Mapping national assessments

With a new set of global development goals on the post-2015 horizon, the education community has been working to shift the focus and investment in education from universal access to education to access *plus* learning. Since 2012, this movement has been spearheaded and formalized through the Learning Metrics Task Force (LMTF), which set out to define what it is that students around the world, regardless of their cultural background and their country's level of economic development, should know and be able to do by the time they finish school. Through a broadly inclusive process that brought together education stakeholders from many countries, LMTF proposed a global framework of seven key learning domains deemed important for the educational experience of children in all countries. These domains are:

- Literacy & Communication,
- Numeracy & Math,
- Science & Technology,
- Social & Emotional Learning,
- Culture & the Arts,
- Physical Education, and
- Learning Approaches & Cognition.

This set of seven domains represents the spectrum of skills and competencies that LMTF stakeholders felt were important for their students and new generations of their citizens to possess, and that were already present, in some form, in their education systems. This was an important first step of bringing learning front and center on the global agenda, and charting common ground among seemingly incomparable systems. Since late 2014, 15 education systems from around the world became LMTF Learning Champions, bringing the challenge of the global learning agenda and applying it to their national curricula and assessment systems. By the end of 2015, they have pledged to advance the development of new standards and assessment frameworks to ensure coverage of key learning domains.

In this policy brief, we take a step back and examine the "known universe" of national assessments, and set the baseline of what is being assessed — and emphasized — by national education systems before the global learning agenda is set.

Charting the Map of Student Assessments: the NLAMP Project

To map the landscape of national assessments and understand the ways in which the seven LMTF domains are reflected in the current priorities of national education systems, FHI 360's Education Policy and Data Center (EPDC) launched the National Learning Assessment Mapping Project (NLAMP). Using publicly available data sources, NLAMP collected national assessment metadata from 125 countries from all six regions of the world, and created a database of over 300 assessments, categorizing their subject focus areas, which learning domains they fall in, and at which point in the schooling cycle they are administered. We subsequently analyzed global patterns in what is being measured, thereby creating a current snap shot to serve as a baseline from which to assess the LMTF's progress. The results of this analysis are presented in this policy brief.

Methodology

For the NLAMP project EPDC selected 125 countries from six regions of the world[1] and reviewed publicly available meta-data on standardized exams and assessments administered at the national level from primary to upper secondary school. Data sources included the 2010-2011 International Bureau of Education (IBE) World Data on Education, national education policy documents from the IIEP Planipolis portal, and national Ministry of Education and student examination agency websites. With the goal of providing the most recent information possible, the mapping project only considered assessments implemented from 2004 onwards. Where information on high-stakes exams (exit and entrance exams) existed for multiple years, only the most recent year of the exam was included in the review.[2]

We began with an initial scoping, where all assessments in the target countries were identified and listed. In the second stage, we examined whether information was available on which subject matters were tested and if so, which learning domains were covered in each case. In the process of mapping the subjects tested in each of the assessments to the LMTF learning domains, we referenced the definition and subdomains for each competency proposed by the LMTF Report. In cases where subjects seemed to fall within multiple domains, we used discretion in assigning those subjects to certain learning domains, ensuring consistency across the mapping exercise. Table 1 shows which content areas assessed in national examinations were assigned into each LMTF domain.

Some exams offer students the liberty of choosing from a list of optional subjects in addition to compulsory exam subjects. This is especially common for exams at the upper secondary level as it is often at this stage that

Table 1. Classification of content areas into LMTF learning domains used in NLAMP mapping

LMTF DOMAIN	CONTENT AREAS TESTED
Literacy & Communication	Reading, Literacy, Language Arts
Numeracy & Maths	Math, Accounting
Science & Technology	Physics, Chemistry, Geography, Economics and Business Studies, Agriculture and other Skills-Oriented Subjects, Entrepreneurship
Social & Emotional	Religion, Citizenship or Civic Education
Culture & the Arts	History, Social Studies, Philosophy, Music, Art
Physical Well-Being	Sports, Physical Education, Health and Nutrition
Learning Approaches & Cognition	Critical thinking and Analytical Skills, Cognitive Skills, Problem Solving, Quantitative and Qualitative Reasoning

1. The majority of the countries are low-income and lower-middle income countries; and the six regions are: East Asia & the Pacific, Europe & Central Asia, Latin America & the Caribbean, Middle East & North Africa, South Asia, Sub-Saharan Africa.

