

ICILS 2023 - Framework for Estimating National Costs

This framework for estimating national costs has been developed to describe the types of tasks, infrastructure and staff needed within countries in order to run the IEA International Computer and Information Literacy Study (ICILS) 2023. The total national costs for running ICILS will, of course, depend on individual country circumstances cost structures.

The costs in this framework have been described with reference to one grade level participating in each country. For ICILS 2023, the target grade in most countries will be the eighth grade, or its national equivalent.

The ICILS 2023 student assessment will be capable of being delivered offline (by USB drive) on local servers or through the internet. The delivery mechanism will be determined in consultation with countries and with consideration of country infrastructure. Staffing and infrastructure costs will need to be established with reference to the chosen delivery method within each country.

The major items to be taken into account when estimating costs are provided below.

Staff

Usually, for a study of this scope, the IEA national study centers include one or two full time researchers plus some part time staff to assist them at particular times during the project life-cycle. The tasks that typically require additional staff at particular times include:

- translation and/or adaptation of the instruments and administration materials;
- technical IT support for preparation of assessment delivery (technical support may include the preparation of USB drives or support for school-level testing of internet facilities depending on the assessment delivery mechanism);
- provision of technical assistance to schools for computer-based delivery of the assessment (including a telephone-based helpdesk at the time of administration);
- survey administration in schools (school coordinator, test administrators);
- national quality control observation of data collection;
- scoring student work at a central marking center;
- sampling, data management; and
- encouraging school participation (to ensure participation rate requirements for reporting are met) and clerical assistance.

ICILS staff who work directly with the International Study Center, and IEA require a high level of proficiency in written and spoken English.

Equipment and Infrastructure

The national study center needs to be equipped with computer infrastructure sufficient to manage work on large-scale assessment.

The chosen delivery method will determine the infrastructure costs related to test delivery (e.g. purchase and configuration of USB drives or notebook computers to be taken to schools).

Scoring student work in ICILS will be computer-based and so the national study center will need to make provisions for computer-based scoring of student work for both the field trial and main survey. This will require approximately 10 computers to be available for use by scorers (for approximately five working days for the field trial and 15 working days for the main survey).

Other costs would comprise standard office costs such as supplies, mail and delivery (courier) services.

Travel

There are five meetings of the national research coordinators (NRCs), which are held in different countries. The second meeting allows NRCs to provide detailed feedback on the reviewed assessment framework and the draft instruments. The next two meetings (meetings 3 and 4) precede the field trial and main survey data collection periods and deal with instrument selection, instrument preparation, and project planning for data collection. The fifth meeting allows participants the opportunity to provide feedback on the draft International Report and includes a training meeting to support researchers to work with the international database.

In addition to the NRC meetings, there are two separate sets of meetings at the IEA Hamburg for field operations and scorer training. Some countries choose to send more than one person to the training meetings (such as the NRC and persons with specific responsibility for scorer training, data management and field operations).

After the study is completed and the database is published, there is a special meeting devoted to training on using the database. This training should be attended by the NRC but, if possible, also by other researchers.

It is necessary to budget for some travelling within your country associated with project operations (such as visits to schools or school administration bodies if required or training for IT support staff or national quality monitoring during the test administration).

In countries where test administrators external to the schools are employed to administer the student instruments then travel costs for test administrators may need to be included.

International Quality Control Monitors are employed by IEA directly. Costs of their training are covered by IEA. They also receive an honorarium for their work.

Instrument and Manual Preparation

Instruments

All ICILS 2023 instruments will be delivered on computer. The student tests (of Computer and Information Literacy and Computational Thinking if the international option is being undertaken), the student questionnaire, the teacher questionnaire, ICT-coordinator questionnaire and principal questionnaire will all need to be adapted and translated under the supervision of the national center and with support from the International Study Center and IEA. The cost of reviewing and verifying adaptations and translations are borne by IEA, the cost of completing the adaptations and translations, conducting internal review and revision in response to feedback from verifiers is borne by national centers and should be included in national costing. All adaptation and translation activities will be conducted online.

While it is not possible to provide an exact word count for the ICILS instruments, based on the plans for ICILS 2023 and data from ICILS 2013 and 2018 we estimate that the student instruments (test and questionnaire) will comprise approximately 27,000 words in total (with approximately 4,000 of those for the Computational Thinking instruments) and the teacher, principal and ICT-coordinator

questionnaires will comprise approximately 10,000 words. We therefore suggest that you budget for translation costs of up to 40,000 words for translation of the ICILS instruments.

