Scoping paper on learning outcome assessment at primary level

CCE - Creativity Culture & Education

CREATIVITY CULTURE
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Contents

Objective

The scope of this paper is to identify relevant international assessments that allow policy makers draw a complete picture of primary students' learning outcomes.

Particular relevance will be given to projects and assessments that have already been administered at scale, and that focus on any of the areas below:

- Cognitive outcomes
- Creativity and executive functions
- Social and emotional skills
- Critical thinking
- Well-being
- Global competences

Results

In this chapter, we list all the assessments that were reviewed for this scoping exercise.

To be included in this list, assessments needed to target at least one year in the 6-12 age range and to cover at least one of the six areas of interest mentioned in the previous chapter.

Organisation for Economic Cooperation and Development (OECD)

Survey on Social and Emotional Skills
(https://www.oecd.org/education/ceri/social-emotional-skills-study/)

OECD's Survey on Social and Emotional Skills (SSES) is one of the first international efforts to collect data from students, parents and teachers on the social and emotional skills of learners at age 10 and 15. SSES assessed students in two age cohorts – 10 and 15 – that attend educational institutions located within the administrative borders 10 participating cities (from 9 countries). Data were collected from 3 000 students in each of the two cohorts. Ten-year-old students were considered the youngest who could reliably answer questions about their behaviours, thoughts, and feelings.

The study draws on a well-known framework in the field of social and emotional skills – the Big Five model – to provide a general outline of how these skills should be organised. Social and emotional skills in this model are arranged hierarchically, with five general skill categories that can be split into narrower, lower-order skills. The broad categories of the Big Five are: **openness to experience** (open-mindedness), **conscientiousness** (task performance), **emotional stability** (emotional regulation), **extraversion** (engaging with others), **agreeableness** (collaboration). Each of the dimensions or categories encompasses a cluster of mutually related social and emotional skills.

The study **also includes the so-called "compound" skills**. These skills represent combinations of two or more individual skills. For example, self-efficacy represents a combination of skills from the conscientiousness, emotional stability and extraversion categories of the Big Five. Compound skills are found to be useful for describing and understanding certain aspects of behaviour and in many cases they are shown to affect important life outcomes.

Investigations at the level of more specific sub-domains have usually provided higher predictive validity scores to studies that have remained at the level of the broad Big Five domains. Another approach that can increase predictive value of skill measures is their better contextual fit to the specific research context. In particular, rather than asking for a description of one's personality "overall" or "in general", the more specific and relevant work context is included as the frame-of-reference for the personality description, e.g. by adding a tag "at work" to items.

One important consideration for the effectiveness of interventions was what Durlak et al. termed the "SAFE" method, which means that the intervention programme was sequenced (i.e. used a "connected and coordinated set of activities to achieve their objectives relative to skill development"), involved active learning, was focused (i.e. the programme had "at least one component devoted to developing personal or social skills"), and explicit (i.e. "the program targeted specific SEL skills rather than targeting skills or positive development in general terms"). The social and emotional skill effect size for interventions that met the SAFE criteria

was a substantial .69, in contrast to the effect size for interventions not meeting these criteria which was a mere .01 (note: an effect size is a measure of the magnitude of an effect, and .20 is usually taken to be "small", .50 is moderate and .80 is large). For the relatively small number of studies that conducted follow-up assessments at least 6 months after the end of the training programme, Durlak et al. (2011) found a significant, but reduced, effect size of .26 for SEL skills. Thus, the treatment effect persisted, but its reduced magnitude suggests that social and emotional skill development should be a continuing effort in schools. Sklad and colleagues (2012) found that, despite large immediate gains, long-term effects were small, with the average programme participant still outperforming the average non-participant by 5%.

Some social and emotional skills are a crucial pre-requisite for effective participation and performance in academic and work settings. In other words, low levels of social and emotional skills can prevent the effective use of cognitive skills while high levels further improve their use and importance (Kankaraš, 2017). On the other hand, higher levels of social and emotional skills can be particularly important for people with low levels of cognitive skills. Among the reasons for this trend is the fact that people with low social and emotional skills are much more likely to become unemployed than those with low cognitive skills.

Platform for Innovative Learning Assessments
(https://pilaproject.org/)

PILA is a not-for-profit, international collaboration project managed by the OECD that provides free and wide access to open, engaging and customisable assessments of 21st Century competences.

