forward button used to proceed to the next question is located at the bottom right hand corner of your screen. In some instances you may need to scroll down to the bottom of your screen to access this forward button.

Your answers will be kept confidential. They will be combined with answers from other principals to calculate totals and averages in which no school can be identified.

<School reminder note>



Reset ◀ ▶

The *Information* template shown in Figure 20.11 is used to insert an introduction, a transition, or a closing page into the questionnaire. The author can use this template to present the questionnaire (e.g., its goals, structure, general recommendations, and other instructions), introduce a new section of questions, and to thank the respondent at the end of the questionnaire for their participation.

The *Exclusive Choice* template shown in Figure 20.12 presents a question to the respondent as well as a set of mutually exclusive responses. Each response option receives an identifier. The data saved for this template is a pre-assigned response number assigned to each radio button (e.g., values 01, 02, 03, 04, 05, or 06 is assigned to each of the radio buttons shown in Figure 20.12). The presentation of this item

type to the respondents uses a single set of standard radio buttons. Choosing one of the options will remove any previous choices.

Figure 20.12. Exclusive Choice Template

PISA 2022 List of items  

Which of the following definitions best describes the community in which your school is located?

(Please select one response.)

A village, hamlet or rural area (fewer than 3 000 people)	<input type="radio"/>
A small town (3 000 to about 15 000 people)	<input type="radio"/>
A town (15 000 to about 100 000 people)	<input type="radio"/>
A city (100 000 to about 1 000 000 people)	<input type="radio"/>
A large city (1 000 000 to about 10 000 000 people)	<input type="radio"/>
A megacity (with over 10 000 000 people)	<input type="radio"/>

SC001

Reset ◀ ▶

The *Multiple-Choice* template shown in Figure 20.13 presents a question to the respondent as well as a set of non-exclusive responses. Each response option receives an identifier. The data saved for this template includes a value, either 0 or 1, for each response option. The presentation of this template uses standard checkboxes. The checkboxes are selected when a user clicks on them and unselects if clicked a second time.

Figure 20.13. Multiple-Choice Template

PISA 2022 List of items

This school year, which types of <additional mathematics instruction> do you participate in?

(Please select all that apply.)

One-on-one tutoring with a person	<input type="checkbox"/>
Internet or computer tutoring with a programme or application	<input type="checkbox"/>
Video-recorded instruction by a person	<input type="checkbox"/>
Small group study or practice (2 to 7 students)	<input type="checkbox"/>
Large group study or practice (8 or more students)	<input type="checkbox"/>
I do not participate in <additional mathematics instruction>	<input type="checkbox"/>

ST297

Reset

Figure 20.14. List of Exclusive Choice (Table) Template

PISA 2022 List of items

The following questions concern your home. If you live in multiple homes, please consider the <home> you spend most of your time in.

Which of the following are in your <home>?

(Please select one response in each row.)

	Yes	No
A room of your own	<input type="radio"/>	<input type="radio"/>
A computer (laptop, desktop, or tablet) that you can use for school work	<input type="radio"/>	<input type="radio"/>
Educational Software or Apps	<input type="radio"/>	<input type="radio"/>
Your own <cell phone> with Internet access (e.g. smartphone)	<input type="radio"/>	<input type="radio"/>
Internet access (e.g. Wi-fi) (excluding through smartphones)	<input type="radio"/>	<input type="radio"/>
<country-specific>	<input type="radio"/>	<input type="radio"/>
<country-specific>	<input type="radio"/>	<input type="radio"/>

ST250

Reset

The *List of Exclusive Choice (Table)* template shown in Figure 20.14 presents the user with a set of exclusive choice questions on a single screen in a tabular format. In the default format, each row of the table is a separate item, and the columns are the response options for each item. In addition, the QAT editor allows the author to invert the table, so that items are in the columns and the response options are in the rows. Typically, this template presents a single question text or stem in the blue box at the top of the screen, and the items that are part of that question are represented in each row.

The *List of Multiple Choice (Table)* template shown in Figure 20.15 presents the respondent with one or more non-exclusive choice questions on a single screen in a tabular format. It is like the previous template; however, it uses checkboxes so that more than one choice can be selected for each item (row), or column if the presentation is inverted. The data generated by this screen include a response of 0 (unchecked) or 1 (checked) for each response option for each question. In the example shown in Figure 20.15 the screen will generate 12 individual variables of data.

Figure 20.15. List of Multiple Choice (Table) Template



The screenshot shows a survey interface for PISA 2022. At the top, there is a header with 'PISA 2022' and a progress bar. On the right, there is a 'List of items' button and a navigation icon. The main content area has a blue header with the question: 'Who usually lives at your <homes> with you?'. Below this is a note: '<i>"Main <home>" refers to the home where you spend most of your time. (Please select all that apply in each column.)</i>'. The table below has two columns: 'At my main <home>' and 'At my other <home(s)>'. The rows list various family members: 'Mother or other female guardian', 'Father or other male guardian', 'Brother(s) (including stepbrothers)', 'Sister(s) (including stepsisters)', 'Grandparent(s)', and 'Other relatives (e.g. aunt, uncle, cousin)'. Each cell in the table contains a checkbox. At the bottom left, there is a 'Reset' button, and at the bottom right, there are navigation arrows. The ID 'ST229' is visible in the bottom left corner of the form area.