2. Different from high-stakes exams, all national large-scale student assessments implemented between 2004 and the present were recorded when information was available.

students enter different academic streams. In these cases, *EPDC documented all available subjects* as well as the corresponding learning domains covered by the exams; in reality however, students are only tested in a fraction of all the learning domains of the exams.

We distinguished assessment by type: *high-stakes exams*, including primary and secondary school exit exams and college entrance exams, and *low-stakes*, often sample-based *national assessments*. The national low-stakes exams are designed to provide generalized information about the state of learning outcomes in a given country, but carry no personal stakes for the student taking the exams. High-stakes exams, by contrast, are census assessments required for completing a given level of schooling or gaining admission to the next level.

In the initial stage, we identified 403 national-level learning assessments from 105 countries. Out of this number, 307 assessments from 85 countries had information available on the subjects tested, which formed the basis of the

LMTF learning domain mapping analysis. Among the 307 assessments, 171 (55%) were high-stakes exams.

Because data availability is uneven across countries, the findings presented by NLAMP reflect the varying degree of information availability and inevitably over-represent exam practices from countries with more public information on national exam systems.

N-LAMP examined an expanded universe of assessments

Although the LMTF proposed learning domains are meant for students at primary and lower secondary education, NLAMP surveyed exams and learning domains at upper secondary level as well. The LMTF rationale for limiting the recommendation to lower secondary level is that students experience diverse areas of specialization at upper secondary level — indicating a comprehensive range of learning domains may be incompatible with education experiences at this level. In reality however,

Table 2. Scope of the NLAMP project

REGION	NO. OF COUNTRIES	NO. OF ASSESSMENTS
East Asia & Pacific	8	21
Europe & Central Asia	8	17
Latin America & Caribbean	23	116
Middle East & North Africa	12	36
South Asia	7	30
Sub-Saharan Africa	27	87
Grand Total	85	307

countries seem to expect students to master a wider — not narrower — range of learning domains as they progress through schooling levels, and it is at the upper secondary level that exams cover the most number of learning domains. Consequently, the seven LMTF learning domains may be just as relevant for upper secondary as for primary and lower secondary schooling.
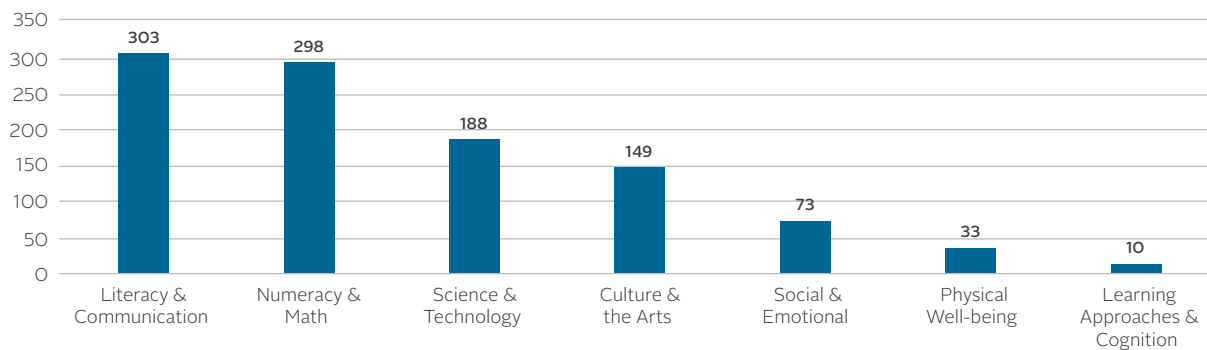
NLAMP Findings

We present the key findings of the NLAMP project below. Since we collected data from publicly available resources, these findings to a large extent reflect the countries' openness in sharing information on national-level learning assessments. While some countries publish and widely disseminate comprehensive information about their national assessments that includes exam content, many do not have exam information readily available through public sources. With that in mind, the findings represent the "known universe" of assessments, which will continue to expand as we obtain more information about existing assessments and new assessments are introduced.

In brief, we found that learning domains beyond literacy and numeracy are assessed approximately at half the rate of these main cognitive areas. However, the number of domains tested increases with school level, and secondary students are more likely to be assessed on subjects falling in the Culture the Arts and Social Emotional Learning.

