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Capturing 21st century skills

Analysis of assessments in selected sub-Saharan African countries



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Helyn Kim and Esther Care

UNESCO Education Sector

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Foreword

The Education 2030-SDG4 Agenda calls on Member States to strengthen the quality of education by equipping all learners in an equitable way with relevant skills that help them thrive in today's and tomorrow's world. Within the SDG4, the target 4.7, explicitly aims at ensuring that "all learners acquire knowledge and skills needed to promote sustainable development, including among other through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and culture's contribution to sustainable development".

The objective of this study is to shed light on how current education systems in Sub-saharan Africa are tackling the need to make education and schooling more relevant and embedded in today's world. How to ensure that education can keep up the pace of social, technological and political developments that have massively transformed societies and the labour market in the continent and worldwide? This is not a trivial question to answer as the world constantly evolves at a fast pace and not always in an orderly manner. While all UNESCO Member States that participated in this study recognize the importance of teaching those transversal, transferable and adaptable skills (referred to as 21st century skills), only a minor part of this acknowledgment is further translated into curriculum objectives or guidance and adequately integrated into teacher training programmes with new pedagogical approaches and properly evaluated. There seems to be a sort of divide between the expectations set in the national education sector plans and what happens in the classroom in terms of skills acquisition through

transformative teaching and learning. Assessment, particularly formative assessment, is an extremely powerful tool that can give the opportunity to teachers to support and correct students' learning paths and to provide individual guidance so that learning actually happens.

This study starts from the analysis of existing assessment to uncover a structural problem of education systems, which can potentially pave the way for greater alignment between curriculum, teacher training, pedagogy and assessment.

The disconnection between the vision of education and the reality of the classroom is becoming more evident with the gap between the skills required by the society and the economy for young people to integrate and perform competently in the labour force; hence to positively contribute to national development. Moving from education to employment is challenging for many young people also because, among many other reasons not discussed in this publication, the more valued type of knowledge and skills assessed based on existing curricula are outdated and do not fit within the current needs of the labour market. The nature of employment itself in the current world is changing, as are the skills that are important to thrive and succeed in today's world. Social cohesion can be built through socio-emotional skills and increasingly, policy-makers and education stakeholders are asking themselves: Does the current education system prepare students for peaceful and sustainable societies? And if the answer is "no", what can be done to reverse this situation? The answer is that education should transform itself by considering a broader approach taking into account 21st century skills into the teaching of

subject-based knowledge.

Despite facing different challenges, all the countries involved in this study represent a good sample of the current debate around the transformation of teaching and learning in the region. Sub-Saharan Africa more than any other region in the world is facing a “learning crisis” affecting the heart of its education system and this will require changing mindset and paradigm to fully embrace 21st century skills.

I wish you all a pleasant and stimulating reading, which I hope will generate a positive momentum with education policy-makers and stakeholders in Sub-Saharan African countries to consider moving away from business-as-usual learning from the existing body of evidence to engage in critical reforms necessary to leave no one behind from meaningful learning opportunities.

A handwritten signature in black ink, appearing to read 'D. Sanga', enclosed within a simple rectangular box.

Dimitri Sanga
Director of UNESCO Regional Office in Dakar

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Acronyms

| | |
|----------------|--|
| 21CS | 21 st century skills |
| BEF | Brevet d'Etude Fondamentale |
| CEPE | Certificate of Primary Elementary Studies |
| CFEE | Certificate of Completion of Elementary Studies |
| DRC | Democratic Republic of Congo |
| EGRA | Early Grade Reading Assessment |
| ERI-NET | Education Research Institutes Network |
| FCAC | Fragile and Conflict-Affected Country |
| GPE | Global Partnership in Education |
| KCPE | Kenya Certificate of Primary Education |
| MENPC | Ministère de l'Education Nationale et de la Promotion Civique |
| MoBSE | Ministry of Basic and Secondary Education |
| NEQMAP | Network on Education Quality Monitoring in the Asia-Pacific |
| OAA | Optimizing Assessment for All |
| OECD | Organisation for Economic Co-operation and Development |
| PISA | Programme for International Student Assessment |
| SEA-PLM | Southeast Asia Primary Learning Metrics |
| SNERS | National System for the Evaluation of Educational Achievement |
| TALENT | Teaching and Learning Educators' Network for Transformation |
| UNESCO | United Nations Educational, Scientific and Cultural Organization |

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Executive summary

In this publication, examples of classroom and national assessment tools used in nine sub-Saharan African countries are explored to identify if “21st century skills”¹ such as collaboration, communication, problem solving and critical thinking are demonstrated. The focus is on those skills that appear to be teachable and learnable in the formal education sector and prepare students for lifelong learning.

For this study, participants from Chad, Côte d’Ivoire, Democratic Republic of Congo (DRC), The Gambia, Kenya, Lesotho, Mali, Senegal and Zambia collected assessment tools from their national and classroom assessment resources from August to December 2018 (Appendix A). Their collection goal was to identify tools across Grades 3-8 that had the capacity to assess 21st century skills. In general, findings indicate that, of the tools collected, a majority did not directly assess these skills, but some were identified as clearly having the potential to do so. Issues highlighted by the study concern the limited test formats that are used for assessment generally, and lack of attention to more complex approaches to scoring and evaluation. These issues are common to many countries and may be attributed to low levels of assessment literacy among educators—typically, assessment is not a major part of pre-service teacher education courses in many countries, nor is it an expertise among middle-level administrators or policymakers. Expertise tends to be confined to specialist assessment units. Easily scored tests that target knowledge constitute the majority of assessment tools, with the results contributing primarily to summative reporting of knowledge-based achievement.

An encouraging outcome of the study was that country participants saw the potential of

adapting some tools to assess 21st century skills, which demonstrates that knowledge about the nature of these skills can prepare educators to better understand and address assessment needs concomitant with the introduction of 21st century skills into learning goals. The guidelines for data collection stipulated that the country researchers collect examples of assessment tools that directly or indirectly capture 21st century skills – in fact, there were no tools that directly captured the skills (i.e., no tools were deliberately designed for the purposes of assessing 21st century skills). The participants identified a range of tools that sampled student achievement in subject studies. In some of these, they identified clear potential for the tools to be used in a modified form for sampling 21st century skills proficiencies. This potential existed primarily in the content of the test items themselves, rather than in their scoring or reporting accessories.