	At my main <home>	At my other <home(s)>
Mother or other female guardian	<input type="checkbox"/>	<input type="checkbox"/>
Father or other male guardian	<input type="checkbox"/>	<input type="checkbox"/>
Brother(s) (including stepbrothers)	<input type="checkbox"/>	<input type="checkbox"/>
Sister(s) (including stepsisters)	<input type="checkbox"/>	<input type="checkbox"/>
Grandparent(s)	<input type="checkbox"/>	<input type="checkbox"/>
Other relatives (e.g. aunt, uncle, cousin)	<input type="checkbox"/>	<input type="checkbox"/>

The *List of Text Inputs* template shown in Figure 20.16 is used for collecting short, open ended response data. The template presents the respondent with one or more areas to type a response, each with a label indicating the information to be entered, the responses can be unfiltered text, or they can be limited to numeric values. Constraints of a minimum/maximum numeric value or text length can be placed on the values entered in each case.

Figure 20.16. List of Text Inputs Template

PISA 2022

List of items  

As of <February 1, 2022>, what was the total school enrolment (number of students)?

(Please enter a number for each response. Enter "0" (zero) if there are none.)

Number of boys:	<input type="text"/>
Number of girls:	<input type="text"/>

SC002





Reset  

Figure 20.17. Multiple List of Text Inputs (Table) Template

PISA 2022

List of items  



How many of the following teachers are on the staff of your school?

Include both full-time and part-time teachers. A full-time teacher is employed at least 90% of the time as a teacher for the full school year. All other teachers should be considered part-time. Regarding the qualification level, please refer only to the teacher's **highest qualification level.**

(Please enter a number in each space provided. Enter "0" (zero) if there are none.)

	Full-time	Part-time
Teachers in TOTAL	<input type="text"/>	<input type="text"/>
Teachers <fully certified> by <the appropriate authority>	<input type="text"/>	<input type="text"/>
Teachers with an <ISCED Level 6 - Bachelor's or equivalent level> qualification	<input type="text"/>	<input type="text"/>
Teachers with an <ISCED Level 7 - Master's or equivalent level> qualification	<input type="text"/>	<input type="text"/>
Teachers with an <ISCED Level 8 - Doctoral or equivalent level> qualification	<input type="text"/>	<input type="text"/>



SC018

Reset  

The *Multiple List of Text Inputs (Table)* template, shown in Figure 20.17, is used for collecting short, open ended response data. However, in this case more than one response can be collected for each area of interest. The response areas are presented as a table. Like the previous template, the response values can be either text or numeric, and can be limited in their range.

The *Scale Question Type (slider)* template shown in Figure 20.18 is used to collect numeric information on a sliding scale. The respondent moves an indicator along a scale line to indicate where in the range their answer should be. The template allows the author to include one or more slider responses on a screen. Each slider has upper and lower limits. Step values for the sliders can be set, and the author may include labels for the left and right ends of the scale. The slider differentiates between no response (not moving the slider at all) and moving the slider to the “0” position. PISA 2022 did not use the scale question type template for new questions, but there were a handful of trend questions that still used this template this cycle.

Figure 20.18. Scale Question Type Template

PISA 2022 List of items  



During the last three months, what percentage of teaching staff in your school has attended a programme of professional development?

A programme of professional development here is a formal programme designed to enhance teaching skills or pedagogical practices. It may or may not lead to a recognised qualification. The programme must last for at least one day in total and have a focus on teaching and education.

(Please move the slider to the appropriate percentage. If none of your teachers participated in any professional development activities select "0" (zero).)

All teaching staff at your school 0% 100%

Staff who teach mathematics at your school 0% 100%

SC025 Reset  

The *Free Text Input* template shown in Figure 20.19 supports an open-ended text response. The respondent is presented with a large text box in which they can enter a long response with line breaks to provide multiple paragraphs. This template was only used in national questions in PISA 2022.

Figure 20.19. Free Text Input Template

PISA 2022 List of items

Please describe your Mother's main job:

SC801

Reset ◀ ▶

Figure 20.20. Drop-Down Template

PISA 2022 List of items 

How old were you when you arrived in <country of test>?

(Please select from the drop-down menu to answer the question. If you were less than 12 months old, please select "age 0-1" (age zero to one).)

Select... ▼

ST021



Reset ◀ ▶

The *Drop-Down* template shown in Figure 20.20 presents the respondent with one or more drop down menus from which to select their response to a question. Each menu can have a textual label to present a question or to indicate what type of information (e.g., age) the respondent should select from the menu. The contents of a menu are defined using a list with each text response in the list assigned a number in the QAT editor. The menus can share the same list of response values across items, or each item on the screen can have a unique list.

Like the Drop-Down template, the *Drop-Down (Table)* template shown in Figure 20.21 presents the respondent with one or more drop down menus for providing a response. In this template, the menus are organised into a table. The drop-down menu contents themselves are defined in one or more lists. In the standard layout, each menu in a row will contain the same list of response values. However, like the other table-based templates, it is possible for the author to invert the rows and columns so that columns contain the same menu values.

Figure 20.21. Drop-Down (Table) Template

PISA 2022

List of items ?  



In your school, are <standardised tests> and/or teacher-developed tests of students in <national modal grade for 15-year-olds> used for any of the following purposes?

If you need further explanation of the term "<standardised tests>", please use the help button.

(Please select either "yes" or "no" to indicate the use of <standardised tests> and teacher-developed tests for each of the specified purposes.)

