Chapter 3

Methodology and tools for international education surveys

This chapter describes the methodology and tools used for international education surveys. The UIS developed an assessment tool better suited to the PISA for Development (PISA-D) context than the two frameworks generally used for the evaluation of countries' education management information systems: the System approach for Better Education Results Education Management Information System (SABER-EMIS) and the Data Quality Assessment Framework (DQAF). The modified tool draws from the SABER and DQAF evaluation and scorings systems, but is adapted to metadata and aggregated data when necessary. The tool includes a concise rubric that evaluates 1) the quality of data based on three major components – coverage, time sensitivity and ownership of information; and 2) availability of data, which assesses the data's transparency and openness via three types of user – internal users, external users and international organisations. For each component, the chapter details the status of the rubric at three levels of grading: latent, emerging and advanced.

Evaluation tools

In leading internationally comparable surveys, three major components are key: timeliness, accuracy and sustainability. Assuming that the information requested is relevant, this information needs to be 1) fresh enough to be significant at the time of use; 2) precise in its coverage, methodologies and quality; and 3) obtained by processes that are reproducible, regardless of staff movements or government politics.

Two frameworks generally acknowledged for their precise evaluation of countries' education management information systems are the Systems Approach for Better Education Results Education Management Information System (SABER-EMIS) and the Data Quality Assessment Framework (DQAF).

Both tools have advantages and limitations. One limitation they share is that they assess numeric data produced by an office in the country, rather than assessing an education system's underlying metadata, such as policies and incentives. These tools are described in more detail below.

SABER-EMIS in the PISA-D context

SABER-EMIS was launched in 2011 by the World Bank's Human Development Network for stakeholders in education, to evaluate whether information gathered by a management system can be used effectively to improve the quality of education. The tool, which includes instruments for data collection and a rubric for scoring, benchmarking, and analysing results is designed to help countries monitor educational inputs, processes, and outcomes for the advancement of student learning at local, national, and international levels.

The SABER tool requires a dual-layer analysis. It first benchmarks 19 policy actions from 4 policy areas under 4 assessment descriptors (latent, emerging, established and advanced). Second, it projects the 19 actions onto a strengths, weakness, opportunities and threats (SWOT) quadrant.

Although extremely thorough, the complexity of this data-driven process would be extremely costly in terms of time, monetary and human resources. Moreover, in the context of this report, using the full SABER-EMIS matrix would go far beyond the assignment's terms of reference.

DQAF in the PISA-D context

An efficient data assessment tool is critical for EMIS or educational statistical information systems to create and improve the quality of data for education stakeholders, in order to advance and plan education in regions where the tool is implemented.

The UNESCO Institute of Statistics (UIS) has developed an instrument called the Education Data Quality Assessment Framework (Ed-DQAF), based on a data quality assessment methodology created by the International Monetary Fund (IMF), to evaluate the quality of information produced about education.

The Ed-DQAF tool is thorough, but complex. It has a four-stage process: initiation, fact-finding, report production and improvement planning. Within these four stages there

is a meticulously detailed framework of quality data consisting of 6 dimensions, 22 sub-dimensions, an extensive list of indicators, and 140 practices that must be scored, ranging on a scale from 1: "practice not observed" to 4: "practice observed". The complete process includes this score along with five other key elements such as averages, questions, observations, and recommendations for low scorers.

The latest framework for the tool simplifies the assessment without undermining its quality. This rating matrix assesses six clear areas of data collection: 1) pre-requisites of quality; 2) integrity; 3) methodological soundness; 4) accuracy and reliability of data; 5) serviceability; and 6) availability. Each criteria are rated by indicating "yes" or "no", making any areas for improvement visually clear and concise.

Although comprehensive and thorough, this framework makes heavy demands on time, monetary and human resources, beyond what is needed for a quality data assessment in the context of PISA-D.

A modified assessment tool combining metadata and numeric data

SABER-EMIS and DQAF both have limitations for the PISA-D context, given that the data at hand are in fact metadata on educational systems, and especially given that the purpose of the task is to generate an overall appreciation of a country's capacity to fill in a questionnaire, rather than doing an in-depth analysis of the data production mechanisms. Therefore, UIS has developed an assessment tool better suited to the PISA-D context. This practical matrix draws heavily from the SABER and DQAF evaluation and scorings systems, but adapts it to metadata and aggregated data when necessary.

The tool was concentrated into a concise rubric that evaluates the quality and availability of data, using similar descriptors, but fewer areas of benchmarking. While still able to handle the complexity of educational data, this revised matrix focuses on the importance of the quality and availability of PISA-D results, as the most relevant factors for this particular project.