From policy documentation provided by the country participants, in association with their collection of assessment tools, several factors were identified that appear to impact on the early stages of implementation of 21st century skills learning goals as symptomized through assessment and teaching; these factors are similar to those identified in previous studies (Care & Luo, 2016). They include lack of understanding of the nature of the actual learning and teaching that is implied by the learning goals; existing learning goals around which education systems are currently structured; lack of assessment, teaching resources and professional development, and a mis-alignment of goals with the current curriculum, assessment and teaching approaches. These issues are explored through brief discussion of the education context in three of the participating countries; Senegal, The Gambia, and Chad, and how the learnings from the study are informing strategy.

1. Other terminologies have been used to refer to 21st century skills, such as life skills, social emotional skills, transferable skills, soft skills, etc.

This is the first study to identify baseline information about the existence of 21st century skill assessments in Africa. The research, analyses and engagement undertaken by the participants has provided a new perspective on how we can undertake assessment of these skills. Rather than assuming that such assessment requires radically different strategies, this study demonstrated how to use the known to advance into uncharted territories. Changing assessments to align with new learning goals does not mean abandoning what already exists. It can instead be achieved through adaptivity, creativeness and flexibility. Teachers must also develop and demonstrate these skills in order to increase student's skills development to a greater degree.

Learnings from the study

The study highlights several issues which reflect challenges faced in the assessment of 21st century skills.

1. **Test formats that are easy to score are used most frequently.** More than half of the tools provided were scored dichotomously (i.e., correct-incorrect). While common across many assessment programs due to the efficiency and objectivity of this type of scoring, dichotomous scoring limits the variety of responses that can be elicited and disregards a large amount of information. In particular, such formats restrict the capacity to assess levels of competency in the exercise of 21st century skills. This is a major challenge that has been discussed by the authors in an earlier publication (see Care, Kim et al., 2019).
2. **There is a lack of rubric development and use.** The summary results show that where country-provided tools are designed to capture more detail, we most commonly find open format items that are scored using rating scales. Although rating scales can enable more than a correct-incorrect classification of student responses, subjectivity of ratings can impact the reliability of information. Depending on the nature of the rating scales, they may not guarantee substantial improvement over dichotomous scores. Where open-ended tools were collected, rubrics for the scoring of these were not made available – it is unclear whether these exist. For capture of complex cognitive and social processes well-defined rubrics are essential.
3. **There is potential for many of the tools that were not originally designed to capture 21st century skills to be expanded.** A majority of provided tools were designed to measure knowledge of the core domains in which 21st century skills might be embedded, rather than 21st century skills themselves. The good news is the potential of the tools for expansion. For example, closed items which are scored dichotomously can be converted into an open format that is more flexible in terms of responses that can be elicited. Also, items that were identified as capturing only a single skill were found to have potential to tap into multiple skills during the verification process. However, in order to take advantage of such opportunities, capacity development in assessment (at both national and classroom levels) needs to take place.

1. Background

Young children and students need a range of skills and competencies, beyond literacy and numeracy, to succeed in the 21st century (Care & Anderson, 2016). Education systems globally acknowledge the importance of a breadth of skills (Care, Anderson, & Kim, 2016). Yet, what are considered to be skills varies widely, not only from country to country (Care et al., 2016), but also across the range of education stakeholders within countries (Care, Kim, Anderson, & Gustafsson-Wright, 2017). Collaboration, critical thinking, social and interpersonal skills are often included. Character traits, such as confidence and self-discipline, and workforce and societal characteristics, such as being a productive member of society and being «moral» are sometimes included. (Care et al., 2017). Many of these human qualities were already highly valued in previous centuries, but this century is seeing them valued more explicitly by education stakeholders, industry and the workforce, and through global statements about the qualities and characteristics of the 21st century citizen.

The appearance of these perspectives has wide and diverse origins. In the last two decades of the century, several global organizations published statements that strongly influenced 21st century views of the nature and role of global citizens and led to policy formulation for education. Statements included the Delors Report (UNESCO, 1996), which outlined a vision for reflection about the nature of society, the citizenry that would inhabit it, and education policy that would promote it. The Report's (1996) humanistic perspective included four pillars of learning—to know, to do, to be, and to live together.

OECD's DeSeCo Report (2001) described both competencies needed for individual success and for a well-functioning society. It outlined competencies that would support individuals to meet societal demands. The framework proposed identified three themes—using tools interactively, acting autonomously, and interacting in heterogeneous groups. These themes required diverse competencies

which would be applicable across a wide range of occupational and life areas. These two reports, among others, stimulated a discussion which could be seen as culminating in the 2015 Sustainable Development Goals ([SDGs](#)). The SDGs not only value literacy and numeracy but extend to notions of equipping citizens with both social and cognitive skills and the characteristics associated with global citizenship and the three dimensions of sustainable development—economic, social, and environmental. In addition, there is a new focus on the relevance of learning both for the world of work and civic life.

At the same time, industry and the corporate world have been calling for development of employability skills for recruits into the world of work. The calls have frequently been based in identification of the technological changes in our world, but go beyond this, to concerns that education is not equipping students to navigate their world successfully or to confront global problems. Technology companies also contributed to a call to action to the education community to foster 21st century skills. A consortium comprised of Cisco, Intel, and Microsoft combined to work with six countries (Australia, Singapore, the Netherlands, Finland, USA, and Costa Rica) in the Assessment and Teaching of 21st Century Skills project (Care, Griffin, & Wilson, 2018) to focus on identification of frameworks for these skills (Binkley et al., 2012), and on innovative approaches to assessment (Care et al., 2015). Similarly, Pellegrino and Hilton (2012) published their influential paper “Education for Life and Work” which argued for a review of educational goals and discussed the implications of a possible shift for subject-level studies and instructional design. The responses to these calls have been myriad, and vary from non-profit organizations focussing on life skills for disadvantaged problems, to formal education systems focusing on both cognitive and social skills hypothesized to improve learning outcomes and the potential of young citizens to contribute constructively to society.

A Brookings Institution review of education systems of more than 150 countries found that over 75% of the countries have explicitly identified 21st century skills (21CS) as goals within their education policy (Care et al., 2016). However, only a few of the countries (11%) show evidence that these skills are consistently identified through their layers of curricular documents, suggesting that there are major challenges when it comes to implementation. These challenges have also been identified through regional level research. A series of studies by the Education Research Institutes Network (ERI-NET) and the Network on Education Quality Monitoring in the Asia-Pacific (NEQMAP) coordinated by UNESCO - Bangkok were conducted to identify a framework for valued competencies and to explore the degree to which education systems acknowledged and supported transversal competencies, or 21CS, as a part of education delivery. These studies (Care & Luo, 2016; UNESCO, 2015a; 2015b; 2016) revealed that countries vary in how they approach the inclusion of skills in their educational policies and practices, and that there is a need for greater consistency of approach and support for teachers through consideration of pedagogical and assessment strategies to support curricular goals. Awareness at the policy and school levels for the need to assess and teach 21CS, is not strongly tied to effective implementation mechanisms.