	<Standardised tests>	Teacher-developed tests
To guide students' learning	Select... <input type="text"/>	Select... <input type="text"/>
To inform parents or guardians about their child's progress	Select... <input type="text"/>	Select... <input type="text"/>
To make decisions about students' retention or promotion	Select... <input type="text"/>	Select... <input type="text"/>
To group students for instructional purposes	Select... <input type="text"/>	Select... <input type="text"/>
To compare the school to <district or national> performance	Select... <input type="text"/>	Select... <input type="text"/>
To monitor the school's progress from year to year	Select... <input type="text"/>	Select... <input type="text"/>
To make judgements about teachers' effectiveness	Select... <input type="text"/>	Select... <input type="text"/>
To identify aspects of instruction or the curriculum that could be improved	Select... <input type="text"/>	Select... <input type="text"/>
To adapt teaching to the students' needs	Select... <input type="text"/>	Select... <input type="text"/>
To compare the school with other schools	Select... <input type="text"/>	Select... <input type="text"/>
To award certificates to students	Select... <input type="text"/>	Select... <input type="text"/>

SC035

Reset  

Consistency Check Rule

The *Consistency Check Rule* template supports a rule-based approach for validating the response provided by a user. The author provides a condition (i.e., "True" or "False") intended to represent the logic of the rule that checks the values of some response variables from different questions the respondent has

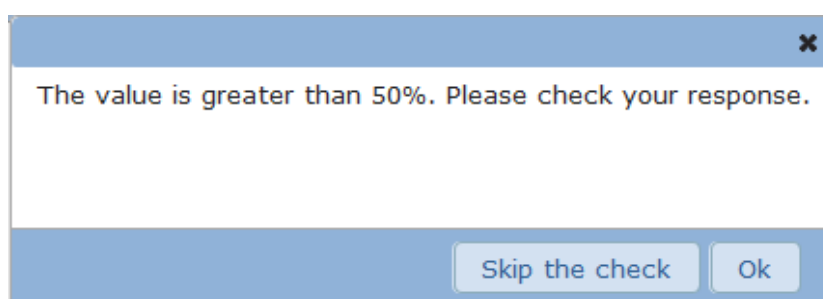
answered. If the condition evaluates “True,” a notification message is displayed to the user. The template for defining the consistency check rule appears in Figure 20.22.

Figure 20.22. Consistency Check Rule Template



The rule is evaluated when the respondent navigates away from the current question, by clicking either Forward, Back, or Log Out. When the condition is true, a message is shown like the one in Figure 20.23.

Figure 20.23. Consistency Check Message



The consistency check is a soft check and will not require the respondent to change their answer if the check appears. The respondent can click on “Ok” in the check and go back to the current question to change their response. If the respondent clicks the “Skip the Check” button, the questionnaire will proceed as normal.

Routing Rule

The *Routing Rule* template allows the author to use branching within a questionnaire to direct the question flow. Routing rules appear in between questions in the questionnaire, and they are executed after the completion of the question before the rule.

The routing rules are based on specific conditions, like the consistency checks. The rules are defined using IF—THEN--ELSE logic. If the condition evaluates “True” the “Then” portion is executed, otherwise the “Else” part is executed. The “Then” and “Else” parts can be either another IF--THEN--ELSE rule or GOTO commands, directing the questionnaire runtime to branch to a specific question in the questionnaire.

The routing rules are typically used for skipping questions that do not make sense given a specific initial response from the respondent. A simple case is an exclusive choice question, where the last response option is “Other”. If the respondents select this option, they should be shown a question asking for more information about their answer. For example, an open response where they can type their answer. In PISA 2022 field trial routing rules were used for the first time to create virtual booklets to indicate that certain questions should be skipped if a student’s random number was within a certain range. An example of a routing rule can be seen below in Figure 20.24.

Figure 20.24. Routing Rule Template

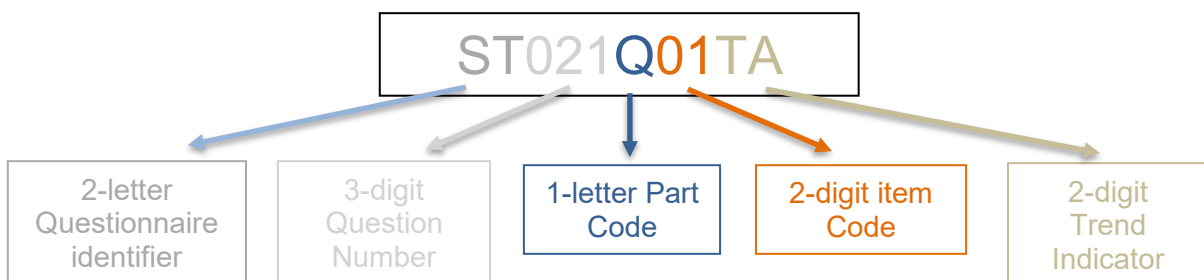


Identifiers within the QAT

An identifier (or ID) is a tag attached to an object in the QAT. When authoring questionnaires, it is important that each question, item, and rule has an ID that follows a standard convention so that each object in the questionnaire can be appropriately identified and data from the questionnaires is generated in a standard format.

In the QAT editor, the types of objects receiving an ID are the various questions, helps, instructions, and response options. These IDs and tags are used when importing the translations used to display the questionnaires in each local language. IDs are also used for each rule and for each element designed to receive and store the data provided by the respondents (i.e., answers). IDs used for data capture within the questionnaires are at least 10 characters long and follow a set format shown in Figure 20.25.

Figure 20.25. Question IDs



The interpretation of these IDs is as follows:

- The 2-letter questionnaire identifier indicates the questionnaire in which the item was administered. ST for Student Questionnaire or Student Questionnaire-UH, SC for School Questionnaire, FL for Financial Literacy Questionnaire, IC for ICT Familiarity Questionnaire, WB for WBQ, and PA for Parent Questionnaire.
- The 3-digit question number: this is a unique ID given to the particular screen on which the questions are administered and can be used for either a single question or a set of questions presented in a table on the screen. As much as possible, questions retain their numbers across cycles to allow for easier identification of trend variables. Question numbers beginning with 800 indicate a national question administered only in a particular country.
- The 1-letter part code introduces the item code and indicates whether the question is equivalent to the master (a code of Q) or is a country-adapted variable requiring harmonization to be compared to the master (a code of C). Consistency checks are labelled with the code E, and routing rules are labelled with the part code R.
- The 2-digit item code indicates the number of the individual question item administered on the screen. If a screen (such as a table screen) contains four items, these numbers will typically range from 01 to 04; however, due to trend IDs or elimination of items after the field trial, the item code is not always sequential on a screen.