Literacy and numeracy dominate national learning assessments

As the graph below demonstrates, unsurprisingly, Literacy & Communication as well as Numeracy & Maths are the two most commonly tested LMTF domains, and are covered by almost all assessments. Science & Technology also appears in more than half of the assessments. In stark contrast are the domains of Physical Well-Being and Learning Approaches & Cognition, which are tested in only 33 and 11 assessments, respectively. The Social & Emotional domain is also uncommon, and is assessed primarily in the subjects of Religion or Civic Education, which is only tested in a few countries.

Figure 1. Number of LMTF Domains covered by National Learning Assessments (N of assessments=307)

More domains are tested at higher levels of schooling

Overall, current assessment practices are far from those recommended by the LMTF, which calls for comprehensive learning opportunities to be created across seven key domains. On average, each assessment tests knowledge in about 3.4 learning domains. As can be seen from the graph on the right, it is uncommon for an assessment to cover more than four learning domains — while 78% of the assessments cover 1–4 domains, only 22% cover more than five of the domains.[3]

It is noteworthy that while the average number of domains tested is low, the breadth of assessments expands at higher levels of schooling. The average number of learning domains per assessment increases from 2.8 at the primary level to 4.2 at the upper secondary level. It seems indicative of the increasing breadth of students' learning as they proceed to higher levels of education.

Low-stakes, mid-cycle assessments cover noticeably fewer domains than high-stakes exams

In terms of the number of learning domains tested in different assessment types, the coverage of low-stakes assessments is noticeably narrower in comparison with high-stakes exams. It seems typical that countries largely focus on students' literacy and numeracy performance in routine national learning assessments to understand their learning levels and gauge the effectiveness of the education system.
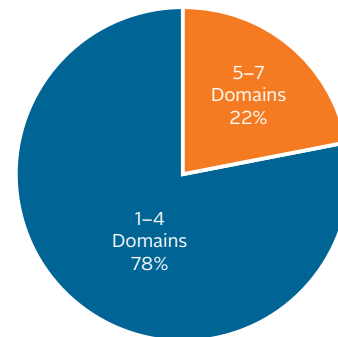
Figure 2. Domain coverage by national assessments

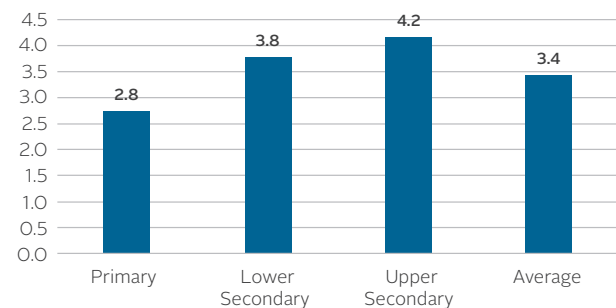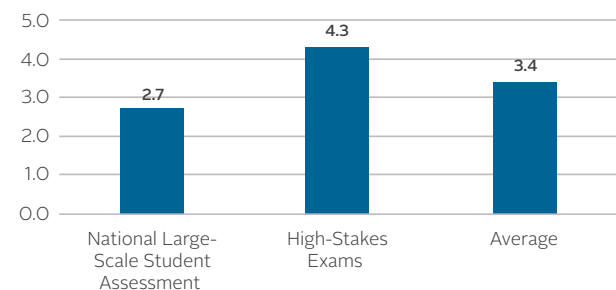**Figure 3. Average Number of Domains per Assessment by School Level**

Figure 4. Average Number of Domains per Assessment

---

3.   There is caveat though, as public information may not comprehensively reflect all the subjects covered by the assessments.

Less common LMTF learning domains are rare, but not absent

As rarely as some of the learning domains appear in national learning assessments, there are exceptions. Some countries are in fact actively placing emphasis on the less common learning domains in their exams and assessments. For example, Table 3 presents a list of assessments that explicitly seek to test skills and competencies that fall within the Learning Approach & Cognition domain.

As can be seen in Table 3, Learning Cognition is tested mainly at the upper secondary level. It is noteworthy that countries are tackling this domain from different angles, each testing varying aspects of the Learning Approaches

& Cognition domain including critical thinking, problem solving and cognitive skills. The degree of emphasis on the domain also varies — countries such as Egypt have designed a specific national large-scale assessment testing critical thinking and problem solving skills to students in grades 4, 8 and 10, while other countries may only include the domain in one subsection of their exams. In Malaysia for example, critical thinking and analytical skills are included in the "General Studies" subject in the upper secondary exit exam.