One of the major challenges in implementation is confusion over terminologies and lack of clear understanding of the skills beyond the surface definition. There needs to be clarity regarding their underlying processes and how contributing subskills develop, progress, and change over time (Care, Kim, Vista, & Anderson, 2019). Developing proficiency in skills is fundamentally different from acquiring knowledge. Students need not only to acquire the skills but also know when and where to activate and apply them dynamically to situations that they have not encountered before.

This challenge in implementation involves questions about how to teach and how to assess the skills. A major issue concerns the definition of skills. Although there are many programs which purport to teach and measure skills,

particularly life skills, these latter often include personality traits, attitudes and values. Attempts at their measurement has frequently relied on self-report scales which raise concerns about response bias, construct validity, and cross-cultural appropriateness. The need for clear definitions of competencies that can be taught and learnt is therefore essential if these are to become realisable goals in formal education systems. Although there is increasing focus on skills assessment at the international level through large scale assessments such as Programme for International Student Assessment (PISA; including collaborative problem solving and global competence), and regional assessments such as the Southeast Asia Primary Learning Metrics (SEA-PLM; global citizenship), there are few reports of assessments at the classroom level. One study, however, was conducted in the Asia region through the coordination of UNESCO Asia-Pacific Regional Bureau for Education (UNESCO Bangkok) and with support from the Global Partnership in Education (GPE). This study examined examples of assessment tools being used both at national level and in some classrooms that could be interpreted as having the capacity to assess competencies, as defined by the UNESCO Bangkok framework on transversal competencies (UNESCO, 2016). This study included eight countries and jurisdictions, including Bhutan, Cambodia, Hong Kong, Malaysia, Mongolia, Nepal, Pakistan, and Vietnam. The qualitative small-scale study (Care, Vista, & Kim, 2019) provided a snapshot of tools being used in the participating countries. It was clear that the majority of tools sampled were not explicitly designed to capture 21CS.

Most tools were embedded within conventional tests within subject areas, such as civics, English, and science. At the national level, the item formats reflected traditional examination or test types while more variety was found at the school and classroom levels, including essay-type responses, rating scales, checklists, creative products, and open response items, which allow student responses to be captured more flexibly. Although the majority of the sampled tools and items captured limited information, there were indications of some potential for extending or modifying these in ways that might capture 21CS.

2. The study

Given the important role that assessment plays in teaching and learning, and the growing emphasis on 21CS globally, the purpose of this study was to explore the degree to which assessments in countries in the Africa region targeted 21CS. Although 21CS are defined in different ways, for the purposes of this particular study, the term “21CS” identifies domain-general skills which cut across domains of knowledge and enable one to respond adaptively to new and different situations. Domain-general skills or competencies are those that are transferable across multiple contexts, supporting learning and application regardless of the specific type of knowledge the individual is working with. Using the same methodology as followed in a study of Asian countries (Care, Vista & Kim, 2018) this is the first study, to our knowledge, that provides baseline information about assessments of 21CS being used in the African region. This study confirms previous findings concerning the potential for modifying existing items to reflect 21CS and identifies factors that can impede implementation of policy goals. The study was undertaken through the collaboration of the office of UNESCO Dakar, participating countries, the Brookings Institution, and GPE.

Led and facilitated by the UNESCO office in Dakar, the Teaching and Learning: Educators’ Network for Transformation (TALENT) was established in 2016 to serve as a thematic platform to support sub-Saharan African countries in the implementation of the learning agenda as stipulated in the Framework for Action of Sustainable Development Goal 4 on Education by 2030. TALENT, supported by GPE, invited member countries to participate in this “Optimizing Assessment for All” (OAA) study implemented by the Brookings Institution, preliminary to a deeper study with a smaller number of countries designed to develop assessments and refine approaches to assessment that would be accessible by countries in the region. The countries which participated include Chad, Cote d’Ivoire, Democratic Republic of Congo (DRC), The Gambia, Kenya, Lesotho, Mali, Senegal, and Zambia (see Appendix B for list of participants from each country). These countries applied to participate in the study

and were chosen after consideration of criteria including: representation from sub-regions (East, West, Central, and Southern Africa); from the two main language groups (English and French); country commitment to 21CS and within-country preparedness to engage with classroom-based assessment of 21CS; and availability of personnel with assessment, pedagogical, and/or curriculum expertise. Other factors that were considered were the existence of leaders to advocate for assessment reform within countries; a concurrent process of education reform; and/or country desire to engage with the broader implications of SDG 4. Background information regarding the countries’ education system structure and their assessment systems is provided in Appendix C.

This publication describes the process undertaken, provides examples of tools from individual countries, and discusses findings based on the practices and approaches across the countries. The publication serves as a platform for knowledge sharing and peer learning, in particular around our knowledge of ‘baseline’ approaches to assessment of 21CS in the nine African countries participating in the study, as indicated in the research questions. This publication is of a technical nature and therefore intended mainly for an audience of practitioners, curriculum developers, teacher trainers, teachers, specialists, and/or technical staff in countries who are involved in assessments and are exploring ways of implementing 21CS in their education systems.

Research questions

This study was conducted with nine countries in Africa to identify existing assessment tools at the national and classroom levels that could be interpreted as directly or indirectly capturing 21CS. The data was collected using convenience sampling and constituted a small sample of the assessment tools that were being used in the country. Therefore, the data and findings are not necessarily representative of the entire country, region, or province. Nevertheless, the data collected contributes to our knowledge of “baseline” approaches to assessment of these skills in the countries participating in the study.

The first research question we explored was:

What tools at classroom and national levels are currently used to assess 21CS in each of the participating countries? In answering this question, the first matter was to determine whether there are tools in use that assess 21CS. Tools which capture a student's ability to memorize and subsequently provide the correct answer to a knowledge or fact-based question would not typically also enable capture of 21CS since these require the application of knowledge rather than its recall. If tools in use do test students' ability to apply information or knowledge, these may well be definable as assessing 21CS.