- The 2-digit trend indicator is used to indicate the cycle in which the question was originally introduced in order to facilitate trend analysis. The trend indicators are shown in Table 20.2.

The IDs are one of the key parts for the computer-based questionnaires and are the basis for the data analysis. A question (or part of a question) with an unexpected or inappropriate ID is unusable and can eventually not be analysed. Checking the consistency of IDs was one of the critical tasks performed by contractors when authoring and reviewing the computer-based questionnaires.

General questionnaire development process

The life-cycle of a questionnaire in PISA followed a process that can be split in ten major steps. These steps are described in Figure 20.26.

This sequence of steps took place twice: once for the Field Trial (FT) and again in an abbreviated process for the Main Survey (MS). During the Field Trial, the whole platform (i.e., the tools, computer servers, network access, etc.) and the material (i.e., the questionnaires) were tested with a limited sample of respondents. After the Field Trial, the results and feedback collected are analysed and reviewed. Then, for the Main Survey, the sequence was started for a second time and each step integrated all necessary adjustments in terms of process, questionnaires material, and tooling. This double-phase cycle provided better data quality.

The procedure for creating the paper-based questionnaires was the same, except step 2 (authoring the questionnaires in the computer platform) and step 5 (quality checks on the implementation of the adaptations in English) were omitted.

In the following sections, each step of this process is explained in more detail.

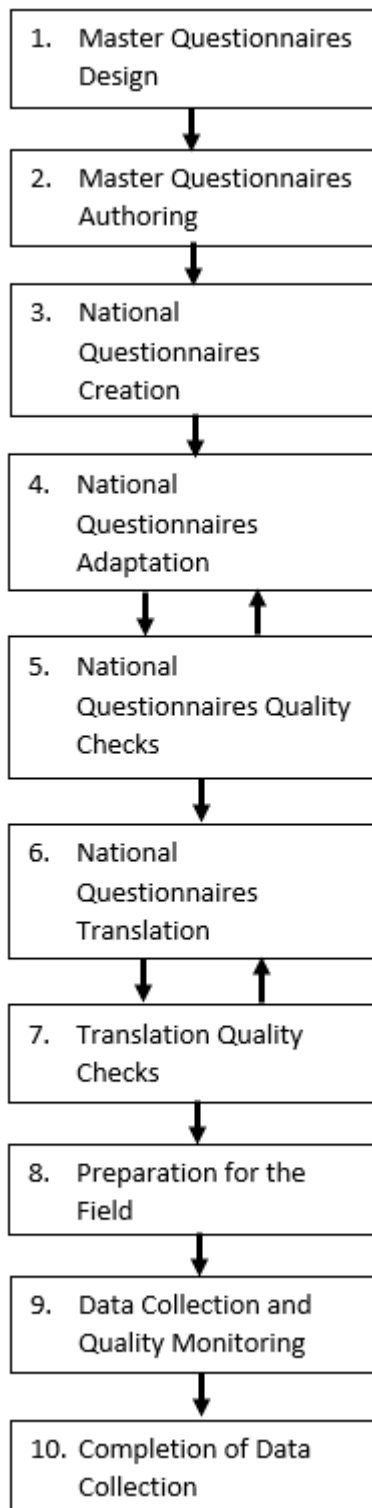
Step 1: Master questionnaires design

The master versions of the questionnaires were created as Word documents, and each contained information about the trend status, IDs, application of matrix sampling to the question, and routing instructions. Once the master versions of the questionnaires were finalized, the Word document was used to create the paper-based master version to be adapted and translated by paper-based participants. The contractors then used the master Word version to begin authoring the computer-based questionnaires in the platform.

Step 2: Master questionnaires authoring

Contractors first used the QAT to author the international master version of the questionnaires in English. Trend questions from the previous cycle were copied from the main survey PISA 2018 master questionnaire profiles to ensure across-cycle continuity of question templates, IDs, data format (e.g., string, numeric), and range limits. The appropriate question template was chosen for each of the new items and the appropriate data types, range restrictions, and consistency checks were added. Questions were ordered appropriately to follow the design-specified routing through the questionnaire and routing rules were inserted. Each questionnaire's formatting was reviewed to ensure it had the appropriate layout, and the master version of the questionnaires were tested extensively using testing scenarios to ensure a high-quality initial version.

Figure 20.26. PISA 2022 computer-based questionnaire life cycle



Step 1: The **Master Questionnaires were designed** in collaboration with the Questionnaire Expert Group. These questionnaires are first created as Microsoft Word documents that will become the Master Paper-Based Questionnaires.

Step 2: The computer-based versions of the **Master questionnaires were authored** using a unique authoring tool in the PISA questionnaire platform. They were produced in English then reviewed and tested.

Step 3: The Master Questionnaires were duplicated for the participating countries. These questionnaires, called **National Questionnaires, were created** and made available to countries for adaptation.

Step 4: The **adaptation of National Questionnaires** was performed by members of the national centres. The adaptations take the form of adding or suppressing questions or changing parts of questions as required by the national context.

Step 5: The **quality of the adapted National Questionnaires was checked** against the original Master Questionnaire. The quality of adaptation is important for guaranteeing that the collected results are comparable at the international level.

Step 6: The National Centre **translated the questionnaire text** into each national language version administered.

