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# 5

## Asia-Pacific Education System Review Series

# Student Learning Assessment



*Asia-Pacific  
Education System Review Series No. 5*

# **Student Learning Assessment**

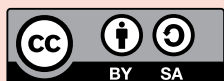
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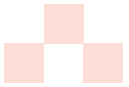
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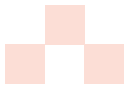
## Preface to the Series

The Asia-Pacific Education System Review Series is published by the Education Policy and Reform Unit of the UNESCO Asia and Pacific Regional Bureau for Education (UNESCO Bangkok). The series aims to summarize what is known, based on research, about selected contemporary policy issues relating to the national education systems of countries in the Asia-Pacific region.

The series provides practice-oriented guidance for those engaged in the review of education policy and systems as well as in the implementation of reforms related to the specific topics that the booklets address.

The booklets are designed to serve as rapid and credible reference material for education policy makers, planners and managers, offering busy readers (a) an overview and quick analysis of pertinent education issues; (b) a choice of approaches and options to address these issues, based on experiences of countries in the region; and (c) a set of recommendations or guiding questions to consider when preparing a sector or sub-sector review and reform.





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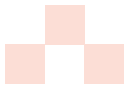


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## List of Abbreviations

AFL	Assessment for Learning
AHELO	Assessment of Higher Education Learning Outcomes
ALS	Alternative Learning System
AOL	Assessment of Learning
ATC21S	Assessment and Teaching of 21 <sup>st</sup> Century Skills
CESSP	Cambodia Education Sector Support Project
CIE	University of Cambridge International Examinations
DeSeCo	Definition and Selection of Competencies
EEHE	Entrance Examination to Higher Education
EGRA	Early Grade Reading Assessment
FBE	Formal Basic Education
FL	Functional Literacy
GDP	Gross Domestic Product
HKALE	Hong Kong Advanced Level Examination
HKCEE	Hong Kong Certificate of Education Examination
HKDSE	Hong Kong Diploma of Secondary Education
ICCS	International Civic and Citizenship Education Study
ICILS	International Computer and Information Literacy Study
ICT	Information and Communications Technology
IEA	International Association for the Evaluation of Educational Achievement
IELTS	International English Language Testing System
IIEP	UNESCO International Institute for Educational Planning
IPW	Interdisciplinary Project Work
KEDI	Korean Educational Development Institute
KICE	Korea Institute for Curriculum and Evaluation
MTPDP	Medium-Term Philippine Development Plan
NA	National Assessment
NARIC	National Academic Recognition Information Centre
NCEA	National Certificate of Educational Achievement
NEAS	National Education Assessment System

NEETS	National Educational Evaluation and Testing System
NIER	National Institute for Educational Policy Research
NQF	National Qualifications Framework
NZQA	New Zealand Qualifications Authority
OECD	Organisation for Economic Co-operation and Development
PIAAC	Programme for the International Assessment of Adult Competencies
PIRLS	Progress in International Reading Literacy Study
PISA	Programme for International Student Assessment
PNQF	Philippine National Qualifications Framework
PREAL	Partnership for Educational Revitalization in the Americas
SACMEQ	Southern and Eastern Africa Consortium for Monitoring Educational Quality
SAIL	Strategies for Active and Independent Learning
SBA	School-based Assessment
SITES	Second International Information Technology in Education Study
SMC	School Management Committee
SPA	Science Practical Assessment
TIMSS	Trends in International Mathematics and Science Study
TSA	Territory-wide System Assessment
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children’s Fund





## Definitions

*Classroom assessment:* The process of collecting, synthesizing and interpreting information to aid classroom-based decision making, support student learning (formative assessment) and judge student performance at a specific point in time (summative assessment). It is primarily carried out by teachers and the students in their classrooms, encompassing the formal grading of students' work as well as more informal observations of students.

*International assessment:* Large-scale assessment studies, whereby data are collected from a number of countries, allowing each country to compare the results of its students with the results achieved by students in other countries. Well-known international large-scale assessments include:

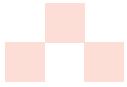
- PISA: Programme for International Student Assessment
- TIMSS: Trends in International Mathematics and Science Study
- PIRLS: Progress in International Reading Literacy Study

*Moderation:* The process of establishing comparable standards for evaluating student responses to assessment tasks in order to ensure that the data are valid and reliable for the intended purposes. In schools, it involves groups of teachers looking at examples of student work, discussing the extent to which these meet the expected standard, and coming to an agreement on the level of attainment represented by each example.

*National [or sub-national] assessment:* Large-scale assessment surveys designed to describe the achievement of students in a curriculum area and to provide an estimate of the achievement level in the education system as a whole at a particular age or grade level. This normally involves administration of tests either to a sample or population of students.

*Public examination:* Assessment specifically designed for the purposes of certifying or selecting students, usually covering the main subject areas in the school curriculum. Generally, all students who take the examination at the designated age or grade level are tested (usually at the end of upper secondary schooling).

*School-based assessment:* Assessments administered in schools and evaluated by the teachers, marks from which, in some countries, could count towards the students' external/public examination results.



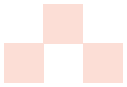
## Acknowledgements

This booklet was prepared by Esther Sui-chu Ho, Professor in the Department of Educational Administration and Policy and Director of the Hong Kong Centre for International Student Assessment at The Chinese University of Hong Kong. It is primarily based on the presentations, discussions and conclusions made at the joint annual seminar organized by UNESCO and the Korean Educational Development Institute (KEDI) on student learning assessment and school performance (Seoul, Republic of Korea, 12-15 July 2010) and also drawing from the literature on the topic of educational assessments. The draft has been shared with the participants of this annual seminar and benefited from their peer review.

Members of the Review Team within UNESCO included Miki Nozawa, Hai Tiet, Gwang-Chol Chang, Le Thu Huong, Sarah Tumen and Ramya Vivekanandan Rodrigues. Assistance was provided by Ratchakorn Kulsawet, Kate Glazebrook and Stella Yu.

The generous and ongoing collaboration with KEDI is gratefully acknowledged. For more than 10 years, UNESCO and KEDI have been promoting regional policy dialogue and cooperation on a number of topics of critical importance in the region. This seminar on student learning assessment and school performance is but one of a series of fruitful regional policy dialogues.

The printing of this booklet has been made possible through the generous support of the Hong Kong Institute of Educational Research (HKIER).



## Foreword

The focus of the fifth booklet of the Asia-Pacific Education System Review Series is on student learning assessment in the Asia-Pacific region. Given the region's progress in extending access to education to all, more and more countries in the region are increasingly concerned with the improvement of the quality of education (Goal 6 of the Education for All Goals adopted in Dakar in 2000). Accordingly, monitoring systems via learning assessments provide a tool for governments to assess, evaluate and monitor the learning outcomes of learners in the country. The results from learning assessments at the international, national, sub-national and school levels allow policy makers and various stakeholders to evaluate the performance of their education system and learners and identify how to improve their assessment systems, subsequently enhancing the quality of education.

However, given the diversity of the region, there are many different practices in learning assessment among countries, including countries that are in the initial stages of developing their assessment systems. This booklet gives an overview of the current status of learning assessments in the region, including ones conducted at the international level, and findings and implications for policy makers in an effort to provide stakeholders with a quick reference on the topic.

It is hoped that this booklet will serve as a useful resource document for policy makers and educators, enabling them to think critically about their own education systems, specifically in regard to learning assessments, to guide them in the development and improvement of their assessment systems and subsequently, the quality of education.

Gwang-Jo Kim  
Director  
UNESCO Bangkok



## **Section 1:**

# **Introduction**

Monitoring student learning outcomes and school performance is multifaceted, and the practice of monitoring varies substantially across countries. This multifaceted monitoring can include large-scale national, sub-national or international assessments, public examinations, school-based assessments and classroom assessments, which can be standardized or non-standardized (Clarke, 2011). Many countries establish national monitoring systems to collect information on student learning outcomes and to develop indicators of school performance at national and sub-national (including local and school) levels for comparing, benchmarking and developing policies and interventions to improve educational outcomes.

In the Asia-Pacific region, there is no regional standard for learning assessment like SACMEQ (Southern and Eastern Africa Consortium for Monitoring Educational Quality) or PREAL (Partnership for Educational Revitalization in the Americas) (Wolff, 2007). However, there may not be a need for such regional standards given that an increasing number of countries in the region are already participating in large-scale international assessment surveys and that specific regional standards may not necessarily translate into improved learning outcomes or better learning assessments.