In addition to identifying currently used tools to assess 21CS, the tool characteristics are of interest. From the characteristics of assessment tools, we can infer a great deal about what is valued in an education system:

- Function and format of assessment tools are two separate elements; however, the function is sometimes closely associated with the format. For example, where the function is to grade for accountability purposes, the format will often require closed responses (such as dichotomous items yes/no, true/false) or multiple choice questions. These are easily scored—an advantage for large scale assessment. Where the function is to guide teaching and learning, the format used in the classroom may be open ended (such as short answer options, essays, tasks, or projects), since these may provide the opportunity for deeper exploration of student understanding and progress. At the same time, given our current state of knowledge on how to assess 21CS, these latter tasks may provide a better opportunity than the closed formats.
- Scoring mechanisms similarly provide indications of what is valued about the information generated from assessments. The use of scoring mechanisms which generate rich information about the targeted competencies, which in turn is reported in comprehensive descriptive terms, implies major interest in the actual proficiencies of students. Use of scoring and reporting mechanisms which provide highly summarized information as in scores or ranks, implies the primary interest is in pass/fail or comparisons between students. In addition, actual scoring and reporting that is specific to a competency implies a direct interest in that competency. Accordingly,

where scoring and reporting is specific to a 21CS and where that reporting provides rich information, it may be inferred that there is a conscious interest in student development in the skills.

We asked the following questions:

What are the characteristics of the available assessment tools collected from the countries?

- **Their primary function (teaching and learning, grading, and accountability)**
- **Assessment formats (e.g., true-false, correct-incorrect, rating scale)**
- **Scoring mechanisms and score reporting formats.**

Previous research has demonstrated that teachers of different subjects tend to prioritize different 21CS (Scoular & Care, 2018), and there are commonly held views that certain subjects, such as science, are strongly associated with inquiry approaches which involve exploration, hypothesizing, and critical thinking, while other subjects such as literature are strongly associated with creativity or communication. These tendencies need to be considered against the philosophical rationale for inclusion of 21CS, which rests on beliefs about transferability of skills. A presumption underlying adoption of a 21CS set of learning goals, is that the student will be able to apply learned processes across a range of different contexts, situations, and subject matter. Consequently, deeper exploration of the capacities of different subjects for the integration of a range of 21CS will provide needed information about both relevance and ease of such integration.

Therefore, we asked: **What 21CS are predominant across assessment items from the participating countries? In what academic subjects or learning domains are these competencies mainly embedded?**

There is a great deal of interest, nationally and globally, among NGOs, academics, and educators, in the question of how to assess 21CS. Symptomatic of this interest have been international studies such as the Assessment and Teaching of 21st Century Skills (Care, Griffin & Wilson, 2018), and regional studies such as the Life Skills and Citizenship Education Initiative in the Middle East and North Africa (<http://www.lsce-mena.org/>). Such initiatives as these have started from the ground up, making the

assumption that new, innovative, or technology-supported approaches to assessment of 21CS may be required. However, if the perspective is that skills can be embedded in mainstream curricula, then they need to be assessed within the parameters of what is possible in the formal education system. Accordingly, exploration of the capacity of traditional assessment items to target 21CS in tandem with assessment of subject-level achievement might provide insights into how students in all classrooms could have access to information about their skills proficiencies.

As such, we were interested in asking: **What are the opportunities for assessment of 21CS that are presented by items that are identified as indirectly assessing the skills?**

Assessment culture

All nine countries are conducting assessments both at national and classroom levels. Examples of national assessments include the Certificate of Primary Elementary Studies (CEPE; Côte d'Ivoire), Early Grade Reading Assessment (EGRA; The Gambia); the Kenya Certificate of Primary Education (KCPE; Kenya), and the Brevet d'Etude Fondamental (BEF; Chad). These national assessments are used for school leaving examinations, standardized assessments of learning achievements at the end of cycle for diagnostic purposes, and obtaining diplomas. Examples of classroom assessments fall under the categories of daily checks, formative evaluation exercises, classroom assessments conducted on a regular basis, homework, classroom assignments and projects, writing compositions, and mid-term tests. Many of the learning assessments have a summative focus, even if the assessments are identified to be for formative use.

An important issue relating to the formative use of classroom-based assessments has to do with differing definitions of formative assessment across countries. For instance, some countries consider all assessments that take place in the classroom and are provided by the teacher to be formative assessments. This could take the form of mock examinations to prepare for national level examinations, continuous tests after each learning module to identify students who may require remedial help, or homework. Some countries have a more specific definition of formative assessment, such as the use of assessment to support teaching and learning on a continuous or daily basis. Examples of this could be class exercises and projects, as well as questions and constructive feedback to the learner. Regardless of the form of the

assessment, whether or not it constitutes formative assessment is determined by how the results are actually used.

Some of the countries are currently implementing assessment reforms. For instance, DRC is implementing a reform to organize standardized evaluations at the primary and secondary levels which will inform individual achievements as well as the performance of the whole education system. The country is also reforming classroom assessment practices to include quarterly exams, homework, and formative assessment exercises. As a general observation, there are not yet assessments designed explicitly to capture 21CS in any of the nine countries, despite plans to develop assessments aligned with the learning goals identified in their education policies (see below for country-specific information regarding inclusion of 21CS). Countries are aware of this lack of alignment and are looking for ways to address the gap. However, countries have identified that their lack of knowledge about assessments to identify whether students are able to obtain and apply these skills is an issue. For more detailed information regarding the assessments in each of the countries, see Appendix C.

Including 21st century skills

In the participating countries, 21CS are acknowledged within their education systems. Most of the countries mention 21CS in their education policy documents; however, the countries vary in terms of the level at which these skills are included in curricular documentation. In most of the countries, skills are mentioned only in high level mission or vision statements; in a few countries, skills are included across multiple national documents, including high level mission statements but also within their education sector plans, professional training strategy documents, and in their curricula. This mirrors findings from a previous study that examined publicly available national education policy documents of 152 countries. The study found that the majority of countries acknowledge the importance of 21CS, but that beyond aspirational statements, there is little evidence of 21CS in curriculum and pedagogical policies, suggesting that the teaching and learning of these skills may not be happening in classrooms (Care et al., 2016). Table 1 provides a brief description of the skills as identified by study country representatives that are identified in education policies and/or curricula of the countries participating in this study.