For instance, the modified assessment tool reduces DQAF and SABER's four levels of grading, "latent", "emerging", "advanced" and "expert" to three, by dropping the "expert" grade. The main rationale was that the difference between advanced and expert is not significant enough to justify a country needing external support in order to achieve the next level; especially given the quality of and available opportunities for capacity building. Also, in most cases, only opportunities and experience make the difference between an advanced and expert grading.

Components of the quality matrix

The assessment of data quality builds on three major components: coverage, time sensitivity, and ownership of information. Each component is described below with the characteristics of each grade.

1. Coverage: statistical units

   This item assesses whether the data covered or information collected is comprehensive. It assesses whether any area of the educational system is left aside, for example whether enrolment data for both general programmes and technical programmes are taken into account; whether both private and public sectors are represented, and/or whether financial resources from all agencies and ministries are taken into account in addition to those of the Ministry of Education (MoE).

   A "latent" grade for this item would reflect, for example, a situation where only general programmes in the public sector are covered, for primary and secondary. These are usually the areas easiest to capture in an educational system, and would mean the country has basic capacities. An "emerging" grade would describe a situation where the main aspects of the education system are covered, as well as the technical and professional programmes, in both public and private sector. These areas usually need more co-ordination because they are frequently implemented, managed and monitored by different ministries or agencies outside the MoE. Finally, an "advanced" grade would reflect that all the sectors of the relevant education system are covered.

2. Time sensitivity: periodicity of production

   The production of reports and other outputs from the data warehouse are determined by cycles in the education system. Of course, this takes into account the fact that some items are expected to be produced at shorter intervals (for instance, enrolment information would be produced yearly), while other items would be only produced once in a while (such as legislation on intended instruction time).

   A "latent" grade represents a system that is unable to produce information, data, or statistics periodically. Conversely, an "emerging" grade describes a system that does produce some information, data, or statistics periodically, but does not cover all components of the statistical units, as an advanced grade would reflect. An "advanced" system produces all the required information, data and statistics periodically (regardless of the frequency of the period).

3. Time sensitivity: timeliness

   Timeliness is another important, related factor in the area of time sensitivity. The expectation in an effective education information system is that final documents, statistics and financial data are produced in a timely manner so that the information can be used to inform decision making and policies, in order to improve or maintain the system's performance.

   As such, a "latent" grade means that the system does not produce information, data and statistics in a timely manner. An "emerging" grade evaluates the system as producing some information, data and statistics in a timely manner. Finally, an "advanced" grade shows that the system produces all the expected information, data and statistics in a timely manner.

4. Ownership of information: framework for action

   Taking responsibility for the information available at the country level is essential in providing accurate, timely, and relevant data. The existence of a framework for action is

therefore key, and ensures that defining, collecting and managing information is an integral part of the educational system and the government.

A "latent" grade shows that there is no framework in place. An "emerging" grade would reflect that basic components of a framework – or informal mechanisms – are in place. Finally, an "advanced" grade in this category means that most elements of a framework are in place.

5. Ownership of information: team responsibilities

Finally, within a framework for action, it is paramount to clearly assign different responsibilities to designated institutions for collecting, processing, and disseminating educational information. Mechanisms for collaborating should also be defined.

Therefore, a "latent" grade indicates that specific teams are not identified. An "emerging" grade highlights that some specific teams are identified, but there are no platforms for collaboration. Finally, an "advanced" grade means that specific teams are identified and collaborative platforms are in place. This ought to be the most beneficial setup for making sure that data meet the highest standards of quality.

Table 3.1 Data quality assessment

Quality assessment					
Category	**Coverage**	**Time sensitivity**		**Ownership of information**	
Sub-category	**Statistical units**	**Periodicity of production**	**Timeliness**	**Framework for action**	**Team responsibility**
Description	The scope of statistics is broader than and not limited to a small number of indicators or to some sectors, e.g. for education: general programmes, public sector	The production of reports and other outputs from the data warehouse occur in accordance with cycles in the education system	Final documents, statistics and financial data are produced in a timely manner	Defining, collecting and managing information is an integral part of the educational system and the government	Responsibility for collecting, processing and disseminating educational information is given to a clearly designated institution
Latent	General programmes in the public sector are covered, for primary and secondary	The system neither produces information or data periodically	The system does not produce information, data and statistics in a timely manner	There is no framework in place	Specific teams are not identified
Emerging	The initial education system is also covered, as well as the technical and professional programmes, in both public and private sector	The system produces some information or data periodically	The system produces some information, data and statistics in a timely manner	Basic components of a framework or informal mechanisms are in place	Some specific teams are identified, but no platforms for collaboration
Advanced	All the sectors of the relevant system are covered (e.g. in education: including second chance programmes and literacy)	The system produces all information or data periodically	The system produces all information, data and statistics in a timely manner	Most elements of a framework are in place	Specific teams are identified, collaborative platforms are in place

Components of the availability matrix

The data availability assessments evaluate the data's transparency and openness via three types of user: internal users (government officials), external users (lay people), and international organisations.