Nonetheless, one of the major challenges in the region is to establish an indicator framework aiming to help define skills and/or key competencies for students that can accommodate new technologies and a knowledge-based society and allow students to be competitive in the global market, so that assessments can monitor not only cognitive aspects of learning, but also “non-cognitive” skills and competencies acquired. As Watanabe (2010) argued, “Individuals need the skills to be great collaborators and orchestrators, synthesizers, explainers, versatilists, personalisers and localisers for the 21<sup>st</sup> century.”

This identification of learning outcomes and the essential knowledge and skills required to function well for a changing world is not a new concept. There have been a number of attempts to define skills and key competencies to monitor educational performance at the international level. The Organisation for Economic Co-operation and

Development (OECD) projects DeSeCo (Definition and Selection of Competencies) and ATC21S (Assessment and Teaching of 21<sup>st</sup> Century Skills) are examples of such international initiatives. These initiatives aim to answer the following questions: (i) what skills and knowledge are needed to be a global citizen; (ii) which methods are suitable to teach these skills and (iii) how can learning be measured and monitored (ATC21S, 2009; DeSeCo, 2003).

The emerging definition of new skills and competencies required in a global knowledge-based society goes beyond the traditional scope of academic learning. In particular, for basic education, the common goal is not only to enhance the average competencies, but also to accomplish access, equity and quality of these competencies (G.-J. Kim, 2010). To achieve these goals, curriculum (standard), pedagogy (delivery) and assessment (outcome) need to be aligned.

In fact, a growing number of countries are conducting various forms of assessment of all learners in formal and informal educational systems. The goal of such measurement is to review the curriculum and pedagogy so as to strengthen teacher professional development and to bring other policy changes aimed at improving student performance.

In the Asia-Pacific region, more economically developed jurisdictions such as Hong Kong (China), Japan, Republic of Korea, New Zealand, Shanghai (China) and Singapore usually have more stable and structured assessment systems, whereas countries such as Cambodia, Mongolia, Pakistan and the Philippines are in early stages of developing their own national assessment systems.

This paper delineates the phenomena and challenges subsumed under the monitoring theme of the joint UNESCO-KEDI seminar and further identifies the learning that would be of useful reference for policy makers and educators in the Asia-Pacific region and globally. Basic information about various forms of international, national and school-based assessment of the ten participating countries/jurisdictions<sup>1</sup>

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<sup>1</sup> The participating countries/jurisdictions referred to in this paper are those ten countries and territories or cities whose representatives participated in the seminar on Monitoring Student Learning Outcomes and School Performance: Hong Kong (China), Shanghai (China), Japan, Republic of Korea, Mongolia, Nepal, New Zealand, Pakistan, the Philippines and Singapore.

is summarized in the first booklet in this series on examination systems (Hill, 2010).

### Box 1: International Definitions of Key Competencies in the Twenty-first Century

The OECD's Definition and Selection of Competencies Project (DeSeCo, 2003) has provided a framework that guides the development of assessment of key competencies in the OECD Programme for International Student Assessment (PISA). DeSeCo (2003) classifies these competencies in three broad categories:

1. *Using tools interactively*: Individuals need to be able to use a wide range of tools for interacting effectively with the environment. They need to understand such tools well enough to adapt them for their own purposes — to use tools interactively;
2. *Interacting in heterogeneous groups*: Individuals need to be able to engage with others in an increasingly interdependent world, and since they will encounter people from a range of backgrounds, it is important that they are able to interact with others in heterogeneous groups;
3. *Acting autonomously*: Individuals need to be able to take responsibility for managing their own lives, situate their lives in the broader social context and act autonomously.

Another recent international project, namely ATC21S, attempts to provide a clear operational definition of 21<sup>st</sup> century skills. The project has identified ten essential skills, which are grouped into four categories:

1. *Ways of thinking*: i) Creativity and innovation; ii) Critical thinking, problem solving, decision making and iii) Learning to learn, meta-cognition (knowledge about cognitive processes);
2. *Ways of working*: iv) Communication and v) Collaboration (teamwork);
3. *Tools for working*: vi) Information literacy and vii) Information and Communications Technology (ICT) literacy;
4. *Living in the world*: viii) Citizenship — local and global; ix) Life and career and x) Personal and social responsibility — including cultural awareness and competence.<sup>2</sup>

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2 For more information, see <http://atc21s.org/index.php/about/what-are-21st-century-skills>

This paper starts with the clarification of key skills and competencies students need to acquire to function in the technological and knowledge-based societies of the 21<sup>st</sup> century. It will then be followed by seven sections. Section 2 reviews the various forms of assessments in place in different countries/jurisdictions. It is found that the explosion of interest in learning outcome assessments has proliferated globally in both developed and developing countries. Sections 3 to 6 analyze the nature and impact of national assessments, public examinations, school-based assessments and international assessments so as to discuss their purpose, nature, present and possible impacts and challenges. The final sections will discuss the regional trends in monitoring systems; lessons learned from various national and international assessments; major challenges for establishing a monitoring system for developing countries and how some countries make use of assessment information.

## Section 2:

# Overview of Assessment Practices in Asia-Pacific Region

Assessment of learning outcomes takes different forms at different levels of the educational system. At the global level, international assessments, such as the OECD's PISA (Programme for International Student Assessment) and the International Association for the Evaluation of Educational Achievement's (IEA) TIMSS (Trends in International Mathematics and Science Study), have become important sources of information for monitoring student learning outcomes. In particular, these assessments allow cross-country comparison based on international benchmarks which help countries to evaluate strengths and weaknesses of education systems from a broader context.

Although growing, the number of developing countries participating in such international assessments is still limited. Of the ten countries and territories or cities that participated in the KEDI-UNESCO Bangkok seminar, six — Hong Kong (China), Japan, Republic of Korea, New Zealand, Singapore and Shanghai (China) — have participated in several international assessments.<sup>3</sup> The major purposes of joining international assessments for these six countries/jurisdictions is to monitor overall educational quality and equality of student learning and to benchmark students' learning outcomes with international standards. Some countries have joined various international assessments such as TIMSS and PISA informally with the financial or technical support of international agencies. One of the aims of their participation is to adapt the knowledge and technology of these international assessments to their own national assessment systems. For instance, Cambodia and the Philippines participated in EGRA (Early Grade Reading Assessment), Mongolia participated in TIMSS 2007 and certain provinces of Mainland China participated in the PISA 2006 trial study informally, followed by Shanghai's (China) formal participation in PISA 2009.

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<sup>3</sup> Representatives from Hong Kong SAR and Shanghai, both under the jurisdiction of the People's Republic of China, were invited to the seminar to present their experience of assessments, including international surveys such as PISA. For ease of reference, Hong Kong and Shanghai will be referred to in this paper as jurisdictions.



At the national level, student learning assessments have also been conducted with increasing frequency in various countries. Recent studies indicate that the percentage of countries that conduct national assessment had increased from 11 per cent to 64 per cent in East Asia and the Pacific, and from 11 per cent to 44 per cent in South and West Asia from 1995 to 2006 (UNESCO, 2008). National assessments provide rich information about learning outcomes according to nationally defined standards. Another type of national-level assessment commonly practised is nationwide public examinations, which are often conducted at major transition points, such as from primary to secondary, from lower to upper secondary and from secondary to higher education or to the labour market. All ten countries/jurisdictions which participated in the seminar have their own national (or sub-national) assessments at certain grade levels, organized either independently or supported collaboratively with various development partners. They also have in place public examinations at the end of primary or secondary schooling. Public examinations in these countries/jurisdictions play an important role providing useful information on selection and certification of students as well as accountability of the schools to the general public (Hill, 2010).

At the school level, school-based assessment (SBA) is attracting much more attention. SBA has always been an integral part of the teaching and learning process and used as a tool for gathering evidence to inform instructional decisions. There is a general trend towards improving the methodology, standards and operational rigours of SBA, which is the most viable channel to formatively monitor learning outcomes in order to improve the reliability and validity of the summative public examination (Koh and Luke, 2009; Koh, Lim and Habib, 2010; Koh and Velayutham, 2009).

In sum, assessment information collected at different levels of the educational system has proliferated around the world. The purpose of this paper is to summarize such information in a systematic way. Many countries that are establishing, reforming or improving their national assessment systems can benefit from this document.

### Section 3:

## National/Sub-national Assessments

A National Assessment (NA) is a survey of schools and students that is designed to provide evidence about the levels of student achievement in core curriculum areas (e.g. reading and mathematics) for the whole education system or for a clearly defined part of the system, such as certain grade levels or particular age groups (Postlethwaite and Kellaghan, 2008). Assessment at the national level typically takes two forms: NA studies and national/public examinations.<sup>4</sup> NA studies are generally low-stake to individual students and the findings are used to monitor the progress of the national system. Public examinations are generally high-stake to students and are administered at certain transition points of schooling for selection and certification purposes (Froumin, 2007).