Step 7: The **quality of the translations of the National Questionnaires** was checked against the agreed-upon national adaptations.

Step 8: When a questionnaire had successfully passed all the quality and technical checks, it was **prepared for the field**. The deployment was either online (via a connection to Internet) or as part of the Student Delivery System.

Step 9: During the data collection periods, **data was collected** either online or in the schools, depending on the distribution method of the questionnaires.

Step 10: At the **end of the data collection**, the online National Questionnaires were deactivated, and respondents could no longer access them. Final data files were exported for data cleaning and analysis.

Step 3: Creation of national questionnaires

Once the master questionnaires were authored and finalized, they were used as the template to create the national questionnaires for each country. The contractors duplicated the master questionnaire for each

country, so every participant started with the same set of questions in the same order. In order to maintain trend adaptations from the previous cycle, trend question screens were copied from the country's PISA 2018 main survey questionnaire instead of the master questionnaire. Since PISA 2018 questionnaires were translated in the profile, as part of this copy process, the English back-translation of the PISA 2018 adaptation was inserted into the QAT editor. The initial version of each national questionnaire contained a combination of new questions for PISA 2022 copied directly from the master questionnaire and trend questions from PISA 2018 copied from the country's final PISA 2018 computer-based Main Survey Questionnaire. This copy operation was performed by the contractors using several system scripts. These national questionnaires were then put into a mode that allowed the national centres to adapt the content.

Step 4: National questionnaire adaptation

At this step in the process, the National Centre first documented in a spreadsheet all the structural adaptations needed to the questionnaires, including adding or deleting questions and response options and all required content adaptations such as the specific names of study programmes. The contractors reviewed and approved the adaptations to ensure internationally comparable questionnaires. Once all adaptations were negotiated, the National Centre connected to the QAT to view and edit their national questionnaires in the platform and insert the agreed-upon adaptations. All adaptations were inserted into the QAT in English so that the text in the national questionnaire in the QAT became the nationally adapted English source text used later for translation. Much like for authoring the master questionnaires, the National Centre had access to the same functionalities in the QAT editor, such as adding new national questions and adapting existing questions, as well as the functionalities for previewing the questions.

When opening the questionnaire in the QAT, the National Centre could see and edit the questions for the new PISA 2022 content. Trend questions copied from the PISA 2018 cycle were locked so that the National Centre could not edit them, and any changes approved for these questions were implemented centrally by the contractors. Maintaining the quality and integrity of the trend questions over time is important to be able to analyse data across cycles.

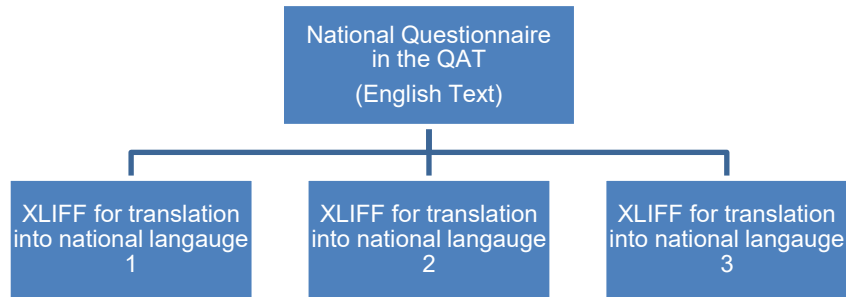
Step 5: National questionnaire Quality Check

Once a country's adaptations and national questions were implemented in the QAT, the national centres tested the questionnaire using contractor-prepared testing scenarios to review all adaptation in English and confirm the routing of the questionnaire worked as expected. Then the contractors reviewed and approved the national version in the QAT to confirm all the agreed-upon adaptations had been correctly authored and to centrally insert any agreed-upon changes to trend adaptations. The contractor also carefully reviewed the questions to ensure all agreed national questions had been inserted in the questionnaire and reviewed questionnaire IDs to confirm that they were appropriately updated to conform to the ID conventions for the cycle. IDs are the key identification point for the data analysis and an error in this part might result in loss of data. After these quality checks, the questionnaires were locked in the QAT so that no further edits could be introduced by the national centre.

Step 6: National questionnaire Translation

With the national questionnaire adaptations finalized, the contractors then used the national questionnaire in the QAT to generate the country-specific English source XLIFF files for translation. Each country had one single structure and source text per questionnaire that then could be translated into multiple languages (see Figure 20.27). The XLIFF files were inserted into an OmegaT translation project which allowed the National Centre to reference translations of similar text used in PISA 2018 to speed up translation. The OmegaT project also allowed the translation of items from PISA 2018 to be automatically filled with the trend translation and locked so the National Centre could not edit them.

Figure 20.27. Translation of Questionnaires into multiple national languages



Countries performed double translation of new questionnaire items and reconciled those translations. If updates were needed to trend translations, the country documented those changes for review by the contractors. During the translation process, countries could generate translated XLIFF files and upload them to the preview tool in the QAT to review the questionnaire as a respondent would. As part of the preview process, countries also noted any layout issues that needed to be fixed by the contractors.

Step 7: National questionnaires quality check

After the National Centre completed the translation of the questionnaires, the contractors checked the quality of the translations, the accuracy of the translation compared to the English master version, the routing and formatting, and the IDs and data generation of the questionnaires.

National translations were reviewed by verifiers under the direction of the translation contractors to confirm that all adaptations were appropriately translated, all translation notes from the questionnaire developers were followed, and to confirm the accuracy of any requests to update translations of trend items. Verifiers updated translations or provided notes to national translators to address issues as necessary. The translation and adaptation discrepancies were documented in a spreadsheet which was delivered to the National Centre for their review. The National Centre was able to accept or refuse these comments and could update their translations accordingly.