By pushing assessment beyond multiple choice/short answers and into more immersive formats, PILA hopes to expand the breadth and depth of insight that can be gained on what students know and how they learn. These new insights can help improve how students are assessed around the world and can inform the development of international assessment programs like PISA.

PILA collects time-stamped data on every action a student makes on the digital platform. PILA analytical models use this rich stream of information to provide live feedback to students on their performance, and to describe in the summary dashboards how students reason through complex problems and regulate their own learning. PILA experts and the research community will use fully anonymised data from PILA to advance research on applications of machine learning in education, including deep-learning predictive models.

Computational Problem Solving

Computational problem solving is the iterative process of developing computational solutions to problems. These solutions are expressed as a logical sequence of steps (i.e. programs) for others to understand and for computers to execute. Developing such solutions allows individuals to create, organise, express and share ideas using digital tools. Given the complex and ill-structured problems students will increasingly face in their everyday lives, mastering computational problem solving skills is key for them to thrive in a rapidly changing 21st Century society.

In the PILA Computational Problem Solving module, students will work through dynamic problems in open-ended digital environments where they have to interpret, design or debug computer programs in a block-based format. To ensure students have the opportunity to learn and apply concepts and skills, the assessment experiences provide learning resources and other forms of support, such as worked examples, hints, automated feedback and tutorials.

Systems Thinking

Systems thinking is the process of building an understanding of the relationship between parts of a complex system, and how these relationships create certain dynamics within that system. It can help students create a deeper understanding of why things happen a certain way, and to construct a broader perspective that informs the type of questions they ask and solutions they imagine for complex issues. The digital tools and environments offered by PILA will provide students with tangible opportunities to examine the interdependencies and ever-changing variables that are characteristic of real-life phenomena, assessing their ability to understand and model how those work.

Measuring What Matters for Child Well-being and Policies

The report assesses and reviews the current state and availability of cross-national data on child well-being. Using an in-depth review of research evidence on child well-being and development as its starting point, this framework sets out which aspects of children's lives should be measured in order to best monitor child well-being, and in what way. It is "aspirational" in the sense that it is not guided by immediate data availability considerations, but instead by research findings. The framework also provides a data "roadmap" that can be used both to improve the use of existing child data and, in the longer term, to guide better data collection and motivate improvements in child data infrastructures.

It also provides useful summaries of dimensions and indicators included in national and cross-national child well-being measurement initiatives.

PISA creative thinking framework

While intrinsically related to the broader construct of creativity, creative thinking refers to the cognitive processes required to engage in creative work. It is a more appropriate construct to assess in the context of PISA, which assesses 15-year-olds around the world, as it is a malleable individual capacity that can be developed through practice and does not place an emphasis on how wider society values the resulting output.

PISA defines creative thinking as "the competence to engage productively in the generation, evaluation, and improvement of ideas that can result in original and effective solutions, advances in knowledge, and impactful expressions of imagination".

This definition focuses on the cognitive processes and outcomes associated with 'little c' creativity in everyday contexts. It reflects the types of creative thinking that 15-year-old students can reasonably demonstrate, and underlines that students need to learn how to engage productively in generating ideas, reflecting upon ideas by valuing their relevance and novelty, and iterating upon ideas until they reach a satisfactory outcome.

Researchers now recognise that, to some extent, the internal resources needed to engage in creative work differ by domain. While the number and nature of 'domains of creativity' remain an open question, several researchers do agree that an individual's capacity to produce creative work does not necessarily readily transfer across different domains. In particular, research has found that creativity in the arts and creativity in maths/science draw upon a distinctly different set of internal resources (e.g. knowledge, skills, and attributes).

Schools can nurture the knowledge, skills, and attitudes that students need in order to engage in creative thinking:

Cognitive skills, Domain readiness, Openness to experience and intellect, Goal orientation and creative self-beliefs, Collaboration with others, Task motivation

Students can produce different kinds of 'everyday' creative work at school, either as individuals or as part of a group, that are multi-disciplinary and extend beyond traditional subjects:

Creative expression, Knowledge creation, Creative problem solving

The competency model describes how the construct of creative thinking has been broken into three distinct facets for measurement purposes in the PISA assessment: 'generate diverse ideas', 'generate creative ideas' and 'evaluate and improve ideas'. The three facets of the competency model reflect the PISA definition of creative thinking and encompass the cognitive skills required for creative thinking in the classroom. The competency model also incorporates both divergent cognitive processes (the ability to generate diverse ideas and the ability to generate creative ideas) and convergent cognitive processes (the ability to evaluate other people's ideas and identify improvements to those ideas).