In some education systems, there is a clear distinction between NAs and public examinations.<sup>5</sup> However, in some countries, results of public examinations are utilized not only for selection or certification purposes, but also to evaluate the school system. For example, the value-added measures of public examination scores have been used to monitor school performance and feedback to schools for improvement in Hong Kong (China) since 2000. Bangladesh and Thailand also use public examinations as a tool for learning assessment (UNESCO, In Press).

In the Asia-Pacific region, Hong Kong (China), Republic of Korea, Japan, New Zealand, China and Singapore have a longer history of national/sub-national assessment — some in the form of national or public examinations, whereas countries like Cambodia, Mongolia, Pakistan and the Philippines are developing their NA systems based on their knowledge gained from international experiences.

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4 Public examinations could be conducted at the “national” or sub-national levels. Public examination, as a more inclusive term, will be used interchangeably with NA in this paper.

5 For instance, Hong Kong (China) has the Territory-wide System Assessment (TSA) as an NA at Grades 3, 6 and 9 and the Hong Kong Certificate of Education Examination (HKCEE) and Hong Kong Advanced Level Examination (HKALE) as public examinations at Grade 11 (S5) and Grade 13 (S7) respectively.

## **Organization and Purpose of National Assessments**

National authorities are usually responsible for developing standards and the operation system for NAs. Of the ten participants in the seminar, the Ministries of Education of Cambodia, Japan, Mongolia, Pakistan, the Philippines and Hong Kong (China) implemented NAs. In Japan, for example, NAs are conducted by the National Institute for Educational Policy Research (NIER) in collaboration with municipal educational authorities as well as primary and lower secondary schools. However, in some countries such as the Republic of Korea, New Zealand and Singapore, the government delegates the responsibility to independent institutes. For instance, in the Republic of Korea, national learning assessment was first administered by the Central Education Research Institute in 1959, and since 1998 has been delegated to the Korea Institute for Curriculum and Evaluation (KICE), a government-sponsored research institute. Some other countries, such as Cambodia, collaborate with international agencies to support the initial developmental stages of their NAs.

The major purposes of NAs are quite similar in all societies regardless of the stage of their development. The first is to evaluate the overall learning achievement levels of students at certain grade levels and to monitor the overall quality of basic education. Secondly, NAs are intended to inquire and transform the information for the improvement of the curriculum and teaching and learning practices in order to achieve better outcomes for students. The third purpose is to use assessment information to inform policy to formulate specific education policies and intervention programmes.

In some countries such as Mongolia, Cambodia and Pakistan, the objectives of NAs go beyond measuring student achievements. With financial or technical support from international agencies, these countries attempt to adapt the experiences from participation in international assessments as well as from sharing experiences with other countries and to use it to establish their own NAs. These countries aim to measure learning outcomes using internationally accepted methodology and tools; to compare the results within countries and to identify key factors contributing to student performance. Through the process, they build up their own national capacity for undertaking learning achievement assessments and for improving policy formulation or strategies.

For instance, the National Education Assessment System (NEAS) of Pakistan was initiated in 2003, with the first assessments conducted in 2005, as a country-wide initiative to build assessment capacity at the national and provincial levels. The project was supported by the World Bank and United Nations Children’s Fund (UNICEF). The results of these NAs were generally used for informing policy makers as to the extent and how background and process factors are linked to student performance and how the curricula are translated into students’ knowledge and skills. The information can help policy makers to identify principal determinants of student performance, which in turn can contribute to improved resource allocation mechanisms. Furthermore, the results of these NAs also help inform pedagogy and lead to professional development for teachers.

However, one major challenge to these countries which are developing their NAs is that funding sources are usually from international organizations and thus may not be stable. Moreover, there are also concerns in terms of the coherency of the approach and the continuity of the assessments.

### ***Target Groups and Subject Domains of National Assessments and Challenges***

Approaches to and methods of NAs vary substantially from one country to another. Yet, there are certain similarities across the participating countries/jurisdictions in terms of the target population of students and the curricula assessed. The target groups of NAs are usually sampled from the middle to the end of primary education and the end of compulsory education at the secondary level. Curricular subjects assessed are usually the first language, second language, mathematics and natural and social sciences.

For instance, Hong Kong (China) and Japan assessed students at Grades 6 and 9 in their NAs. In Japan, the target group is based on samples of students in Grades 6 and 9, although the assessment in this case was originally developed to assess all students in Grades 6 and 9. In Hong Kong (China), the Territory-wide System Assessment (TSA) was first implemented in 2000 to all students in Grades 3, 6 and 9.

However, in some countries, the target group has changed from a selected sample to the total student population. For instance, from 2000

to 2008, the Republic of Korea sampled students (0.5 per cent to three per cent) from Grades 6, 9 and 10, but the assessment was changed to be administered to the total student population of the same grade levels in 2008 (Huh, 2010). Advocates argued that the sampled test was neither adequate for assuring basic academic ability of all students nor was it adequate for improving accountability of schools.

For emerging assessment systems such as Cambodia, methodologies have been synthesized from international assessments. In developing its NA, the Cambodia Education Sector Support Project (CESSP) conducted a pilot study in about 20 schools and then a main study in 200 schools, in which about 6,000 students were sampled to represent the nation in each wave of assessment — 2005-06 for Grade 3, 2006-07 for Grade 6, 2007-08 for Grade 9 and 2008-09 for Grade 3 again.

From the experiences of the above-mentioned countries, there are varied methods in the selection of target groups, and it is difficult to assess the effectiveness of such methods given the different NA systems. However, as the UNESCO International Institute for Educational Planning (IIEP) suggests, education officials need to (1) work in collaboration with researchers to define the target population and ensure the best approach is used; (2) execute the survey under a good sampling frame, if a sampling method is utilized and (3) determine if and where over-sampling is required (Postlethwaite and Kellaghan, 2008).

In regard to defining the target population, given the resource constraints in assessing all students in a population, a sample survey may be used. However, in general practice, excluding more than five per cent of the desired target population is usually not recommended (Postlethwaite and Kellaghan, 2008).

Sampling frames provide additional context for sample surveys by providing a list of all variables that can be compared in various analyses. In the case of NAs, the list should include all schools with the corresponding number of students within the country under such categories as regional designations (i.e. rural/urban), types of school (i.e. public/private), etc. With these classifications, researchers (and correspondingly, policy makers) can easily query out the key variables that affect or contribute to student learning.

Governments need to decide on where over-sampling is required and then extract the sample. For example, when accurate estimates by sub-sectors are needed, then the number of schools in the sample may need to be quite large because small sectors may need to be over-sampled. As Postlethwaite and Kellaghan (2008) states: “if only [two] per cent of students are in private schools, a comparison of student achievement in private and public schools may require the sample size for private school students to be a much higher percentage of the total sample of students” (p. 14).

Similar to target groups, subject domains also vary among countries. Since 2007 in Japan, the subject domains include Japanese language and arithmetic in Grade 6 and Japanese language and mathematics in Grade 9, while in Hong Kong (China) for the TSA, Chinese, English and Mathematics are assessed. In the Republic of Korea, students are assessed in Korean language, social sciences, natural sciences, mathematics and English language, and in Cambodia, basic Khmer language and mathematics skills are assessed. Although only a selected number of countries are mentioned above, the trend in NAs is to mainly assess languages and mathematics. However, given the importance and correlation of education to the achievement of development goals (e.g. economic growth), subjects such as the natural sciences are crucial to support innovation and competency in knowledge and skills required in a competitive global market. As such, the assessment of other subject domains is needed in order to evaluate the curriculum and needs of students and to align with development goals.

In sum, NAs assist in diagnosing strengths and weaknesses of an education system at the national level. They are useful for monitoring the overall quality of education and identifying schooling input and process factors that have contributed to the learning outcomes. NAs may target sampled students from particular schooling levels, age groups or otherwise involve the entire target population. NAs typically assess attainment in core subjects, notably the national language, specific second languages, mathematics, natural sciences and social sciences. The frequency and scope of NAs vary depending on the purposes of monitoring.