What have we learned from this process?

It is evident that the learning domains framework provides a useful lens for examining the priorities

Table 3. National assessments that involve measurement of critical thinking and problem solving skills

COUNTRY	ASSESSMENT NAME	GRADE	NATURE OF ASSESSMENT	LEARNING APPROACHES AND COGNITION TESTED
Malaysia	Malaysia Higher School Certificate(STPM)	Grade 12	Upper Secondary Exit Exam	Critical Thinking, Analytical Skills
Thailand	General Aptitude Test (GAT)	Grade 12	College Entrance Exam	Critical Thinking, Problem Solving
El Salvador	Learning and Skills Test for Graduates of Secondary Education	Grade 11	NLSA	Cognitive skills, Procedural skills
Mexico	National Upper Secondary Education Entrance Exam	Grade 9	Lower Secondary Exit Exam	Critical Thinking Skills
Bahrain	National Exam	Grade 12	NLSA	Problem Solving
Egypt	Critical-Thinking, Achievement, and Problem Solving (CAPS) Test	Grade 4, 8, and 10	NLSA	Critical Thinking and Problem Solving Skills
Saudi Arabia	General Aptitude Test	Grade 12	College Entrance Exam	Problem Solving, Inference Skills
Mauritius	General Certificate of Education A-Level	Grade 13	College Entrance Exam	Thinking Skills

placed by national governments on the types of skills and competencies of their students. First, there are many obstacles to getting a comprehensive and meaningful overview of the landscape of national learning assessments. National assessment data are not always publicly available, and it is not always possible to classify country-specific assessment information into the LMTF's seven learning domains, largely because school learning is typically structured around specific subject matter.

We must also recognize that in some cases, students may be exposed to numerous learning domains within one curricular subject — for example, they may learn important skills from the Learning Approaches & Cognition domain in the context of their reading courses. Information on national assessments will not necessarily reflect this integration. Notwithstanding this restriction, we find that even while children become exposed to a greater number of learning domains as they grow, they are seldom tested on more than four domains. The vast majority of national exit exams and standardized tests focus substantially on literacy and numeracy, while the two least-tested subjects are, unsurprisingly, those that are also the hardest to measure. This focus on basic skills and knowledge makes a lot of sense — literacy, numeracy, and content knowledge of science and social science are much easier to assess in a formal school setting than are other important skills endorsed by the LMTF, including resilience, leadership, and moral and ethical values.

These preliminary findings raise a series of questions. First, while stakeholders agree that the seven learning domains all captured important skills and competencies, what is the relative weight of each domain in a given country context? Further, are students expected to be exposed to all seven domains in their formal school settings, or are some better developed in informal settings? Finally, how can non-cognitive skills be best incorporated into the structure of formal schooling? These debates are just as important for developed countries as they are in developing nations, and indeed these are the questions that will continue to drive international discussions led by the LMTF.

Moving forward

The NLAMP project is the first attempt to "ground-truth" the framework recommended by the Learning Metrics Task Force, and examine to what extent the seven key learning domains reflect the assessment priorities of national governments around the world. In a way, our effort can be viewed as a *"baseline assessment" for the LMTF*. In February 2015, LMTF convened a global meeting of its Learning Champions — representatives of 15 education systems from around the world that took it upon themselves to push the learning agenda forward. Together, the Learning Champions will grapple with many of the questions we have posed in this brief, and eventually develop potential solutions to these challenges. There is hope that as the international dialogue around learning progresses, we will begin to see greater convergence around the seven learning domains identified by the LMTF, as well as better articulation of the types of subject matter that form the content of each specific domain.

We also hope to see a growth of reliable nationally representative formative assessments that can be linked to international and regional student achievement studies, forming a

comparative knowledge base on the skills and competencies mastered by students at different levels of their education systems. Most importantly, we hope that this process will stimulate greater information sharing and exchange of experiences, frameworks, instruments, and analytic methods among international and national educators, policymakers, and professionals working in the realm of data for education.

To access the metadata collected through NLAMP, visit http://www.epdc.org/education-data-research/national-assessments-mapping-metadata. To review the list of national assessments included in the analysis, visit http://www.epdc.org/education-data-research/list-national-learning-assessments.