Test units are divided among four domain contexts. The written and visual expression domains involve communicating one's imagination to others, and creative work in these domains tends to be characterised by originality, aesthetics, imagination, and affective intent and impact. In contrast, social and scientific problem solving involve investigating open problems. They draw on a more functional employment of creative thinking that is a means to a better end, and creative work in these domains is characterised by ideas or solutions that are original, innovative, effective, and efficient.

International Association for the Evaluation of Educational Achievement (IEA)

Trends in International Mathematics and Science Study
(https://timssandpirls.bc.edu/timss-landing.html)

TIMSS provides important data on student achievement trends over time. Since 1995, TIMSS data have been an invaluable tool for countries to make evidence-based decisions about their education systems and policies. Countries can compare their recent results with those of previous cycles to measure growth, assess the impact of education policies and curricula, and compare their results to those of other countries. Seventy countries are planning to participate in TIMSS 2023. The TIMSS 2023 assessments will include new and engaging item formats and interactive features and scenario-based Problem Solving and Inquiry tasks (PSIs) that motivate students and capitalize on the digital environment.

Since 1995, TIMSS has been administered every 4 years. TIMSS is sponsored by the International Association for the Evaluation of Educational Achievement (IEA). The most recent TIMSS data collection was in 2019 and included students in grades 4 and 8. The next administration will be in 2023.

Thailand participated in TIMSS in 1995, 1999, 2007 (8th grade only), 2011, 2015 (8th grade only).

For fourth graders, the domains are the following: **mathematics (number; measurement and Geometry; Data) and science (life science, physical science, earth science). Both domains are investigated through the lenses of the following cognitive domains: knowing, applying and reasoning**.

Progress in International Reading Literacy Study
(https://timssandpirls.bc.edu/pirls-landing.html)

The Progress in International Reading Literacy Study (PIRLS) is an international assessment **designed to measure reading achievement at the fourth-grade level**, as well as school and teacher practices related to instruction. Fourth-grade students complete a reading assessment and questionnaire that addresses students' attitudes toward reading and their reading habits. In addition, questionnaires are given to students' teachers and school principals to gather information about students' school experiences in developing reading literacy.

Since 2001, PIRLS has been administered every 5 years. PIRLS is sponsored by the International Association for the Evaluation of Educational Achievement (IEA). The next administration should be in 2026. Thailand NEVER participated in PIRLS.

PIRLS adopted a single unified assessment based on a new group adaptive assessment design. The new design is based on having three levels of passage difficulty—difficult, medium, and easy—that are combined into two levels of booklet difficulty. More difficult booklets are composed of two difficult passages or one medium and one difficult passage while less difficult booklets consist of an easy and a medium passage or two easy passages. Each country administers the entire assessment, but the balance of more difficult and less difficult booklets varies with the reading achievement level of the students in the country. Two 40-minute units plus 30 minutes for questionnaires.

ePIRLS – administered since 2016 – assesses how well students read, interpret, and critique online information in an environment that looks and feels like the internet.

Shares of PIRLS and ePIRLS devoted to reading purposes and comprehension processes

	PIRLS	ePIRLS
Purposes for Reading		
Literary Experience	50%	0%
Acquire and Use Information	50%	100%
Processes of Comprehension		
Focus on and Retrieve Explicitly Stated Information	20%	20%
Make Straightforward Inferences	30%	30%
Interpret and Integrate Ideas and Information	30%	30%
Evaluate and Critique Content and Textual Elements	20%	20%

ICCS investigates the ways in which young people are prepared to undertake their roles as citizens in a world where contexts of democracy and civic participation continue to change. The study was first implemented in 2009 with a follow-up cycle in 2016 and one in progress for 2022.

ICCS reports on **students' knowledge and understanding of concepts and issues related to civics and citizenship, as well as their beliefs, attitudes, and behaviours with respect to this domain**. In addition, ICCS collects rich contextual data on the organization and content of civic and citizenship education in the curriculum, teacher qualifications and experiences, teaching practices, school environment and climate, and home and community support.