## *Utilizing the Results of National Assessments*

The results of NAs can be utilized in many different ways and levels, including reforms and improvements at the central, provincial/district and school levels to improve curriculum and its relevance, teacher pedagogy, etc. For example, in the Republic of Korea, student performance in Korean language, social studies, mathematics, social and natural sciences and English language are reported to the schools. At the school level, the raw scores of individual students are transformed into scaled scores and then mapped into one of the four achievement levels (superior, average, elementary and below elementary). An explanation of the achievement levels is included in the student report card to help parents understand the results. The test results have been used as a reference for students in planning their studies and choosing schools in the future. At the system level, KICE prepares a full report and a subject report and constructs education indexes to inform policy makers. The information on the overall academic achievement levels of the Korean students serves as a tool for the government to keep track of the quality of education over time and to inform curriculum improvement. The results have been used as the basic reference for evaluating overall national education policy and for searching for directions for improvement. However, the recent policy to disclose school results of NAs to the general public has led to much debate among the general public in the Republic of Korea.

As for Japan and Hong Kong (China), individual school results have not been disclosed publicly due to the concern that disclosure may lead or push schools and students into meaningless competition, and that it may eventually cause schools to spend more time in preparing just for the test. Therefore, in Japan, only aggregated results by grade and by subject have been reported to the public. In the case of Hong Kong (China), results of subscales of Chinese language, English language and mathematics by grade level are provided to schools so that teachers can draw up plans to improve the quality of teaching and learning of these core subjects. NAs in Japan and Hong Kong (China) are supposed to be low-stake for students because the analysis is made at the school level. However, NAs could become high stakes for schools if policy makers or the school management use the results as evidence for comparing the performance between schools and as a means for pushing schools to improve.

## Box 2: The Case of Pakistan: Assessment with Supplementary Survey

In Pakistan, the National Education Assessment System (NEAS) collected additional information from students, parents, teachers and head teachers in addition to achievement scores. Although it is only an emerging system, Pakistan's recent NA experience warrants a detailed discussion because the results of NEAS have revealed that the essential background factors related significantly to students' performance in the context of a developing country.

At the student level, girls perform better than boys in reading and natural sciences. Students who like the subjects — meaning that they are motivated or interested in the subject area — perform significantly better in both natural sciences and social studies than those who do not like the subject. Students who work outside the home to earn money tend to score lower in both natural sciences and social studies. In particular, students who need to take leave from school due to crop harvesting perform significantly worse in both natural sciences and social studies.

Regarding teaching and learning factors, teachers who regularly check homework tend to have students who perform better (in natural sciences). Blackboard usage by teachers and usage of libraries also made significant contributions to student achievement. Students who always ask questions during the lesson perform significantly better in both natural sciences and social studies than those who do not. Rewards have positive impact on performance in natural sciences and social studies, but corporal punishment adversely affects student achievement.

Regarding homework practices, students who spend more time doing homework (more than two hours per day) scored the highest in homework and perform much better than those who spent less. Moreover, students who always get feedback from their teachers on homework perform significantly better in both natural sciences and social studies.

Regarding parental involvement, students with parents who always ask their child about their study in school tend to score higher in both natural sciences and social studies. Parents with higher education qualifications had significant positive impact on student achievement. Children with parents who discuss with teachers about their performance on a regular basis (monthly) tended to perform better than those whose parents contact teachers too frequently (weekly) or too rarely (yearly). Parents' attention to students' homework is positively associated with student achievement, and parents' participation in school activities is positively associated with student achievement as well; however, parental involvement in parent-teacher associations or school management committees does not make a difference in student achievement. All of these findings are informative to stakeholders, and some findings are quite consistent across developing countries.

In emerging NA systems such as in Mongolia, Cambodia and Pakistan, there have been attempts to collect additional information for identifying factors contributing to students' learning outcomes (see Box 2 for the case of Pakistan). In Mongolia, surveys of governors,



school administrators, teachers, students and parents were conducted (Bat-Erdene and Bayarmaa, 2010). Cambodia has also conducted surveys and interviews of students and teachers.

As emerging NA systems are exploring methods in utilizing the results, the experiences of countries like the Republic of Korea and Japan provide contrasting yet fruitful lessons. The interesting note is that although Japan and Hong Kong (China) are concerned with the competition that might result from the full release of NA results, these countries and the Republic of Korea still release the data in some form to the public, which allows for accountability and transparency. Accordingly, for emerging NA systems, consideration to public release of the results in some form in an easily accessible format may enrich the policy-making process, as various stakeholders are able to provide feedback. However, countries also need to be mindful that certain groups may display different results than another (See Box 3 for an example).

### **Box 3: Assessment Results: Gender Differences in Educational Outcomes**

Currently, some countries in the Asia-Pacific region use NAs as a summative instrument, which entails using NAs to measure learning outcomes and evaluating the results based on overall (national) standards (OECD, 2008). Summative assessments have an important role as they can essentially hold schools and Ministries accountable for the results of NAs.

However, if we look at the results of NAs by gender, the current delivery of summative assessments may not be the best tool in effectively evaluating learning. For example, in the Republic of Korea (as will be discussed in Section 6), female learners scored significantly higher than male learners on the International Civic and Citizenship Education Study (ICCS) in 2009 (T. Kim, 2010). The Republic of Korea is not alone in this regard, as most countries that participated in the study experienced the same results.

Ma (2007) explains that the differences in learning outcomes between males and females may be due to the advantages males have in nonverbal cognitive skills, while females have advantages in verbal cognitive skills. This psychological basis, as explained by Ma, may be the result of how males and females can reflect the different expectations from teachers (for example, teachers may expect less from female learners in certain subject areas as the sciences and technology), which could also explain the results of the ICCS 2009.

Accordingly, OECD (2008) recommends policy makers to be mindful of a formative approach towards assessments, which refers to the frequent assessment of learners' progress to identify learning needs and to adjust teaching and assessments accordingly.

## Section 4:

# Public Examinations

Vis-à-vis national assessments, public examinations involve higher stakes for students and schools, playing a crucial role in directing students' learning, determining their future careers as well as assessing school effectiveness.

In Mainland China, assessment for selection and certification has a two-thousand-year history, stretching back to the Han Dynasty (206 B.C. - 220 A.D.). Regarding the current national examination in China, the Entrance Examination to Higher Education (EEHE, commonly known as *Gao Kao*), is taken by students at the end of Grade 12, their last year of high school. Three core subjects are mandatory everywhere in China: Chinese language, mathematics and a foreign language (usually English but may also be substituted by Japanese, Russian or French). The other elective subjects are three natural sciences (physics, chemistry and biology) and three humanities (history, geography and political education). Students typically select one to three elective subjects from these six options (Hill, 2010). However, there has been a fierce debate around this examination on issues such as overloading students in one examination or neglecting their creativity and practical ability.

To address the problem of extremely high pressure of national examinations, the Ministry of Education initiated a series of curriculum reforms since 2001, requiring the local governments to carry out reforms of the examination and assessment system.<sup>6</sup> The assessment for graduating junior secondary students was re-designed to include the element of “comprehensive qualities” besides academic examination, such as a) moral performance, b) civil awareness, c) learning aptitude, d) ability in communication and cooperation, e) physical well-being and f) aesthetic literacy (Gao, 2011; OECD, 2011). The examination and recruitment systems of the institutions of higher education were also reformed to lay more emphasis on practical

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6 The Ministry of Education of China issued the Guidelines for Curriculum Reform of School Education of 2001 and subsequently the National Curriculum Standards for Compulsory Education (2002), Circular of the Ministry of Education on Promoting Reforms on School Evaluation and Assessment System (2002) and the National Curriculum Standards for General Senior Secondary Schools (2003).

abilities and general qualities of students (UNESCO, 2008). As part of the assessment reform, 78 universities in Mainland China, which were regarded as the more competitive ones, participated in the project of “independent admission”, under which the institutes designed and organized their own assessment and student recruitment schemes to suit the institutes’ own development goals and characteristics. However, 76 of these institutes still took EEHE as the key criterion and two even counted EEHE scores directly for student admission. By the year 2004, a total of ten provinces were given permission to set their own examination for admission to higher institutes (Liu, 2008). Among these provinces, Shanghai was the first province-level municipality to take part in the new examination reform (OECD, 2011).

The school system of Shanghai is different from the typical 6-3-3 system of China. Shanghai has five years of primary, followed by four years of middle school (lower secondary) and three years of high school (upper secondary). There are two major entrance examinations. One is conducted at the end of lower secondary for admission to upper secondary; however, not all students are admitted to upper secondary schools via the examination. Some public schools (i.e. municipal showcase schools and modern boarding schools) recruit 40 per cent of their students before the examination is held. Among the 40 per cent, 30 per cent are recommended by their lower secondary schools and ten per cent recommend themselves for admission (UNESCO, In Press). Another entrance examination is conducted at the end of upper secondary for admission to university. According to Zhao and Zhu (2010), the examination system in Shanghai has been reformed to be comprised of two academic performance examinations which replace all prior forms of graduating examinations. The two examinations are to be taken respectively by all students in lower secondary and upper secondary schools. For the general (academic) upper secondary schools, the academic performance examination has replaced the former unified EEHE. The examination syllabus is aligned with the general upper secondary school curriculum. Examinations are criterion-referenced, and results are classified into four proficiency levels based upon an A, B, C and D system (“A” denotes the highest proficiency, while “D” represents the lowest proficiency). Universities can select applicants according to their achieved academic performance levels without referring to the EEHE results.