1. Government officials: awareness

In order to evaluate whether government officers are aware of the available information, and how to access it through the institutional/organisational structure, we identified three levels of awareness. A "latent" grade, in this case, would mean that officials are more or less aware of the information available, and rely on personal connections to find it. Without an extended personal network, in other words, some officials would not be aware of the available information in the system. An "emerging" grade, on the contrary, would mean that officers are aware of some of the official channels through which one can access the information. Finally, an "advanced" grade means that regardless of the position of the official within the structure and their personal connections, information is organised in a coherent and accessible manner; for example through a specific office or data warehouse.

2. Government officials: data-driven culture

In addition to being aware of what information exists, government officials should be able to use it to design or adapt policies, fostering an information and data-driven culture where information and data are disseminated and used for policy making. A "latent" grade here means that there are no mechanisms to disseminate the documents or results in order to improve the system. An "emerging" grade would reflect that there are some mechanisms in place to ensure that documents or results are used in order to improve the system. Finally, an "advanced" grade indicates that there is a communication strategy to make sure that documents or results are disseminated and used in order to improve the system.

3. Outside users: openness and transparency

Students, researchers, journalists, or other members of civil society looking for official information should be able to access it. Their ability to access government data and information is often indicative of openness and transparency. This item looks at the way users outside the education ministry have access to the information, either online, or through public-access platforms (such as by phone or at a documentation centre, such as a library). A "latent" grade in that category means that information is available through personal contact. An "emerging" grade indicates that some information is publicly available, such as online or at a documentation centre, but is not circulating freely. Finally, an "advanced" grade means that all the relevant information is organised in a coherent manner and available in a single place (such as a website or information centre).

4. Global community: international organisations

The last category for assessing availability looks at how information has been shared with international organisations (including the UIS) through regular data collection activities. Like making data available to outside users, sharing information with the global community means being open and transparent, and being on the international stage allows for greater accountability. A "latent" grade indicates that no data have recently been shared with the UIS, UN or other international partners. An "emerging" grade shows

that some information in some areas is sent to the UIS or UN, with gaps in data and timeline. Finally, an "advanced" grade reflects a situation where relevant information is shared with the UIS or UN through regular activities, and then relayed to other partner agencies.

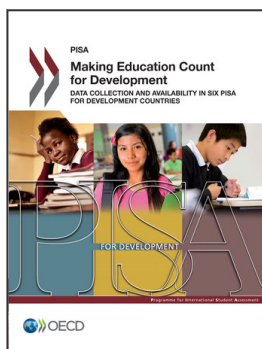**Table 3.2 Data availability assessment**

Availability assessment				
Category	Government officers		Outside users	Global community
Sub-category	Awareness	Data-driven culture	Openness and transparency	International organisations
Description	Officers are aware of available information, and know how to access it (i.e. institutional/organisational structure)	Information and data-driven culture: information and data are disseminated and used for policy making	Users outside the ministry have access to the information, either online, or through public-access platforms (phone, documentation centre, etc.)	Information has been shared with international organisations (e.g. the UIS) through regular data collection activities
Latent	Officers are more or less aware of the information available, and rely on personal connections to find it	There are no mechanisms to disseminate the documents or results in order to improve the system	Information is available through personal contact	No data have recently been shared with the UIS/UN or other international partners
Emerging	There are some official channels through which government officers can access the information	There are some mechanisms in place in order to make sure the documents or results are used in order to improve the system	Some information is publicly available, online, at documentation centres, or in other ways	Some information in some areas is sent to the UIS/UN, with some gaps in data and timeline
Advanced	Information is organised in a coherent and accessible manner, for example through a specific office or data warehouse	There is a communication strategy to make sure the documents or results are disseminated and used in order to improve the system	All the information is organised in a coherent manner and available in a single place (e.g. website, information centre)	Relevant information is regularly shared with the UIS/UN through regular activities, then relayed to other partner agencies

Data collection methodology

This report draws on evidence gathered during UIS site visits to PISA-D participating countries. These visits took place between March and May 2015, and mainly consisted of meetings with NPMs and other officials responsible for managing the areas covered by this assignment at the national level.

The UIS teams visiting the countries held meetings to exchange data with NPMs and other persons responsible for education data collection, carried out interviews and consultations with key stakeholders, usually over a three-day period to allow times of debriefing between UIS and the NPMs, as well as follow-up meetings between teams when needed.

Since there were challenges to Cambodia's participation in the project that had not been resolved during the period scheduled for country missions, UIS did not visit Cambodia, but rather carried out a desk assessment of the availability of data items contained in the system-level questionnaire. This meant that some facets of the matrix could not be evaluated; but on the other hand, the report highlighted that the information currently available in the UIS database covers most of the items collected by the system-level questionnaire.