Table 1. Inclusion of 21st century skills in Countries' Education Policies and/or curricula Country

| Country | Inclusion of 21CS in Education Policies |
|-------------------------------------|---|
| Chad | Despite its efforts to reform the education system, Chad does not have formal information on the inclusion of 21CS in national education policies in its sectoral documents, such as the Interim Project for Education 2018—2020 (<i>le Plan intérimaire de l'éducation au Tchad; PIET, 2017</i>). However, a «transdisciplinary» approach is practiced in the classes. In other words, each discipline can offer an opportunity to develop 21CS. To this end, the basic skills that are listed as 21CS such as know-how and interpersonal skills are frequently used in classrooms. |
| Côte d'Ivoire | 21CS, though not expressed explicitly in the country's vision statement, remain a top priority for the education system. Problem solving, citizenship, creativity, ICT literacy skills, and the everyday life skills of initiative, sociability, and productivity, are mentioned in national education documents and used in the classroom. In addition, the acquisition of ICT skills is a national priority, and a policy introducing ICT as a separate subject has been adopted. |
| Democratic Republic of Congo | <p>The national education Framework Act, Loi-cadre n° 14/004 du 11 février 2014 de l'enseignement national (n.d.), which sets out the fundamental principles relating to education in the DRC, advocates a vision of education centered on a wide range of transversal skills, including several 21CS: «education must aim to promote <i>the acquisition of human, moral, civic and cultural skills and values to create a new democratic, supportive, prosperous, peaceful and just Congolese society</i>».</p> <p>The Framework Act for education specifically targets 21CS by proposing, specifically in Article 29, the human model to be shaped with a view to «<i>promote the diversity and richness of local cultures while developing intelligence, critical thinking, initiative and creativity, mutual respect, tolerance and protection of the environment</i>». The education and professional training sector strategy 2016-2025 (SSEF) adopted by the government and endorsed by all education partners places emphasis on «oral and written communication» skills. The ability of students to use information and communication technologies is also one of the priorities of the national education strategy.</p> |
| Gambia | « The aims of the education system (Ministry of Basic and Secondary Education, MoBSE, 2015) across all levels include encouraging creativity and the development of critical and analytical mind; furthering an understanding and appreciation of the contribution of science, technology, and innovation to development; and developing the physical and mental skills (which will contribute to nation building) economically, socially, and culturally in a sustainable environment.» (Gambia Education Policy 2016-2030) |
| Kenya | In the Competency Based Curriculum, which is being piloted nationally at Grade 1 and 2, seven core competencies have been identified in the Basic Education Curriculum Framework (Kenya Institute of Curriculum Development, 2017): communication and collaboration, critical thinking, problem solving, imagination and creativity, citizenship, digital literacy, learning to learn, and self-efficacy. In addition, the current curriculum incorporates the teaching of Life skills at both Primary and Secondary levels. Through this, skills such as self-awareness and self-esteem are emphasised. |

| | |
|----------------|---|
| Lesotho | <p>«The Curriculum and Assessment Policy: Education for individual and school development (Ministry of Education and Training, 2008) of Lesotho identifies a broad range of 21CS, including entrepreneurial, scientific, problem solving, communication, technological, cooperation, and learning how to learn. From Grade 1-4 the curriculum is thematically structured, integrating different elements of knowledge including Numerical, Mathematical, Linguistic, and Literary capabilities. At Grades 5 and 6 the curriculum is organized into the following learning areas: Linguistic and Literary; Mathematical and numerical; Personal, Social, and Spiritual; Creative and Entrepreneurship; Scientific and Technological. These learning areas start merging into subjects including Technology, Life Skills Based Sexuality Education, Arts and Entrepreneurial, and Social Science at Grade 7 and 8. By the end of Basic Education, learners should have acquired communication skills, numeracy skills, scientific and technological concepts and principles, knowledge and understanding of civil and human rights, gender equity, and equality for effective participation in society. Learners should have developed creative, productive, and entrepreneurial skills for survival; and appreciate the interdependence between human beings and the environment for sustainable development and good health.» (OAA technical report, Lesotho)</p> |
| Mali | <p>Mali's Education Act of 1999 (Loi 99-046 AN RM, portant loi d'orientation sur l'éducation, République du Mali, 1999), specifically in the reference framework for the evaluation of learning, includes a focus on 21CS. These skills include problem solving, collaboration, creativity, and critical thinking.</p> |
| Senegal | <p>The Programme d'Amélioration de la Qualité, de l'Équité et de la Transparence (PAQUET; Ministère de l'éducation nationale, 2013) identifies as an education priority the promotion of the development of science, technology, and innovation. The curriculum, structured in a Competency-Based Approach, covers some 21CS in a diffuse way. The evaluation system based on this curriculum assesses some of these skills, notably at the Certificate of Completion of Elementary Studies (CFEE), in the National System for the Evaluation of Educational Achievement (SNERS), and more particularly with PISA for Development. There is, however, a need to address these 21CS more systematically in curricula and to build, at all levels, an assessment system more sensitive to these skills.</p> |
| Zambia | <p>The National Implementation Framework 2008-2010: Implementing the Fifth National Development Plan (Ministry of Education, Government of the Republic of Zambia, 2007) vision is: "Innovative and productive life-long education and training accessible to all by 2030." The Zambia Education Curriculum Framework (2013) promotes the acquisition of knowledge, skills and values. The key competences include critical thinking and problem solving, creativity and innovation, entrepreneurship, self-management, communication, and cooperation.</p> |

Method

The study was designed to collect examples of assessment tools used at national and school levels. “Tools” is the term used to describe tests, items, assessments, assessment tasks, etc. in this publication. The study drew data across Grades 3 to 8, with particular focus on Grades 6 and 8. This grade range was selected through consensus of the participating countries, informed by the perspective that this range covered both primary and secondary sectors, and would therefore provide insights about the degree to which 21CS might be valued across sectors.

Participating countries collected examples of tools from national and school levels that were considered to be targeting 21CS. The guidelines for collection stipulated that the country researchers collect examples of assessment tools that directly or indirectly capture 21CS, and therefore, should not include assessment tools that only capture subject areas or domain competencies (e.g., literacy or numeracy skills).

The 21CS that researchers specifically looked for were derived from a list compiled by the national research teams. This list was informed by the literature on 21CS which included several frameworks commonly used to describe the competencies, such as Partnership 21, the Assessment and Teaching of 21st Century Skills (Care, Wilson & Griffin, 2018), and the UNESCO ERI-Net framework (UNESCO, 2016). The list acknowledged these resources but was compiled to be more closely based on the skills that were valued by the participating countries (Appendix E).

For both national tests and school/classroom tools, country researchers were asked to provide copies or images of tools, as well as technical and scoring information where available. Permission was requested for use of these materials, thereby providing countries with the opportunity to contribute but also to limit access to the materials. Permission options were to:

- use materials to inform report writing but not to provide sample items
- include sample items in the report

- include technical information in the report
- include both sample items and technical information in the report.

Due to the small-scale nature of this study, just four or five schools in each country were selected (see Appendix D for a list of the selected schools) from which to collect information. Consequently, the collected data and findings are not representative of the country, region, or province; however, they do provide some examples of the types of tools that are available and being used. With the primary goal to access sets of tools as diverse as possible, the following criteria were considered when selecting schools:

- Location and type of school—schools across urban and rural areas; as well as different types of school, such as government or private schools
- School size – schools of different sizes; small (less than 400 students), medium (400-800), large (more than 800) served as broad guidelines
- Academic performance – schools with a mix of academic learning outcomes (i.e., low, average and high performing schools)
- Socio-economic status – schools across a range of socio-economic and/or financial resource status.