Hong Kong is a Special Administrative Region of China, and its secondary school students do not need to take *EEHE/Gao Kao*. The universities in Hong Kong (China) retain their own admission procedure for local students. In return, Mainland China's universities also have a separate procedure for admitting Hong Kong (China) students. Yet, soon after the handover in 1997, Hong Kong (China) embarked on a ten-year programme of educational reform that included elements of a new upper secondary examination, basic competency assessment, school-based assessment (SBA) and a commitment to assessment for learning (AFL).

Although Hong Kong (China) is a small Chinese society, it also has a long history of public examination even under the British colonial governance. In particular, Hong Kong (China) has been monitoring the schooling system by using "value-added measures" of academic achievement in the Hong Kong Certificate of Education Examination (HKCEE, now an outgoing secondary school graduating examination system) and the Hong Kong Advanced Level Examination (HKALE, now an outgoing university entrance examination) since 2000. The raw scores cannot give an accurate picture of how effective a school and its teachers are at raising and maintaining the achievement of all students, but the initiation of "value-added" methodologies provide more valid information for school improvement. The value-added measures are widely used by the school administrators and subject panels to monitor student learning and school performance. The school management committee (SMC) of each school is obligated to reveal the results of these value-added measures, and this makes schools more accountable to the parent representatives, alumni representatives and professional committee members from the community.

Making SBA an integral part of public examination enables the assessment of students' abilities that could not otherwise be easily accessed through written tests (for example, the ability to organize, communicate and work with others). In this way, students are encouraged to participate in diversified learning activities and develop multifaceted abilities. In 2009, the new three-year senior (upper) secondary education system was adopted, and the HKCEE and HKALE will be replaced by the Hong Kong Diploma of Secondary Education (HKDSE) in 2012. SBA will be widely applied to more subjects in this new public examination as of 2012. SBA in Hong Kong (China) refers to

in-school assessments graded by teachers, then moderated by public examination scores that contribute around 15-25 per cent (a relatively small proportion) of the total examination score of a given subject. SBA is not new to Hong Kong (China) and had been introduced in the late 1970s for science subjects. Countries such as Singapore and New Zealand also have rich experience in SBA as discussed further in the following section.

## Section 5:

# School-Based Assessment

In order to reduce examination pressure and enhance the authenticity of public examinations, school-based assessment (SBA) is increasingly being adopted in many countries in the region, including Australia, Hong Kong (China), New Zealand and Singapore. In fact, SBA is an integral part of the teaching and learning process and provides teachers with vital information about students' learning progress. However, if SBA becomes an integral part of high-stake public examinations, it must be administered by schools under strict directions regarding the substance of the assessment tasks, the conditions of implementation and its scoring specification. The moderation process is usually employed to adjust the scores of SBA before it can be combined with the public examination score (Hill, 2010). The following two sub-sections will discuss the use of SBA in New Zealand and Singapore.

### *Use of SBA for Improving Reliability and Validity of Public Examinations in New Zealand*

New Zealand has a long history of SBA in upper secondary schools and has developed a wide variety of teacher support materials and associated research studies. According to the New Zealand Curriculum Framework, the primary purpose of SBA is to improve students' learning and the quality of learning programmes. It also serves to provide feedback to parents and students, to award qualifications at the upper secondary school level, to monitor overall national educational standards and to identify the learning needs of students in order to effectively target resources (Crook, 2010).

From 2002 to 2004, the reform of the National Certificate of Educational Achievement (NCEA) replaced the previous secondary school qualifications. A major change in the new NCEA is the implementation of a standard-based or criterion-based system of assessment, which is now an integral part of the national curriculum and qualifications framework. The NCEA will be conferred on the students who have achieved a specified number of credits according to the standards of the National Qualifications Framework (NQF).<sup>7</sup>

<sup>7</sup> For example, NCEA Level 1 is gained by achieving 80 credits at any level of the NQF, of which eight credits must demonstrate numeracy (i.e. mathematics) and eight credits must demonstrate literacy (i.e. English or Te Reo Maori). NCEA Level 2 is gained by achieving 80 credits, of which 60 must be at Level 2 or higher and the remainder from any level. There is no literacy or numeracy requirement. NCEA Level 3 is gained by achieving 80 credits, of which 60 must be at Level 3 or higher and the remainder at Level 2 or higher.

While the NCEA and its standard-based system of assessment has now won wide acceptance, the system received much criticism at its initial stage. The points of criticism included the consistency of results across years, the credibility of SBA and the possible bias in external examination papers. In 2004, after heated debates on inter-subject and inter-year variability in the NCEA results, a number of enhancement programmes and research were initiated. For instance, the New Zealand Qualifications Authority (NZQA) conducts quality assurance checks on a sample of assessment decisions of the school-based (internal) assessment, and if necessary, provides assistance to schools for improving their assessment practice.

Regarding dissemination of assessment results, NZQA provides school reports to principals on how effectively assessment is managed in each subject area in their school. NZQA also advises schools on steps to be taken for improvement purposes. In turn, schools are to report back on the measures taken to improve their internal systems. In subsequent years, NZQA, based on these school reports, is able to decide to take heavier or lighter samples from individual schools or subjects within a school. Sanctions will be in place for schools which show no improvement. Such sanctions include the removal of accreditation in some or all of their subjects. In accordance with New Zealand's official information legislation, final moderation reports, including actions planned by schools to rectify any problems, are likely to be made public (Chambers, 2010).

This emphasis on the use of assessment for improving learning and teaching was further enhanced in the 2007 version of the New Zealand Curriculum (Ministry of Education, 2007). In describing what constitutes good assessment practice, the document states that effective assessment benefits and involves students, supports teaching and learning goals, is planned and communicated, is suited to the purpose and is valid and fair (Ministry of Education, 2007, p. 40, cited in Crooks, 2010, p. 444).

## ***SBA in Singapore: Improving Teachers' Assessment Literacy through Professional Development***

Singapore has adopted an official policy of assessment for learning and encouraged teachers to experiment with different forms of SBA. The case of Singapore illustrates not only using SBA to strengthen the validity of public examinations, but also to support teaching and learning.

In Singapore, as in many other East Asian countries with high-stake public examinations, teachers are generally pressured to teach to the test and preoccupied with preparing students for these examinations. To illustrate the problem, Koh and Luke (2009) pointed out that the majority of classroom assessment tasks/assignments were not highly intellectually demanding. They did not require students to demonstrate deep understanding of subject matter, nor application of advanced concepts and skills or making connections to the real world.

There has been a movement towards educational reform and innovation in response to the issue. "Thinking Schools, Learning Nation" (Goh, 1997) and "Teach less, Learn More" (Lee, 2004) are two such initiatives. Under these initiatives, a series of curriculum and assessment innovations have been developed, including: Interdisciplinary Project Work (IPW), Strategies for Active and Independent Learning (SAIL) and Science Practical Assessment (SPA). The Centre for Research in Pedagogy and Practice conducted several intervention studies to examine teachers' classroom practices, and one of them was to what extent and how the new forms of assessment, such as the authentic assessments, affect students' learning and performance (Koh, 2011).<sup>8</sup> The authentic assessment intervention was designed to improve teachers' assessment literacy through a two-year sustained professional development programme with a group of primary school teachers. The design and rubric of the intervention was adapted from

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<sup>8</sup> Before the intervention, results from stock taking indicated that teachers generally lack professional knowledge and skills about authentic and formative assessment, that is, assessment literacy among teachers was low. Moreover, teachers of most subjects tended to place more emphasis on the teaching and assessing of factual knowledge and procedural skills. The majority of classroom assessment tasks required only a limited understanding of subject matter knowledge and little higher-order thinking. Therefore, the majority of student work demonstrated high levels of regurgitation and reproduction of factual and procedural knowledge. In fact, there was a strong and significant correlation between the quality of teachers' assessment tasks and the quality of student work.