Mindful of the new and emerging challenges evident in today's world, the study aims to improve countries' understanding of issues such as students' role with respect to global citizenship, environmental sustainability, social interactions at school, the use of new social media for civic engagement, digital citizenship, and migration and diversity.

The study provides valuable data for countries monitoring their progress towards achieving the UN's Sustainable Development Goals.

ICCS assesses **students enrolled in the eighth grade, provided that the average age of students at this year level is 13.5 years or above**. In countries where the average age of students in Grade 8 is less than 13.5 years, Grade 9 is defined as the target population.

Thailand participated in 2009.

Association of Southeast Asian Nations – South East Asia Primary Learning Metrics
(https://www.seaplm.org/)

The Southeast Asia Primary Learning Metrics (SEA-PLM) is a regional learning assessment and capacity building programme designed by and for Southeast Asian countries to improve relevant and equitable learning outcomes for students in basic education. The assessment framework, tools, and protocols resulted from collaborative partnerships with governments and technical stakeholders, ensuring the assessment can deliver high-quality data embedded within national education systems.

Three key pillars drive the programme:

- Generate comparative data, indicators and analysis on learning outcomes and context in basic education;
- Strengthen collaboration and exchanges to improve system and school levels policy and practice in basic education;
- Promote and improve the technical capacity and the use of evidence.

First (and latest) implementation: 2019, next implementation 2024. 5000 Grade 5 students in each participating country. Thailand did NOT participate in 2019 and its participation in 2024 has not been confirmed.

Main domains: mathematics, reading and writing (rotating design, 30 minutes per domain, so 60 minutes total). Scores expressed as proficiency levels.

In 2019, it included **global citizenship framework** that distinguished between the following three content sub-domains: systems, issues and dynamics; awareness and identities; and engagement. Furthermore, these were assessed according to students' Cognitive outcomes; Attitudes and values; and Behaviours and skills (20-30 minutes).

The Australian Council for Educational Research Ltd (ACER) has been contracted to design and implement the first round of SEA-PLM assessment, SEA-PLM 2019.

Children's Worlds
(https://isciweb.org/)

Children's Worlds (International Survey of Children's Well-being) is the first global study of childhood from a child's perspective. It began in 2010 with a small, unfunded pilot project and has developed, with the Jacobs Foundation's support, to gather the views of more than 200,000 children in over 40 countries across five continents. This report presents the first findings from the third and largest wave of the study undertaken between 2016-2019, covering 35 countries with such diverse contexts as Namibia, Nepal and Norway.

Central to the project is the concept of 'well-being'. Children's Worlds focus is children's day-to-day feelings of happiness and sadness; their satisfaction with their life as a whole and different aspects of it; their feelings of safety, being cared for, autonomy, and being listened to; and their hopes and expectations for the future.

Over 128,000 children from 35 countries / regions participated in this survey in three age groups of 8, 10 and 12; reference to these ages is not an accurate reflection of children's actual age, rather to their age group. **The three questionnaires which were used in the second wave can be used freely**. If you use the questionnaires we ask you to indicate the Children's Worlds project as a reference.

Assessment of: **Overall Subjective Well-Being, Subjective Well-Being, Domain Based Subjective Well-Being, Positive and Negative Affects, Psychological Subjective Well-Being.** Those sets of questions designed to tap into three different aspects of self-reported well-being: Cognitive subjective well-being (overall life satisfaction), Affective subjective well-being (positive and negative affect), Psychological well-being. The exact wordings of the questions is provided at the end of this document. The first two measures will be included in the surveys of children aged 10 and 12 years old and the third measure in the survey of children aged 12 years old only.

Background questionnaire about The home and the people they live with, Money and things they have, Relationships with friends and other people, The area where they live, School, Health, Time management and leisure time, Self.

Thailand did NOT participate in this initiative.

CEDETI

YELLOW/RED
(http://www.cedeti.cl/investigacion-y-desarrollo/proyectos-activos/yellow-red/)

Yellow Red is a set of tests that allow the **evaluation of Executive Functions**, which are the cognitive abilities that allow us to plan, maintain, or inhibit certain behaviors, thoughts, or emotions in pursuit of an established goal.