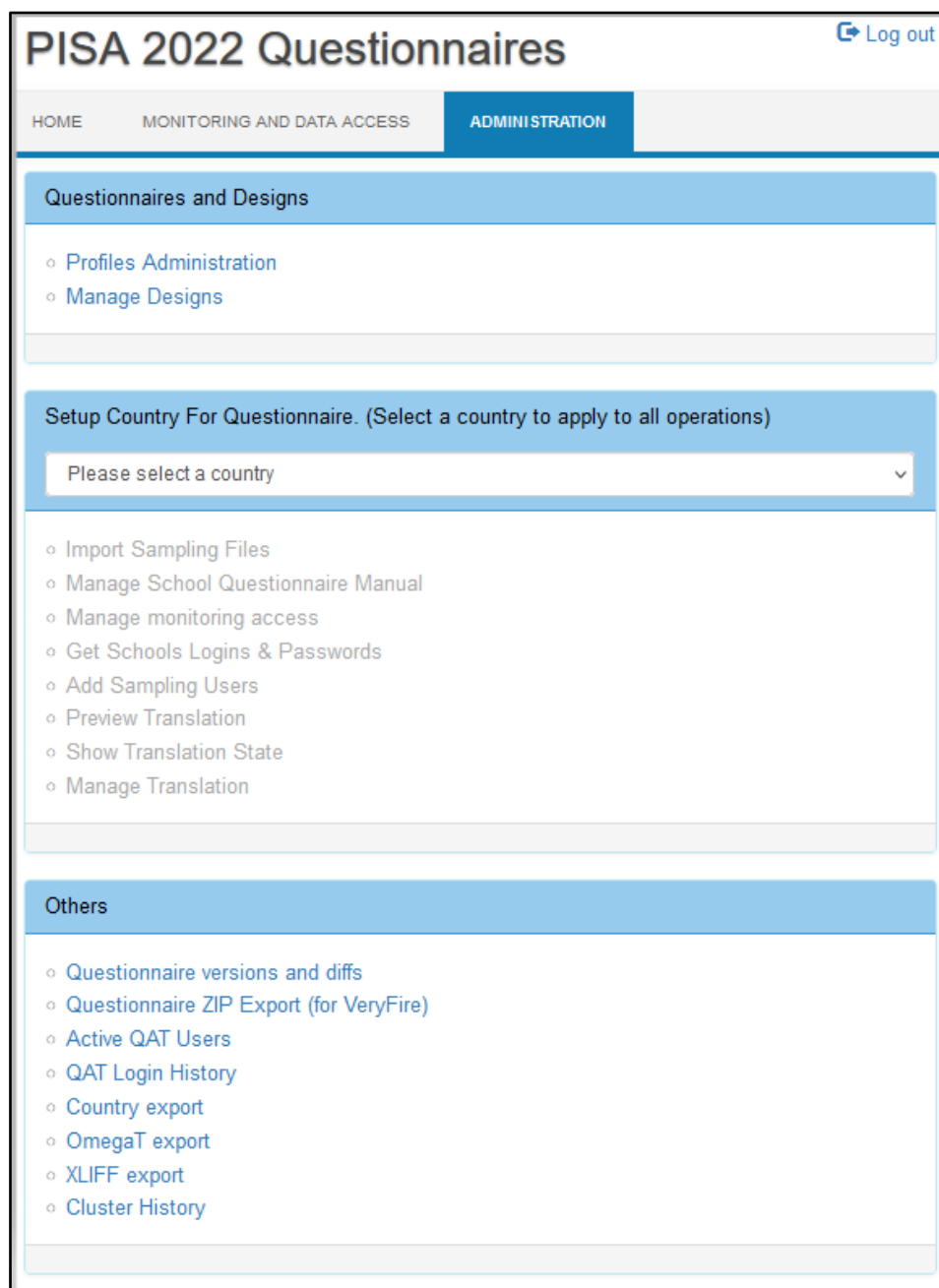
The contractors also reviewed the questionnaires to manually check that a user was able to go through the questionnaire from the beginning until the end without a software error due to, for instance, errors in routing rules; check if all questions and messages were translated; and check if all the parts of the interface were translated and well-integrated.

National centres were provided testing scenarios for each questionnaire to validate the accuracy of their translation and adaptation work. These testing scenarios defined different ways in which a respondent could answer a questionnaire following every possible routing. National centres were required to test the questionnaires in each language version following these scenarios and provide their test results to the technical team for review. The contractors reviewed the output files to confirm no technical problems were detected when saving data. Only once all these reviews were completed were questionnaires deemed ready for administration.

Step 8: Preparation of national questionnaires for delivery

To prepare the questionnaires for administration, the QAT administrators and technical team used the features of the questionnaire platform's administrative interface shown in Figure 20.28.

Figure 20.28. Questionnaire Platform – Administrative View



There were two modes of delivery used for the questionnaires in PISA 2022. The student questionnaires, including the optional ICT, Financial Literacy, and Well-Being questionnaires, were run as part of the PISA student delivery system (SDS). The School and Teacher questionnaires were delivered online over the Internet. Both delivery modes shared a common code base and database structure, but the preparation for delivery followed different procedures.

For the student questionnaires, the preparation step involved uploading the final translation file for each national language version into the QAT and then exporting the completed national questionnaires for each country, as well as the questionnaire software and user interface translations, in a form that could be integrated into the Student Delivery System (SDS) and loaded onto and accessed from USB drives. The

export only included the software components needed to run the questionnaire, so components such as the QAT, were not included in the export, and a database image with the national questionnaires was created. These exported files were directly integrated into the PISA SDS software for a country, and then tested and validated.