Manuals

There will be also several manuals for both Field Trial and the Main Data Collection, some of them to be translated, printed and reproduced. The manuals used in the IEA studies are: Sampling Manual, Field Operations Manual, School Coordinator Manual, Test Administrator Manual, and Scoring Guide. There are also manuals for using each of the software components (such as the translation, administration and scoring systems). The scoring will be completed on computer, but our experience has shown clearly that scorers prefer to work with printed scoring guides. In most countries, there will be no data entry for ICILS as all instruments will be completed on computer. In countries where school staff will complete paper-based questionnaires, there will need to be some data entry. In previous cycles of ICILS this has been negligible and in most countries no data entry was required at all.

Instrument Delivery/Data Collection

Principal, ICT-coordinator and teacher questionnaires

These instruments are delivered online (unless this is not possible). Costs associated with field operations and school communication are borne by national centers.

Student test(s) and questionnaire

Regardless of the delivery mode used in ICILS 2023, national centers will need to work with schools to complete pre-assessment checks of school infrastructure for the testing. This will vary by delivery mode and will include checks of connectivity to the test (through the internet, using USB or local servers) as well as the availability of computers and facilities within schools to conduct the testing. The cost of administering these checks will be borne by national centers.

Countries where USB delivery is being used

Countries will be required to pay for the cost of USB drives (one per participating student for the field trial and main survey).

The International Study Center will provide technical specifications (such as memory capacity and speed) regarding the USB drives. Typically any relatively new (less than 1 year old) model produced by a reputable brand will meet the requisite technical criteria. We strongly recommend that countries do NOT purchase cheap USB drives from small providers. Any cost saving between purchasing high quality USB drives and ones of unknown quality is very quickly lost if USB drives fail and additional data collection is required in schools to make up for these failures. Arranging for additional data collection in schools is time consuming and very costly; staff time is required to make the arrangements to collect the data in make-up sessions, schools are inconvenienced and, as data are collected typically in the final third of the school year, there is a risk that schools are not available to arrange for additional data collection sessions after the scheduled sessions.

Following the translation and verification of assessment instruments, the assessment software will be downloaded and replicated onto USB-drives in participating countries. National study centers will need to arrange and pay for the in-country USB drive preparation (this will mainly involve copying

the assessment software onto USB drives and quality control of this process), distribution, tracking and return of the USB drives and management of the data upload from the USB drives.

There will be approximately 25-30 schools and 500-1000 students participating in the field test and a minimum of 150 schools with approximately 3000-4000 students for the main survey. In each school there will be 20 students randomly selected from the target grade level to participate in the surveys.

Countries where internet delivery is being used

In countries where internet delivery is being used, there will be no need to purchase USB sticks for the purpose of conducting the testing with all students. However, we recommend that USB-based versions of the test instrument are available as a backup solution for use in schools where internet delivery is not possible.

Local server method

In countries where local server delivery is used, it will be necessary for national centers to purchase computers that can be used as local servers (connected to school networks) within schools. In each case, one local server is required per school, but each local server can be used to conduct as many testing sessions across schools as the schedule of testing sessions permits.

	Advantages	Disadvantages
USB delivery	<p>Self-contained environment, does not rely on either school internet connectivity OR browser configurations (as the browser is contained on the USB)</p> <p>Generally greater standardisation of layout (e.g. zooming) although this can be controlled</p> <p>Higher security during test taking, students cannot easily exit the test to, for example, surf the web or communicate with each other</p>	<p>Harder to administer than web delivery</p> <p>Problems can occur if school security settings, for example, block the use of USB or 'sandbox' data (so more testing is required)</p> <p>Relies on technology that has a USB port. Also may not work on non-Windows OS (depending on the OS and whether emulation software can be used)</p> <p>Data need to be uploaded from each USB after each test session</p> <p>There is a slight risk of losing USB drives between the time data are collected and data are uploaded</p> <p>It is possible for duplicate records to be created, if for example a test is begun on one USB and then completed using the same user ID on another stick (this is very rare)</p> <p>Requires instrument content to be absolutely final before USB image is created (so any last-minute corrections may not be possible after the USBs have been replicated)</p>
Internet delivery	<p>Easier to administer than USB (simply navigate to a URL and enter username and password)</p> <p>Cheaper for the national center if school computers are sufficient to support testing</p> <p>Data are uploaded in real time</p> <p>Changes to the instruments (i.e. corrections) can be made and implemented up until testing begins</p>	<p>Relies on schools having sufficient bandwidth to support the testing</p> <p>May require specific browsers to be installed on school computers (usually the requirement is Firefox or Chrome that is not more than 1 year old)</p> <p>Performance can be affected by fluctuations in internet connection speed</p> <p>If a locked-down browser is used then security is</p>

		<p>OK but otherwise, supervision is required to ensure students remain on task and in the active browser window</p> <p>If a locked-down browser is used then this needs to be installed on all student devices, which may be time consuming and have issues (such as conflicts with local security or network settings)</p>
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Scoring

Scoring will take approximately 50 person days for the field trial and 200 person days for the main survey.

Reporting and Dissemination of the Results

This includes the costs of preparation and publishing the main report.