Newmann's "authentic intellectual quality" framework<sup>9</sup> and applied to the primary level (P5), covering the school subjects of English language, mathematics, sciences and Chinese language. After the intervention, teachers' capacities were found to have improved, and they were able to better make use of the programme input in designing high-quality classroom "assessment tasks" and in using reliable and valid "scoring rubrics" for assessing student work (Koh and Luke, 2009). It was suggested in the seminar that improving teachers' assessment literacy through sustained, ongoing professional development is achievable and essential.

The experiences of New Zealand and Singapore show that while SBAs are useful for the education system, assessments of SBAs are also needed as shown in the case of New Zealand. However, as discussed elsewhere in this paper, countries should be cautious in the number of assessments that they undertake. SBAs are in no doubt vital and important tools for administrators and policy makers, but countries should be mindful in streamlining all assessments when and where possible to limit any possible effects from over-assessment.

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9 Newmann's framework stresses teaching that promotes student production of authentic intellectual work via meeting intellectual demands of contemporary work, citizenship and personal affairs, minimizes problems of traditional curriculum and pedagogy (fragmentation of meaning, intellectual powerlessness and common set of intellectual demands) and stimulates professional community among teachers. For more information, see Newmann and Associates (1996).

## **Section 6:**

# **International Assessments**

International assessments are gaining prominence worldwide by providing a comparative perspective in assessing school performance in a global context. As Postlethwaite and Kellaghan (2008) stated: “International assessment[s] . . . can provide data for individual countries to carry out their own within-country analyses in what becomes, in effect, a national assessment” (p. 28).

### ***Trends in International Assessment***

Two notable organizations that administer international assessments are the International Association for the Evaluation of Educational Achievement (IEA) and the Organisation for Economic Co-operation and Development (OECD).

IEA has a long history in conducting large-scale international assessments and comparative research in education dating back to 1958. The target populations of the IEA evaluation are generally fourth-grade and/or eighth-grade students. Its general survey model is mainly curriculum-based and class-related that includes information from teachers and school principals and on the intended curriculum, implemented curriculum and achieved curriculum in mathematics and natural sciences (Trends in International Mathematics and Science Study, TIMSS) and reading (Progress in International Reading Literacy Study, PIRLS). The current concern of the IEA survey also extends to learning processes inside and outside the classroom. IEA also conducts surveys on learning outcomes beyond academic achievement such as civic literacy (International Civic and Citizenship Education Study, ICCS) and computer literacy (International Computer and Information Literacy Study, ICILS).

The OECD has also initiated a number of international educational assessment projects: PISA (Programme for International Student Assessment), PIAAC (Programme for the International Assessment of Adult Competencies) and AHELO (Assessment of Higher Education Learning Outcomes), with different sampling targets, assessment approaches and purposes. Sampling age ranges from 15-year-olds to 64-year-olds and school level ranges from secondary to higher

education (Schleicher, 2010). Multilevel surveys cover parents, teachers, school administrators and sometimes policy makers in addition to students. The general assessment model is based mainly on functional literacy beyond curriculum-based and focuses on the application of knowledge in solving daily-life problems.

In an information and digital age, it is inevitable that the processes of education will need to accommodate the growing reliance on information and communication technologies (ICT). Both the OECD and IEA recognize that the assessment process will have to cope with the trend and will need to develop ICT-based assessment. For instance, OECD/PISA started the electronic assessment for mathematics in PISA 2003, for natural sciences in PISA 2006 and for reading in PISA 2009. It is also planned to change the format of assessment in all of these domains to electronic form in 2015.

Furthermore, there is a growing trend in education to align curriculum to go beyond traditional academic subject areas such as languages, mathematics, sciences, etc. Although many countries have been and are teaching such subject areas as civics and citizenship, assessments in this regard have been limited with few exceptions. Box 4 highlights the Republic of Korea's case in monitoring beyond academic achievement with its involvement in the ICCS in 2009.

### ***Benefits from Participation in International Assessment Studies***

Countries would benefit from participating in international assessment projects in various direct and indirect ways (Schleicher, 2010). International assessment studies can help countries to develop a more comprehensive and sophisticated educational monitoring system. The results from an international survey provide a baseline profile of the knowledge and skills of students from an international perspective. Over several survey cycles, a longitudinal database can be established for examining the trend of student performance. A longitudinal study is particularly essential for informing policy makers about the impact (or the lack of impact) of implemented education reforms.

#### Box 4: The Case of the Republic of Korea: Monitoring beyond Academic Achievement

The Republic of Korea participated in the ICCS in 2009. The survey collected data from over 140,000 Grade 8 students, 62,000 teachers and 5,300 school principals in 38 countries between October 2008 and June 2009 (Ainley et al., 2010). The ICCS assessment framework is organized around three dimensions: (1) the content dimension specifying the subject matter to be assessed within civics and citizenship with regard to affective-behavioural and cognitive aspects. The four content domains are: civic society and systems, civic principles, civic participation and civic identities; (2) the affective-behavioural dimension describing the types of student perceptions and activities measured. The four affective-behavioural domains are: value beliefs, attitudes, behavioural intentions and behaviours; and (3) the cognitive dimension describing the thinking processes to be assessed which comprises two cognitive processes: knowing and reasoning (analyzing).

In particular, ICCS 2009 assessed not only civic knowledge but also civic engagement, which covers the following aspects: students' self-belief, student engagement in communication about political and social issues, student participation in civic activities outside the school, student participation in civic activities in their own schools and students' expected political participation in the future (Schulz et al., 2010, p. 115).

Results of ICCS 2009 indicated that Korean students performed very well in civic knowledge, scoring 565 and ranking in the top 4 among 38 participating countries. Yet T. Kim (2010) pointed out that Korea's concern was not only about the intellectual domain but also the attitudinal and motivational domain of the assessment of civic and citizenship education. T. Kim (2010) emphasized that Korean students' self-concept in politics was found to be below the international standard. Civic participation of Korean students at school (scored 45) and in the wider community (46) and students' expected participation in future political manifestations (45) are also significantly lower than the international average of 50. The Republic of Korea hopes that it can prepare its students for global citizenship, which requires a balanced development of knowledge and attitudes, which in turn are manifested in their participation in local as well as global contexts.

Network building is an indirect benefit in participating in the international assessment studies in that countries with a common interest in monitoring student learning outcomes and school performance can share their experiences and learn from each other. The KEDI-UNESCO Bangkok Joint Seminar itself has also facilitated collaboration among academics as well as among policy makers whose interest is in assessment design or reform strategies.



The findings from each cycle of study often times fuel debates among stakeholders as to how to direct educational reform. For instance, Hanushek and Woßmann (2007) conducted a secondary analysis of the data from TIMSS and PISA to examine the role of education quality in economic growth. They found that the test-score measure features a statistically significant effect on the growth of real gross domestic product (GDP) per capita in 1960-2000 even after controlling for the initial level of GDP per capita and for years of schooling. In their recent report on “The High Cost of Low Educational Performance”, they argued that quantity of education as measured by years of schooling does not make a significant difference on economic growth. However, quality of education, as measured by the PISA literacy scores, can have an impact on economic growth. As such, Hanushek and Woßmann’s findings showcase how assessments and their results can be used for research and cross-sectorial studies.

Although international assessments contribute to the monitoring of education systems in significant ways such as delineating the relationship among inputs, processes and outcomes and informing educational target setting, countries — which could be at various stages of socio-economic development — utilizing concepts and approaches from international assessments should re-think the relevancy of the seemingly universal set of skills and competencies to their own needs. This issue will be addressed in the last section.