In addition to the tools, the countries provided coded summaries of their raw data. These summaries included categorical variables that described the tools:

- Primary purpose: teaching, reporting, certification (e.g., end-of-level or exit exams)
- Subject and topic area
- Level of tool: national or sub-national (including district, school, and classroom-levels)
- 21st century skill/s targeted by the tools as identified by the country researchers or school staff
- Scoring type: dichotomous or polytomous (including rating scale and partial credit items)
- Reporting mechanism: scored and/or reported separately.

The summaries from all countries were cleaned and consolidated. Tools that were sourced commercially or were proprietary were excluded from the study. Accordingly, 5 of the 96 provided tools were excluded.

Authors verified the summary information by cross-validating against the actual tools. The cross-validation process focused on whether the items directly or indirectly captured 21CS, with the main criteria being face and construct validity. This process was completed iteratively over several rounds; individual expert opinions (i.e., whether an item identifies/captures 21CS) were reviewed by the rest of the author team until consensus was reached.

After the summary data were validated, the tools provided by the country researchers were organized according to the classifications shown in Table 2. The first point of interest is whether 21CS appear more frequently in some subject areas than others, and whether specific 21CS are more strongly associated with some areas. Second, the primary purpose of the tools is identified, taking into consideration that some tools are intended to serve summative functions (for grading or accountability) while others may be used to inform teaching and learning. Associated tool formats tends to be linked with these two functions—which as mentioned previously may limit their capacity to capture evidence of 21CS. Third, is whether the tools are intended for use at national system or sub-national levels—with implications for item format, as well as symbolizing what is most valued by the formal education system. Fourth, whether tools have clear capacity to capture 21CS is noted—the primary purpose of the study. And fifth, the various student capabilities that lie outside of 21CS are identified as the target of the assessment tools.

In the fifth classification area, fine distinctions are made, and these highlight the complexities associated with defining and categorizing 21CS. “Tools that are non-skill” (see Table 2a) is straightforward – the classification refers to human characteristics that are neither skills-based nor knowledge-based, such as values or attitudes (e.g., patriotism). “Tools that capture other domain-general skills” is a fine distinction. Cognitive processes such as reasoning or pattern recognition are part of some 21CS, such as problem solving or critical thinking. However, these processes are also used for other performances, such as in mathematics. Traditional academic study also uses these processes. For such processes to be interpreted as 21CS, they need to be brought within the context of the named 21CS, rather than within the context of other domains, such as subject-specific activity. “Tools that capture artistic skills” is another finely tuned category, distinguishing between processes that fall within the arts domain and those that are creative. Here, the “numeracy” and “literacy” classifications are made explicit in order to distinguish between generalizable skills that have been a focus of formal education for many years, and the newly labelled 21CS. There is no doubt that numeracy and literacy are transferable skills that are important in our 21st century. The final classification “primarily a domain-specific tool”, is based on whether the tools primarily tap into mainstream school subjects.

Table 2a. Tool classification options

| Classification | Description | Comments |
|-------------------------------------|--|--|
| Subject/topic areas of tools | The tools are classified based on the subject or topic area within which it is used. | Examples of subject areas are history, geography, numeracy, and literacy. |
| Primary Purpose of tools | The tools are classified based on the primary purpose of the tools. | The tools may be used for teaching, accountability, monitoring...etc. purposes. |
| Source of tool development | The tools are classified based on the system level at which they were developed. | The tools may be developed at the national or sub-national levels (e.g., district, school, classroom). |
| 21CS tools - indirect | The tools are classified based on the major 21CS that they may capture. | The tools may tap into more than one 21CS. |
| Other tools | Tools that capture “other domain-general” skills | These tap into skills that although they may contribute to 21CS (e.g., reasoning, pattern recognition, spatial processing), are contributing to traditional subject studies performance. |
| | Primarily a numeracy tool | The tool is mainly tapping into numeracy. |
| | Primarily a literacy tool | The tool is mainly tapping into literacy skill. |
| | Tools that capture artistic skills | These capture artistic creations or expressions but are not broad enough to be classified as tapping into creativity in the context of 21CS. |
| | Primarily a domain-specific tool | The tool is mainly tapping into other domain-specific (e.g., Science, History, Civics, etc.) skill. If the tool also taps into an identified 21CS, the context is dependent on the domain and not generalizable. |
| | Tools that are non-skill targeted | These refer to tools that capture or elicit constructs that are not considered skills (e.g., attitudes and behaviours). |

Table 2b. Distribution of tools across countries and categories

| Country | # of tools provided by Countries* | National level tools | Most common purpose for National level tools | School level tools | Most common purpose for school level tools | # of tools: scoring is dichotomous/rating scale | # of tools: 21CS scored/ reported separately | Proportion of tools that capture 21CS* | Proportion of tools that capture other domain-general skills** | Proportion of tools that capture domain-specific skills** |
|----------------------|-----------------------------------|----------------------|--|--------------------|--|---|--|--|--|---|
| Chad | 3 | 1 | Teaching | 2 | Certification | 2/0 | 0/0 | none | none | 1 of 3 |
| Côte d'Ivoire | 4 | 1 | Certification | 3 | Teaching | 0/4 | 0/0 | 2 of 4 | 2 of 4 | none |
| DRC | 5 | 3 | Teaching | 2 | Teaching | 2/3 | No data | 4 of 5 | none | 1 of 5 |
| Gambia | 11 | 5 | Progression | 6 | Teaching and Reporting | 5/4 | 1/0 | 1 of 11 | 2 of 11 | 6 of 11 |
| Kenya | 11 | 4 | Teaching and reporting | 7 | Teaching and Reporting | 9/2 | 0/0 | none | 3 of 11 | 8 of 11 |
| Lesotho | 9 | 8 | Teaching and Reporting | 1 | Teaching | 4/4 | 2/2 | 2 of 9 | 2 of 9 | 4 of 9 |
| Mali | 11 | 7 | Certification | 4 | Teaching | 4/7 | No data | 6 of 11 | 1 of 11 | 3 of 11 |
| Senegal | 13 | 3 | Teaching and Reporting | 10 | Teaching and Reporting | 4/9 | 4/0 | 6 of 13 | 1 of 13 | 6 of 13 |
| Zambia | 29 | 12 | Certification | 17 | Teaching | 18/10 | 0/0 | 7 of 29 | 7 of 29 | 13 of 29 |
| Total | 96 | 44 | Certification | 52 | Teaching and Reporting | 48/43 | 7/2 | 28 | 18 | 42 |

*Total number of tools is based on all tools provided by countries, including those that were excluded (5 tools total) based on the verification process.