The battery has 6 tests that evaluate different components of executive functions. The "Cat-dog" test evaluates executive functions in a general way, the "Arrows" test evaluates **cognitive inhibition**, the "Flies" test is aimed at evaluating **delayed gratification**, the "Farm" test evaluates **memory** of auditory and visual work, the "Nexos" test focuses on the evaluation of **associative pairs** and the "Trios" test seeks to assess **cognitive flexibility**. In addition, a global index of executive functions is calculated that considers all the subtests.

It is a battery that is presented through different games in tablet format, which is why it is attractive to children from 6 to 12 years of age. The test has been used for research purposes in Chile, Germany, Peru, Australia, Argentina, Norway, England and Hungary.

This is a non-language-based test.

TENI
(http://www.cedeti.cl/cedetest/tests-ninos/teni/)

TENI is a neuropsychological assessment test designed to **build profiles of cognitive strengths and weaknesses**. With this battery, the functioning of **attention, visual-spatial development, memory systems, language and executive functions** are evaluated in children from 3 years to 9 years 11 months.

TENI has a technical-interpretive manual and an administration and correction manual, which can be downloaded by clicking on their names. It is designed to be applied by speech therapists, speech therapists, psychologists, psychologists and professionals with training in neuropsychology.

TENI has been standardized with 608 girls and boys, belonging to three socioeconomic levels. Each of its scales shows reliability levels ranging from "good" to "excellent". Evidence of validity is offered from the content, the response process, the internal consistency and the relationship with external variables. It is norm oriented and has been designed with a functional modular conception of cognition.

TENI is made up of 8 games that evaluate ten components of psychological processes (Visuospatial Development, Attention, Memory Systems, Language and Executive Functions). Delivers a performance profile by role, with standardized scores. The evaluation is carried out through a tablet individually with a duration between 20 – 30 minutes. Its correction is automatic, which allows obtaining reliable results quickly.

EPOC
Creative potential can be conceptualized as an ability to produce original ideas that have value in their context. This ability can be measured in three different ways, namely by examining (a) accomplishments or (b) ingredients (abilities and traits) underlying creativity or (c) through contextualized tasks that simulate real-world creative work. The Evaluation of Creative Potential (EPoC) Battery offers **a contextualized measure of divergent-exploratory and convergent-integrative thinking processes applied in several content domains (visual art, verbal-literary, social, scientific, maths, music and body movement)**. The domain specificity of creative ability is represented by a profile of scores. Creative giftedness can be detected using this type of battery (30/45 minutes).

It includes verbal and graphic sub-tests that measure the two key modes of creative cognition—divergent-exploratory thinking and convergent-integrative thinking—in elementary and middle-school

students. It is a comprehensive evaluation tool that combines an approach to creativity by domain and by mode of thought, allowing a profile of creative potential to be assessed. The battery can be used as an efficient diagnostic tool to identify creative potential and to monitor progress, using pre-tests and post-tests, in educational programs designed to enhance creativity. EPoC is available in five languages, including: French; English; Arabic; Turkish; and German.

Human Early Learning Partnership
(http://earlylearning.ubc.ca/mdi/ - https://discovermdi.ca/)

The Middle Years Development Instrument (MDI) is a comprehensive, strengths-based measure of child well-being. This self-report survey measures children's thoughts, feelings and experiences across multiple contexts, including at school, at home, and in the community. The MDI assesses five areas of development that are strongly linked to children's well-being, health, and academic achievement: social & emotional development, physical health and well-being, connectedness, use of after-school time, and school experiences (Grades 4 to 8). MDI data are used by school systems and broader community partners, along with families and the children themselves, to work collectively toward positive change during this important transitional time in children's lives.

In British Columbia, over 75% of public school districts have participated in the MDI, as well as a number of independent and First Nations schools. Outside of BC, school districts and governments in two territories and four provinces have participated in the MDI since 2015. MDI data provide powerful information to understand and promote children's well-being and positive development in the middle years; from guiding school-level planning to contributing to provincial policy frameworks.

Part of the questionnaires are freely available.