## **Section 7:**

# **Major Findings and Implications for the Future**

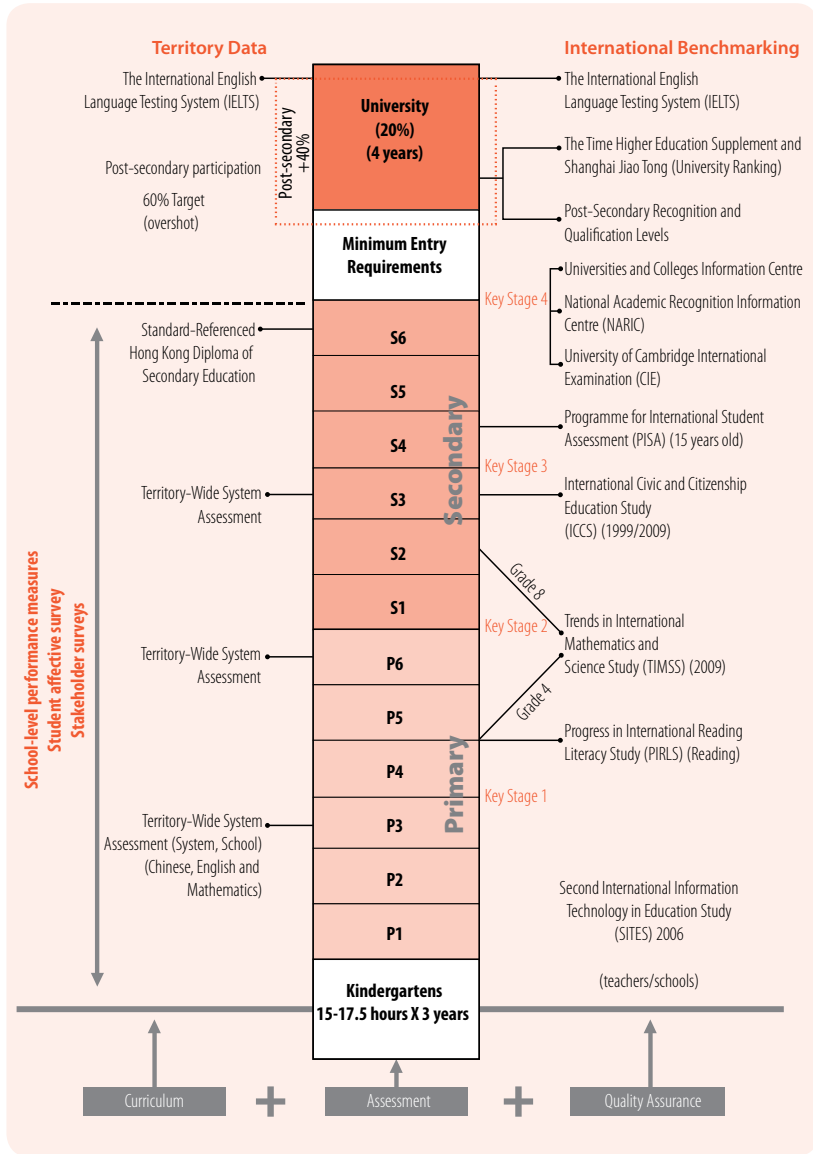
This section discusses the major findings from this report as well as implications for policy makers and countries in general. In particular, the trend towards a systematic approach to monitoring, lessons learned from national assessments (NAs), examinations and international assessments and emerging and common challenges within developing countries in the region will be discussed.

## ***Regional Trend in Monitoring Systems in Education: Multilevel Approach***

Since 2000, there has been a growing interest in measuring students' learning outcomes and their achievement levels through assessments of various forms (Froumin, 2007; Van der Gaag and Adams, 2010). The focus of monitoring has shifted from system input (i.e. infrastructure and learning materials, teacher supply and qualifications, etc.) to system output (i.e. the concrete learning outcomes of students, which comprise the knowledge, skills, behaviour and attitudes needed to succeed in adult life). The outcome-based or competence-based approach to education expanded the scope of assessments beyond the hard skills of knowing "what" and knowing "how" to soft skills; some examples of which are: clear communication, critical thinking, problem solving in real life, collaboration within heterogeneous groups, creativity and innovation, information literacy and technology literacy (ATC21S, 2009; DeSeCo, 2003; Froumin, 2007).

Many countries, including the ten countries/jurisdictions that participated in the seminar, adopted a systematic approach to monitoring students' learning outcomes and school performance (e.g. Hong Kong (China), Japan, Republic of Korea, New Zealand, Shanghai (China) and Singapore). Take Hong Kong (China) as an example (See Figure 1). The jurisdiction has struggled to build a system where assessment of learning (AOL) is used for reporting, selection and accountability to balance with assessment for learning (AFL) which is mainly used for monitoring educational improvements (James, 2010). At the international level, Hong Kong (China) has participated in a number of international assessment studies including PIRLS

**Figure 1: Multilevel Approach for Monitoring: Hong Kong Education System**



(Primary Grade 4 students), TIMSS (Primary Grade 4 and Secondary Grade 2), ICCS (Secondary Grade 3) and PISA (students of age 15). At the local level, Hong Kong (China) has the Territory-wide System Assessment (TSA), an assessment for all students at P3, P6 and S3, and the new local public examination, Hong Kong Diploma of Secondary Education (HKDSE) Examination, will be implemented in 2012 for S6, the final year of the New Senior Secondary System. SBA will then be integrated into most of the 2012 examination subjects.

Therefore, teacher assessment at the classroom level is to cover a wider range of curricular outcomes that could not be assessed in territory-wide public examinations. At the school level, all schools are to conduct a student effectiveness survey and stakeholder surveys for parents, teachers and school administrators. Over twenty performance indicators are generated from these surveys. In addition, the Education Bureau of the Hong Kong (China) Government constructed value-added measures of school academic performance. Results of all these academic and non-academic indicators have been reported to schools annually since 2000.

Other countries/jurisdictions are in search of synergy and complementarity among system-wide, school-based and classroom-based assessments for both formal and informal education (e.g. Cambodia, Mongolia, Pakistan, the Philippines and Shanghai (China)). For instance, the Philippines envisions to monitor the functional literacy (FL) of learners and seeks to recognize and accredit the basic competencies of both in-school and out-of-school learners. Their reformed assessment looks into the FL of the general population beyond the basic education school learners.

In sum, countries show a tendency towards adopting a multilevel approach in establishing their education monitoring systems. In the case of Hong Kong (China), however, there may be a need to streamline assessments so as to limit the number of assessments and the workload given to teachers and other stakeholders in this regard. More mature systems attempt to balance classroom and school-based assessment for formative purposes with the national or territory-wide assessments and examinations for summative goals so that the legitimate demands for improvement, accountability and accreditation can be met.



## ***Lessons Learned from National Assessments, Examinations and International Assessments***

Evidence from the ten participating countries/jurisdictions indicate that NAs contribute to educational policy and practices in several ways: (i) taking stock of the condition of the current education system; (ii) providing timely information for reviewing the impact of reforms and interventions; (iii) informing the direction of curricular reforms and resource allocation and (iv) identifying aspects of the education system in need of support. Moreover, the dissemination and discussion of results with stakeholders can also enhance accountability (Postlethwaite and Kellaghan, 2008).

High-stake national/public examinations have always been criticized for the high pressure that they place on students and the possibility of distorting the nature of teaching to “teaching to the test”. The introduction of SBA constitutes one strategy for reducing examination pressure. The current practices commonly combine national/public examination with school-based assessment in a way to enhance the reliability and validity of public examinations (Hill, 2010). In more mature assessment systems such as that of New Zealand and Hong Kong (China), national/public examinations and SBA are seen as two complementary systems to define the qualification of secondary education. However, establishing SBA may also add an extra burden on teachers and students who are already overloaded with tests and examinations. Moreover, little has been done to examine to what extent and how SBA can be used more effectively to improve teaching and learning and to promote teachers’ professional development. An empirical study conducted by Cheung and Yip (2004) in Hong Kong (China) pointed out that even experienced educators implementing SBA have difficulty in providing students with formative feedback for complementing the summative public examinations and using SBA as a catalyst for enriching the science curriculum in schools.

When utilized tactically, international assessment can contribute to monitoring student and school performance at the national level in several significant ways: (i) it helps countries to re-define student learning outcomes beyond traditional academic achievement; (ii) it helps benchmark national performance against international standards and (iii) it facilitates the transfer of technology of assessment such as

the rigorous process of item design, representative sampling and advanced statistical analysis.

Over the years, major international assessment projects such as PISA, TIMSS and PIRLS have created important impacts on educational systems worldwide. They influenced the development of national assessment practices in many countries, as well as pedagogy, teacher training and funding in some countries. Yet, caution needs to be taken to avoid the techniques originally tailored for these international assessment exercises dominating local assessment practices, particularly in the case of developing countries. As Van der Gaag and Adams (2010) warned: “These measurement instruments that were developed for industrialized countries often exhibit ‘floor effects’ when used in developing countries...possibly due to either the extreme difficulty of the test or the lack of local relevance of the exam content” (p. 5).

### ***Emerging Challenges for Developing Countries and Assessment Reform***

Countries appear to share common challenges in building their monitoring systems, especially for developing countries trying to establish a sustainable assessment system, including the stability of funding sources, capacity building in management and technical skills, institutionalization of monitoring systems and dissemination and use of assessment results.

Emerging monitoring systems such as Cambodia and Mongolia voiced their needs for stable sources of funding in developing a comprehensive NA system of their own. Even with funds regularly budgeted, ownership and capacity building are still major challenges in these countries when they attempt to engineer an assessment system that can meet national needs and cope with the national context.