**Numbers may not add to 100% due to tools that were provided but were not capturing skills and/or were dropped from analysis.

3. Findings and discussion

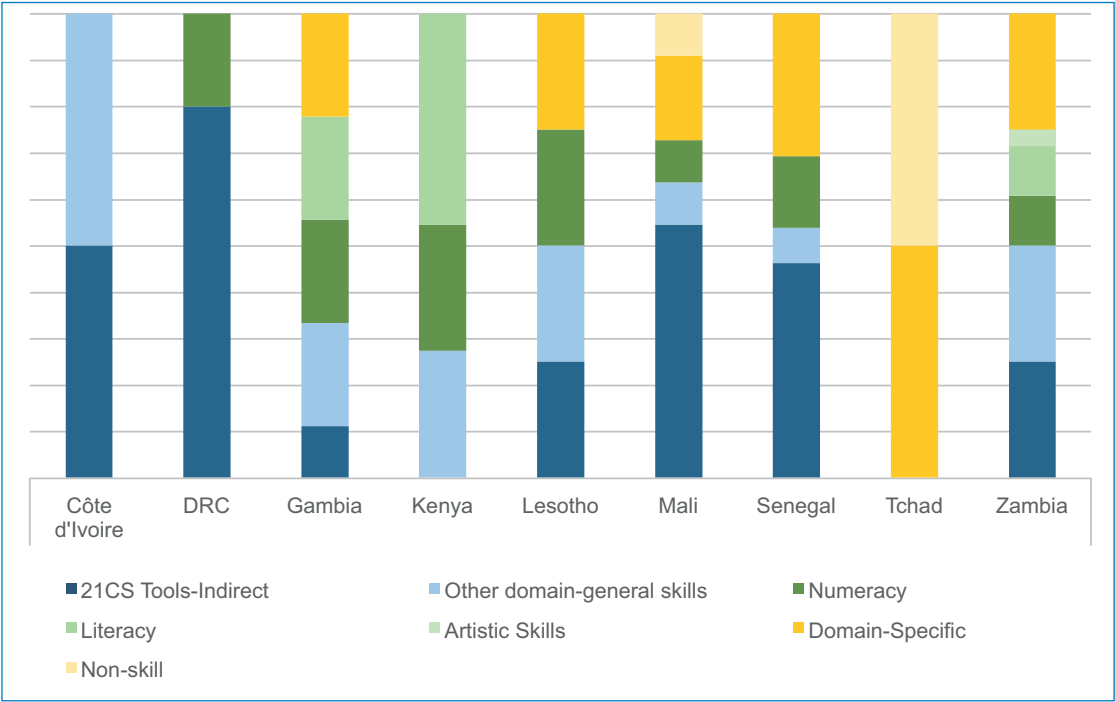
Classification of items

The summary of the 91 tools provided by the countries can be found in Table 2b. There are no tools that directly target 21CS in both function and associated scoring and reporting materials. However, tools collected from some countries demonstrate a clear capacity to capture these skills. At the aggregate level across all 91 tools, less than a third of the tools were verified as indirectly capturing 21CS. Because of the qualitative and small-scale nature of this study, this data should not necessarily be interpreted as representative of the

countries. Nevertheless, the information provides a general sense of the level of availability of tools that target 21CS among the participating countries.

Figure 1 shows the distribution of classifications of tools by country. As shown in the figure, several countries have a solid representation of tools that can capture 21CS. As discussed below, tools that capture “other domain-general skills” as well as literacy and numeracy are particularly subject to mis-interpretation as 21CS—but within reason.

Figure 1. Proportion of tools by country across categories

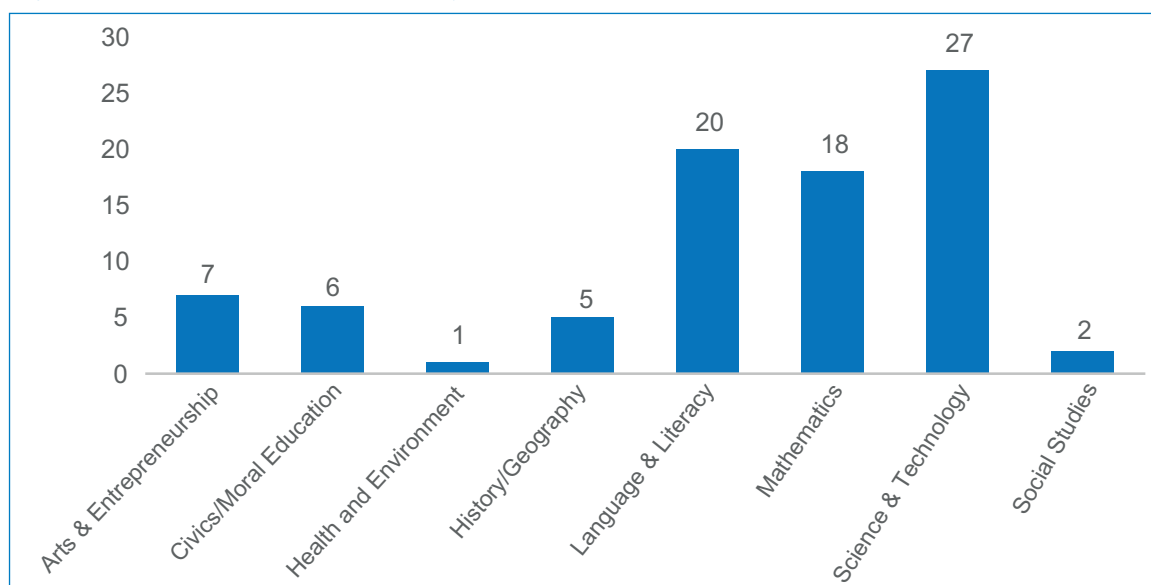


Source: Country Studies (2018, 2019) : OAA Mini-Study, UNESCO

21CS are not the primary focus of assessment. Some countries clearly sourced tools that had the indirect capacity to capture 21CS to a greater degree than others. For example, of the five tools that DRC provided, four of these had an indirect capacity. Issues in understanding the nature of skills, as well as the actual type and format of tools can contribute to difficulties in the identification of whether a tool captures 21CS.