Assessment of: **Physical Health & Well-being** (physical well-being in the areas of overall health including emotional well-being, physical activity, nutrition and sleeping habits); **Social and Emotional Development** (optimism, self-esteem, happiness, empathy, prosocial behaviour, sadness and worries), **Connectedness** (support and connection with the adults in their schools and neighbourhoods, with their parents or guardians at home, and with their peers), **Use of After-School Time** (in organized activities such as sports, music and art, as well as the time they spend watching TV, doing homework and playing video games), **School Experiences** (academic self-concept, school climate, school belonging, and bullying)

Australian Council for Educational Research (ACER)

International Schools' Assessment (ISA)
(https://www.acer.org/gb/isa/isa-program/assessments)

The ISA is designed for students in Grades 3–10 in international schools and schools with an international focus. It is based on the assessment frameworks of the OECD's Programme for International Student Assessment (PISA) and aligned with the IB curriculum. Like PISA, the ISA assesses complex higher-order thinking skills because it includes open-ended questions in Mathematical Literacy, Reading and Scientific Literacy, which require students to construct responses, for example, to explain their reasoning, to find evidence or to justify their opinion.

Assessment of **Mathematical Literacy, Scientific Literacy, Reading, and Writing Narrative and Writing Exposition** (4 hours total). Tests include multiple-choice and interactive questions, as well as a range of open-ended questions that encourage students to show their work and

explain their answers. They provide information about the students' abilities to evaluate problems, employ content knowledge, and interpret results.

Every year, approximately 90,000 students from more than 70 countries and 400 schools take part in the ISA.

Social-emotional well-being survey
(https://www.acer.org/gb/sew)

Survey your students and generate an instant and comprehensive report on a wide variety of social, emotional and behavioural outcomes. Assess the well-being of students on an annual basis and identify the social and emotional needs of student groups. SEW has been used by schools for over 15 years, by more than 700 schools since 2003. Students respond to a series of statements confidentially indicating their level of agreement on a two-point Likert scale (Agree or Disagree)

Assessment of **Overall SEW, Feelings & behaviours, and Internal strengths** (42 statements, 20 minutes to complete, from ages 3 to 18)

School life questionnaire
(https://www.acer.org/gb/slq)

Survey your students on how they feel about key aspects of their school lives, including their teachers, peers and learning. ACER's School Life Questionnaire is a survey with instant reporting so you can quickly gather the information you need to support your students.

Assessment of **General satisfaction, Negative affect, Teachers, Relevance, Success, Social integration, Enjoyment**, Years 5 & 6, 35 statements, 15 minutes

General Ability Test
(https://www.acer.org/gb/agat/assessment)

Engaging questions encourage students to think outside the box. AGAT assesses beyond the curriculum, enabling students to demonstrate their full range of abilities. Students are assessed on their ability to reason, make logical deductions, identify connections and spot patterns. The questions in the test do not require any prior knowledge from any particular content area. Students must think critically to solve simple, multi-step and non-routine problems.

AGAT 2nd edition assesses 5 reasoning strands for a comprehensive understanding of your students' general **reasoning abilities: Abstract, Kinetic, Numerical, Spatial, Verbal**.

AGAT is an online multiple-choice test suitable for 7–16 year olds. Each 50-minute test consists of 30–40 questions.

Abstract Reasoning Test

(https://www.acer.org/gb/art)

The ACER Abstract Reasoning Test assesses student ability to use **non-verbal reasoning skills**. Such reasoning is widely applicable across the curriculum, and beyond school, and is related to scholastic outcomes. Such items are particularly useful when assessments need to be done independent of language skills.

Abstract items require students to solve problems by hypothesising, identifying and applying patterns and relationships presented in diagrammatic form. Evaluation of evidence is an important element in problem solution.

Five levels of testing are available for students in Years 4–10+ and suitable for general population or gifted students.

ART is available to administer on paper with results reported via email within 10 working days (30 questions, 30 minutes).

Essential Learning Metrics (ELMs)

(https://www.acer.org/gb/elms)

ELMs is easy to use, from administering the tests to interpreting results. Assessments aligned to the National Curriculum in England. Instantly measure knowledge, skills and understanding in English and Mathematics with reliable, research-based assessments for years 2–10.

Assessment of **Mathematics** (fluency, understanding, problem solving and reasoning; multiple choice questions; 45 minutes) **and Reading** (interpret explicit and implied information and reflect on texts; multiple choice questions; 50 minutes)

Scottish Online Formative Assessments (SOFA)

(https://www.acer.org/gb/sofa)

Engaging, relevant content aligned with Curriculum for Excellence. All content used in SOFA is curriculum-aligned and appropriate for the Scottish context, producing meaningful results and valuable insights for teachers and parents in Scotland.