In addition, there is the challenge of capacity building in management and technical skills for monitoring educational processes and outcomes. Countries need to train national experts and professionals and build infrastructure to operate the rigorous assessment processes. For instance, Cambodia has trained a team of item writers. However, it still lacks expertise in writing related documents and reports for dissemination. As for Pakistan, NEAS needs expertise to improve test

instruments and to enhance technical skills so that it can improve the efficiency of the education system, track the trend of student performance and identify key areas for intervention.

The institutionalization of a monitoring system is also a challenge. The sustainability of a monitoring system depends not only on the establishment of an autonomous body of assessment, but also on the degree of integration between this body and the existing national and sub-national assessment centres and systems. Mongolia, Cambodia and Pakistan also pointed out their needs to establish an institutional infrastructure with clear and coherent policy on systematic review of assessment and accountability so that different levels of assessment results can be sufficiently used to inform and regulate curriculum reform policies and practices aligned with national and international standards. Additionally, the current assessment reform of the Philippines extends the monitoring system beyond formal basic education to that of the alternative learning system, which provides a crucial avenue to assess not only the academic performance of school learners, but also the functional literacy of all learners regardless of whether they are in or out of schools (see Box 5).

A last challenge is that of the dissemination and use of assessment results. Results of assessment at school, national and international levels should be used more effectively by decision makers and stakeholders. As the Cambodian representatives to the seminar suggested, results of their NA should be better used by the Ministry of Education to inform their policy-making as well as by teachers and schools to improve their practices. Most of the participants also agreed that the dissemination of assessment findings to the general public should be in a more comprehensive manner; stakeholders should be more involved in the dissemination process and the substance should provide directions for policy makers and educators as well as feedback from all stakeholders to policy makers.

## Box 5: The Case of the Philippines: Functional Literacy in Formal and Alternative Learning System

The Philippine education system includes both **formal and non-formal education**. The Department of Education handles both *formal basic education* (FBE) and the *alternative learning system* (ALS). FBE is a sequential progression of academic schooling at three levels: six years of elementary, four years of secondary and then tertiary (college and graduate levels). ALS is responsible for out-of-school youths and adults through its Bureau of Alternative Learning System (formerly Bureau of Non-formal Education).

Both the FBE and the ALS curricula emphasize the five learning areas of “Functional Literacy” (FL), namely: (1) communication skills; (2) problem solving and critical thinking; (3) sustainable use of resources/productivity; (4) development of self and sense of community and (5) expanding one’s world vision. These five areas have been anchored on the four pillars of education, which were discussed in the Delors Report: learning to know, learning to do, learning to live together, and learning to be. A total of 49 indicators have been constructed to measure FL.

### Reform Effort and New Trends for Quality Assurance

The Medium-Term Philippine Development Plan (MTPDP) for 2004-2010 is the Philippines’ blueprint for growth and development and for breaking the vicious cycle of poverty. The National Educational Evaluation and Testing System (NEETS) was established to achieve the MTPDP targets on basic education. NEETS serves as the assessment and testing agency for all levels of education. It is also the central authority of quality assurance based on the Philippine National Qualifications Framework (PNQF). NEETS also aims to promote external quality assurance for universities and the awareness of all institutions in order to instill a culture of quality.

### Learning from the Philippines Assessment Reform

The two representatives from the Philippines pointed out in the seminar that the monitoring system was lacking harmonization among the various levels of assessments (Imperial and Vargas, 2010). The old system limited the use of results to sanctions, whereas the new system attempts to align assessment with learning goals. The old system is largely summative, and tests are limited to a paper-and-pencil modality (especially a multiple-choice format), whereas the new system is more formative and emphasizes assessment for and as learning by using authentic and performance assessments. The old system has large disparities between assessments of FBE and ALS, whereas the new system facilitates the convergence of the two sub-systems. Moreover, there was a marginalizing effect in using foreign language for testing in the old system, which will be addressed in the reforms where students in primary grade levels will be tested in their mother-tongue language.

In sum, as many emerging/established assessment systems are transforming to more established/mature ones (Clarke, 2011), the Philippines envisions assessments to be localized for student learning according to the unique learning environment of the learner in the country. They focus on the functionality of learning regardless of where learning occurs (in school and out of school). The reformed assessment looks into FL of the general population beyond FBE. It seeks to recognize and accredit basic competencies of both in-school and out-of-school learners and looks for synergy and complementarity between system-wide and classroom-based assessments in both FBE and ALS.



## **Section 8:**

### **Limitations and Further Investigation**

It is important to be aware that the assessments discussed in this paper draw mainly from the reports and presentations made for the 2010 seminar jointly organized by UNESCO Bangkok and KEDI. Furthermore, the paper focuses mostly on standard forms of assessment including international and national assessment, national examination and school-based assessment. Alternative forms of assessments, which are more likely to have direct impact on teaching and learning and for school improvement, have also been gaining attention. This includes: portfolio assessment, teacher-developed test and student assessment and homework. In fact, results from PISA 2009 indicated that about 98 per cent of schools reported that student assignments and homework are used as one of the measurements for school-based assessment. About 97 per cent of schools reported using teacher-developed tests and 76 per cent of schools reported using portfolio assessment in OECD countries.

It is also worth mentioning that the use of assessment results at the school level should be further investigated if the ultimate goals of a monitoring system are accountability and school improvement. As reported in a recent OECD (2011) report on “Strong Performers and Successful Reformers in Education”, it is common for schools to use assessment results for: benchmarking and informing stakeholders; making decisions for school improvement and monitoring the performance of teachers, principals and schools overall.

Further investigation using PISA 2009 indicates that for benchmarking and informing, nearly all schools reported that they used assessment results to “inform parents about student progress”, that is an average of 98 per cent across OECD countries and similar percentages across the strong-performing countries listed in Table 1. About 77 per cent of OECD countries also use the results “to identify aspects of instruction and curriculum improvement”, though 83-98 per cent of strong-performing countries do so. It is thus obvious that strong-performing countries are more likely than the OECD average to use evidence of assessment to make decisions for school improvement.

In sum, understanding the various forms of assessment in different countries might be the first step for the establishment of a comprehensive monitoring system. To move towards improving the quality of education, further investigations are needed to study how strong-performing countries utilize assessment results to inform stakeholders, to support decision making in instruction and to monitor teachers, principals and schools. Assessments, as used tactically in strong-performing countries, could be cost-effective tools to drive educational improvement.

**Table 1: Use of Assessment Results across Selected Countries that Participated in PISA 2009 (Percentage reported by principals)**

	OECD average	Hong Kong (China)	Shanghai (China)	Republic of Korea	Japan	Singapore	New Zealand
<b>Benchmarking and Information purposes</b>							
1. To inform parents about their child's progress	98	99	92	95	100	100	99
2. To compare the school to national/ sub-national performance	59	36	69	78	24	95	94
3. To compare the school to district performance	53	34	60	75	22	93	92
4. To compare the school with other schools	46	22	64	62	20	82	83
5. To benchmark students to national or sub-national population	52	14	47	79	84	88	78
6. Posted publicly	37	48	1	4	33	89	78
<b>Decision making that affects schooling</b>							
7. To identify aspects of instruction or the curriculum that could be improved	77	97	97	88	83	97	98

Table 1 (continued)

	OECD average	Hong Kong (China)	Shanghai (China)	Republic of Korea	Japan	Singapore	New Zealand
8. To make decisions about students' retention or promotion	76	99	46	37	91	88	77
9. To group students for instructional purposes	51	80	43	78	42	95	91
10. Used in decisions about instructional resource allocation to the school	32	49	34	4	39	72	68
<b>Monitoring teachers, principals and schools</b>							
11. To monitor the school's progress from year to year	76	95	86	83	61	99	97
12. To make judgment about teachers' effectiveness	46	76	83	66	78	85	61
13. Used in evaluation of teachers' performance	43	55	80	24	45	41	48
14. Used in evaluation of the principal's performance	33	17	45	9	28	63	50

**Note:** Selected countries are those which participated in the seminar.

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# Student Learning Assessment

This booklet was prepared as part of UNESCO Bangkok's programme on quality of education, which focuses on issues of curriculum, pedagogy and assessment.

The booklet, drawing largely from the proceedings of the "KEDI-UNESCO Bangkok Joint Seminar on Monitoring Student Learning Outcomes and School Performance" held in Seoul, Republic of Korea, 12-15 July 2010, provides an overview of assessment practices in the Asia-Pacific region, including national/sub-national assessments, public examinations, school-based assessment and international assessments. Drawing upon the experience of various countries, the need for a comprehensive, multilevel monitoring system is highlighted as a critical factor for better evaluation of educational quality in the Asia-Pacific region.



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