The online School and Teacher questionnaires required more steps to prepare for delivery. The first critical step in this process was to import the sampling information from each computer-based testing country into the questionnaire platform so that the selected schools and teachers would be known to the system and could be identified when they connected to complete the questionnaires online. To do this, the final approved “Sampling Task 5b” (specific to the Field Trial) or “Sampling Task 11” (specific to the Main Study) output files were taken from the PISA Portal and uploaded into the QAT. The content of these forms is described in Chapter 6 of this Technical Report. These files contained the list of schools selected from the sampling process, using anonymous ID codes. The QAT software used these files to generate logins and passwords for each sampled school. These logins and passwords were then sent to the national centre, which distributed them to the selected schools and teachers accordingly. The ACER Maple sampling software generated the IDs and passwords used for the Teacher Questionnaire, and Teacher Questionnaire authentication process was set up to recognize valid teacher IDs and passwords.

The countries participating in the online questionnaires in PISA 2022 were spread out across the world. To improve performance for end users, servers were set up on several continents, as shown below in Figure 20.29, following the same distribution used in the 2018 PISA cycle. The distribution of servers helped to reduce network latency and improved the performance. Server installations for this cycle of PISA were in Germany, Singapore, Australia, and the United States.

Figure 20.29. Distribution of the PISA 2022 servers



Participating countries/economies were routed to their nearest server locations. When respondents logged into the questionnaire using their user ID and password on the School or Teacher login website, they were automatically redirected to their assigned server based on their login ID to complete the questionnaire. One country, the United States, delivered the online questionnaires from their own national server. This

server was completely standalone, so respondents connected to it directly, and were not rerouted through the central PISA server.

Step 9: Data collection and quality monitoring

During the field trial and main survey data collection periods, students, school principals, and teachers responded to the questionnaires. For the students, responses were captured as part of the PISA Student Delivery System, which ran from either a USB drive on a school computer, from laptops with the SDS software pre-loaded, or through Google Chromebooks. The system ran in full screen, locked down mode when running on Windows and Macintosh computers, and in “kiosk mode” (<https://chromeos.dev/en/kiosk>) on Chromebooks.

The questionnaire software ran offline, in a standalone mode on the school computer, and all results were saved back to the USB drive. The students did not need to login to start the questionnaire. Identification and authorization of the students was performed by the Student Delivery System.

For the online questionnaires for school principals and teachers, delivery was performed online over the Internet. Schools were assigned login IDs and passwords as part of the sampling process in Step 6. A set number of teacher questionnaire IDs were accepted for each school. When respondents first connected to the questionnaire platform, they entered their ID and password. The questionnaire software selected the appropriate national questionnaire based on this ID. In countries with multiple language versions of their questionnaires, users had to select which language they wanted to use before proceeding further.

As respondents completed the questionnaires, data was collected by the questionnaire platform. The original data saved was the response to each question or item. This data depended on the template used for each question. For questions that used radio buttons, the data value saved was the response ID associated with that radio button. For checkboxes, a data value was saved for each of these boxes on the screen and the value would be zero or one depending on whether the box was selected. For sliders, drop-down menus, and textual responses, the value selected or entered is saved. If no response is selected or entered, a value of “null” is saved. For questions where matrix sampling was applied, those items that were not presented to the student received a special code so that nonresponse could be distinguished from not administered.

Along with the response data, the questionnaire saved the final valid path taken by the respondent in the questionnaire. This allowed the contractors to easily identify which questions were presented to the respondent based on the routings so that not administered questions could be distinguished from not answered. Also, a log of actions by the respondent and the questionnaire system was saved. This log includes events such as those shown in Table 20.3.

During data collection for the online questionnaires, National Project Managers and administrators of the questionnaire platform could monitor the activity of the questionnaire respondents. The monitoring showed which respondents had connected to the questionnaire platform and how far they had progressed through the questionnaire. The platform also supported generating a PDF file for a respondent showing the questionnaire including all the responses that had been saved. The overall status for each of the questionnaires could be exported to a spreadsheet for further sorting and filtering.

During the Main Study, the sampling process selected schools to participate in the PISA survey, along with replacement schools if the originally samples schools refused or were unable to participate. Through the monitoring tools available in the questionnaire platform, the NPMs were able to activate or disable school logins to control access to the questionnaire depending on the school’s status as selected or replacement.

The administrators of the questionnaire platform had additional tools available for monitoring the progress of the respondents. These included a view of all currently connected users, as well as a history of the logins, both successful and unsuccessful. These reports were important in supporting users who reported

problems and in monitoring performance issues on the servers. Additionally, the questionnaire platform saved many different logs, which the administrators used for detecting problems and troubleshooting them. All the servers were monitored and active 24-hours a day during the entire field test and main survey administration dates.

Step 10: Completion of data collection

Access to the online access to the questionnaires closed four weeks after the country's negotiated field trial or main study data collection period ended. Once access to the questionnaires was closed, national centres exported their results data for inclusion in their national database that they submitted to the contractors. After the questionnaires were closed, respondents who attempted to login received a message indicating that the questionnaires were currently not available and asking them to contact their National Centre for further information.

Each country's result data was available throughout the data collection period and could be reviewed for completeness by the national centre. Once data collection was complete, the national centres were required to download the final results in a single compressed file and import it directly into the Data Management Expert system for data processing.

The access to the servers and the questionnaire software was available several weeks after the end of the data collection to allow some time for the NPMs to retrieve the data and ask the contractors questions about any issues in the data that they uncovered.

Overview of the technical infrastructure

This section describes the technical aspects of the software and hardware used to support the PISA 2022 computer-based questionnaires.