Assessment of **Numeracy, Reading and Writing**

Progressive Achievement assessments (PASME)

(https://www.acer.org/gb/pasme)

A set of research-based online assessment tools created by ACER to support schools using the Indian syllabus to monitor student progress and inform their teaching and learning (Grades 3-10).

Assessment of **Mathematics, Science and Reading**

Beyond Education

(https://beyondeducation.tech/)

Beyond Education proposes a scientifically validated self-reporting assessment scale: The Competency Calculator (21st Century Competence Compound Inventory (CCI-21). The Competency Calculator has a total of 36 items that allow us to verify whether and which educational programs improve 21st century competencies and enable improvement in several areas also measured by PISA. In the BE programs, we track the evolution of students' competencies by assessing their level at the beginning and end of each program.

There are 4 key dimensions that prepare students for the 21st Century, based on the Center for Curriculum Redesign. Knowledge is the dimension that is mainly developed and measured in schools. However, to prepare students for the 21st century, the other 3 other dimensions (Character, Skills, & Metalearning) are equally important to focus on.

- **Character: Mindfulness, Curiosity, Courage, Leadership, Resilience, Ethics**
- **Skills: Critical Thinking, Collaboration, Communication, Creativity**
- **Metalearning: Growth Mindset, Metacognition**

6 Interactive programs to shape your students' future

- BE Confident: Develop a positive mindset to unleash your potential
- BE Organized: Increase your productivity and efficiency.
- BE a Teamplayer: Collaborate effectively with a team to bring your dreams into reality.
- BE a Leader: Lead any cause or project in a convincing way and inspire others.
- BE an Entrepreneur: Learn how to turn problems into opportunities.
- BE a Global Citizen: Find creative solutions for both local and global issues.

More than 1 000 students sat the test already. Students' ages: (10-) 13-21 (20 minutes).

Recommendations

Based on the findings illustrated in the previous chapters, it is recommended that the following organisations are invited to the seminar to be held in Bangkok in March 2023:

	Organization	Motivation
1	Organisation for Economic Co-operation and Development (OECD)	Its Survey on Social and Emotional Skills is the world's first large-scale try at measuring social and emotional skills across different countries and would provide a wealth of data in terms of cross-country comparisons and in-depth analysis. Furthermore, its Platform for Innovative Learning Assessments could represent a highly salient stakeholder for future research proposals, as it could help devise new forms of assessment of critical and computational thinking, and of executive functions for primary school students.
2	International Association for the Evaluation of Educational	TIMMS and PIRLS are world benchmarks to assess primary school students' cognitive outcomes in mathematics, science and reading. Thailand only joined the former, and sporadically (last participation in 2015).

	Organization	Motivation
	Achievement (IEA)	IEA might also provide interesting insights about why their International Civic and Citizenship Education Study is not administered to primary school students, not to mention potential research proposals to fill this gap.
3	Association of Southeast Asian Nations (ASEAN)	Besides providing salient regional benchmarks, the SEA-PLM is one of the few surveys investigating global competence among primary students at scale. 2019 was their first survey, so they could also share their lessons learnt from the field. ASEAN's presence would immediately define the event as relevant for all regional stakeholders.
4	Children's world	The International Survey of Children's Well-being is the first international study of childhood's well-being from a child's perspective and may represent an interesting complement to other surveys looking into cognitive outcomes and socio-emotional skills.
5	CEDETI	Both their assessments represent innovative ways to look at executive functions and their components. Furthermore, none of them is language-based, which allows to straightforwardly overcome the issue of translating long survey materials.
6	EPOC	A tool focusing exclusively on creativity, which has already been used in Thailand and it has been recognised as a helpful instrument for programs designed to evaluate and enhance this skill.
7	Human Early Learning Partnership	The Middle Years Development Instrument is a comprehensive assessment of children's well-being, socio-emotional skills and other contextual factors affecting their development.
8	ACER	Their International Schools' Assessment represent an interesting concept in terms of cognitive outcomes assessment (with the ambition to represent the primary school equivalent of the OECD PISA). Some other products may also be of interest to this event, particularly the Social-emotional well-being survey.
9	Beyond Education	Despite being a young start-up in the world of education, their Competency Calculator has the potential of representing an innovative and informative tool to look into children's 21st century skills. They might be an interesting candidate in the perspective of the future research papers.