The PISA Questionnaire platform is a complex and relatively large software system. The development followed standard software development processes. A modified Agile process (see https://en.wikipedia.org/wiki/Agile_software_development) was used, implementing multiple releases during the course of developing and extending the platform.

The PISA Questionnaire platform is composed of two primary subsystems. One, the QAT supports authoring questionnaires and managing the many national versions of the questionnaires. The second, the QAT Runtime, implements the execution environment for the questionnaires, presenting questions to the respondents, implementing branching rules, and collecting data for later analysis. The QAT software was written primarily in PHP on the server side and JavaScript within the web browser. The QAT Runtime software was new for the PISA 2022 cycle. This subsystem was split off and built from scratch to address performance issues that arose in previous cycles, as well as to support the new Electron based PISA Student Delivery System (SDS) that was specifically developed for this cycle. The QAT Runtime was built using Node.JS and Express.JS on the server, and JavaScript within the web browser. The Apache web server was used for delivery of web content, and data was saved using the MySQL database system in the QAT, and MongoDB (for online questionnaires) and NEDB (for offline questionnaires) in the QAT Runtime. The questionnaire content was structured using custom XML markup.

The online questionnaire servers were Linux based, using Ubuntu 20.04 LTS. The student questionnaires were delivered as part of the PISA Student Delivery System, which was based on Electron. For the Main Study online questionnaires, multiple servers were deployed using the Amazon Web Services EC2 system.

Summary

Improvements made to the authoring and delivery of questionnaires in PISA 2022 provided several advantages over the PISA 2018 cycle. First, the updates to the QAT Runtime allowed for faster administration of the questionnaires and for significant increases in the amount of material that could be administered to students. PISA 2022 introduced the use of a random number to assign students to a path in the questionnaire, which allowed multiple version experiments to be conducted during the field trial to collect data that informed future development of PISA context questionnaire items. In addition, the field trial pilot and main study adoption of within-construct matrix sampling, allowed for greater efficiency in the instruments and an increase in the coverage of the constructs to be implemented for the first time in PISA 2022.

Second, including the English back-translation of questionnaire adaptations in the QAT instead of the translated text allowed for clearer documentation of the adaptations to ensure international comparability and higher-quality translation. Contractors and data users were able to clearly distinguish between adaptations to the content of the questions and linguistic adaptations necessary for the translation of certain terms into the local language, ultimately leading to more assurances of international comparability of the questionnaire data.

Third, due to the ability to export customised translation files for each country and language version, translators and translation verifiers were able to make use of translation tools to ensure repeated text used in multiple modules across questionnaires appeared consistently, ensuring that constructs appearing in multiple questionnaires were measured using as identical an instrument as possible. Also, translators and verifiers were able to clearly see in the translation files where national translations did not match the agreed-upon customised source text, reducing misunderstandings about whether adaptations were linguistic or content-related.

Chapter 19 tables

Tables	Title
Table 20.1	The PISA 2022 Questionnaires
Table 20.2	Participation in the PISA 2022 Main Study
Table 20.3	Trend Indicator Values in PISA Question IDs
Table 20.4	List of Logged Events

Table 20.1. The PISA 2022 Questionnaires

Questionnaire	Respondent	Mode of delivery	Compulsory
Student Questionnaire	Student	Computer (SDS) and paper	Yes
Student Questionnaire – Une Heure	Student	Computer (SDS)	No
School Questionnaire	School Principal or Administrator	Computer (Online) and paper	Yes
Financial Literacy Questionnaire	Student	Computer (SDS) only	No
ICT Questionnaire	Student	Computer (SDS) only	No
Teacher Questionnaire	Teacher	Computer (Online) only	No
Parent Questionnaire	Parent of selected student	Paper only	No
Well-Being Questionnaire	Student	Computer (SDS) only	No

Table 20.2. Trend Indicator Values in PISA Question IDs

Trend Indicator	Cycle PISA Question Introduced
TA	In multiple cycles prior to and post 2009
IA	2009
WA	2012
NA	2015
HA	2018
JA	2022

Table 20.3. List of Logged Events

Event	Description
SESSION_START	The user starts or resumes a questionnaire.
ITEM_START	The user starts an item.
HELP	The user clicks on the Help button.
RESET	The user clicks the Reset button to clear previously entered answers.
LIST_OF_ITEMS	The user clicks the List of Items button to see the questions that have already been visited in the questionnaire.
SELECTED_JUMP	The user clicks on one of the questions in the List of Items to jump to that item.
SELECTED_FORWARD	The user clicks the Next button to move forward in the questionnaire.
SELECTED_BACK	The user clicks the Back button.
SELECTED_LOG_OUT	The user clicks the Logout button to leave the questionnaire.
ANSWER_SELECTION	An answer is selected or entered.
ANSWER_UNSELECTION	The user unselects a checkbox item.
RANGE_CHECK	The answer entered triggered a range check.
RANGE_CHECK_FAILED	The range check warning message was shown letting the user know the permitted range of answers.
CONSISTENCY	A consistency error message is displayed.
CONSISTENCY_CANCEL	The user presses OK to return to the current screen and update their answer.

Event	Description
CONSISTENCY_SKIP	The consistency error is skipped and the move action proceeds.

This work is published under the responsibility of the Secretary-General of the OECD. The opinions expressed and arguments employed herein do not necessarily reflect the official views of the Member countries of the OECD.

Note by the Republic of Türkiye

The information in this document with reference to “Cyprus” relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Türkiye recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Türkiye shall preserve its position concerning the “Cyprus issue”.

Note by all the European Union Member States of the OECD and the European Union

The Republic of Cyprus is recognised by all members of the United Nations with the exception of Türkiye. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

The use of this work, whether digital or print, is governed by the Terms and Conditions to be found at: <https://www.oecd.org/termsandconditions>