Almost all of the tools were embedded within specific subject areas, with the exception of five from Zambia that were based on “psychometric” test items. Figure 2 lists subjects from which tools were provided. The majority of the tools were from language and literacy, mathematics, or science and technology areas. This is similar to the findings in the Asia study, where the most common subject areas were language and literacy and the sciences (Care, Vista et al., 2019).

Figure 2. Tools distributed across subject areas



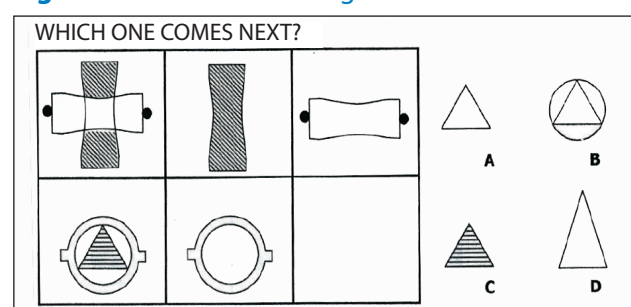
Source: Country Studies (2018, 2019) : OAA Mini-Study, UNESCO

Skills applied to traditional learning areas:

As summarized in Figure 1, many items were not categorized as 21CS tools at the construct level. However, there were instances where tools captured sub-skills such as analytical processes, which although incorporated within definitions of critical thinking, are also drawn upon in traditional subject-based tasks. One example is the reasoning and recognition of patterns which may apply to numeracy and literacy activities. Note that as mentioned earlier, literacy and numeracy are considered to be 21CS in some frameworks (e.g., P21 Partnerships for 21st Century Learning; Battelle for Kids, n.d.). In fact, many tools captured literacy and numeracy skills (26% of the collected tools and items). There has been some criticism of the 21CS movement due to differing views about what constitutes capabilities that are specific to the 21st century. Yet, it is not the emergence of these capabilities within this century, but rather their growth in value that has led to their prominence. In three items, abstract reasoning was targeted

outside of a subject area (see Figure 3 for example). However, most of the items were similar to the example in Figure 4 (where analytical skills, such as ability to identify patterns and gather information, are applied to numeracy areas). Here, students would identify the pattern (aspect of analytical skills), and once the pattern is found (i.e., subtract 13 from each number), the same formula can be applied to find the answer. In other words, the way that analytic skills are drawn upon is in a specific reference to mathematics.

Figure 3. Abstract reasoning item from Zambia



Source: Zambia Country Study (2018) : OAA Mini-Study, UNESCO

Figure 4. Item from Kenya that primarily captures numeracy skills

Fill in the missing number:

170 157 144 131 —

Source: Kenya Country Study (2019) : OAA Mini-Study, UNESCO

This type of item contrasts with the example in Figure 5, where analytical skills can be applied to explain a phenomenon like the transmission of albinism. Skills to draw upon for this item include gathering information, analyzing, reflecting, and synthesizing information—these processes can be widely applied and transferred to new and different situations.

Confounding knowledge with skill: Another issue has to do with distinguishing between what constitutes subject-based knowledge founded on rote learning and what constitutes a 21CS. For example, media and information literacy includes the ability to obtain and analyse information through ICTs, critically evaluate

Figure 5. Item from Mali that indirectly captures 21st century skills

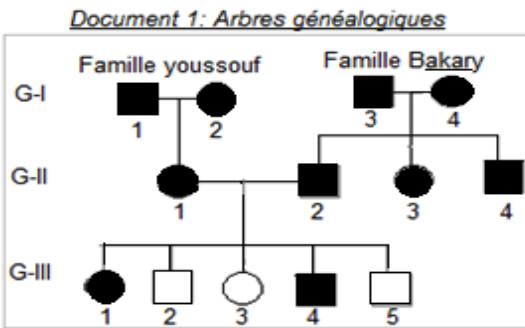
Abdou's reflections:

I do not understand, in my neighborhood, there are two families in which there is no "albino child" however, the marriage between their children gives more "albino children" than children of normal complexion.

To allow you to answer Abdou, we present in document 1, the family tree of the two families.

Instructions:

By using document 1 and using the problem-solving approach, explain to Abdou how the gene responsible for albinism is transmitted.



Source: Mali Country Study (2019): OAA Mini-Study, UNESCO

Figure 6. Item from Senegal targeting primarily domain-specific knowledge

| | | |
|--|---|---|
| Here is a laptop. Its three main parts are a keyboard, screen, and mouse | Write each part against its appropriate position: keyboard, screen, mouse | Write each part lined up with its function: show text and images, connect, to write, move |
| | <div>A.</div> <div>B.</div> <div>C.</div> | <div>A.</div> <div>B.</div> <div>C.</div> |

Source: Senegal Country Study (2019) : OAA Mini-Study, UNESCO

Another example relates to self-management, which can be described as the ability to manage oneself, demonstrate self-restraint, accommodate others' views, manage one's use of time, and produce desired change in one's behaviour. Figure 7 is an item that was identified as targeting self-management. Similar to the previous item, this item may tap into knowledge but does not target processes involved in self-management, such as demonstrating the act of managing and restraining oneself or producing desired change in one's behaviours.

Figure 7. Item from Lesotho targeting domain-specific knowledge relating to self-management

How should a teenage girl take care of herself to avoid unwanted pregnancies?

- A. Have multiple partners for sex
- B. Use a condom during sex
- C. Bath daily after sex
- D. Abstain from pre-marital sex

Source: Lesotho Country Study (2019) : OAA Mini-Study , UNESCO

Characteristics of collected tools and items

The collected tools vary, not only across national and school levels and whether they capture 21CS, but also in terms of 1) the primary purpose of the tool, 2) tool format, and 3) scoring and reporting mechanisms.

Primary purpose

Countries were asked to provide information about the primary purpose of each tool. Options for purpose included for teaching, reporting, certification, and progression. The majority of countries provided assessment tools that have teaching and reporting as the primary purpose. For Mali, the most common purpose of tools was for certification, while Gambia's most commonly stated purpose was for progression. The primary purpose is often dictated by the priorities of the assessment developers. For example, nationally developed tools reflect national or systems level priorities while school-based tools will focus on the needs of the particular school. Across all countries, there was a balanced mix across national and sub-national sources of the assessments, with sub-national tools (primarily school-based) more numerous. Of the nine countries, only three indicated that certification is the

most common purpose of the national level tools that they have submitted, while nearly all countries indicated that the most common purpose for their school level tools was for teaching and reporting.

Tool format

In addition to identifying the main purpose of the tool, the type or format of each tool was identified; specifically whether it was open format, such as asking open-ended questions, or closed format, such as a true or false question. Related to the format is how the tool is scored—whether it is dichotomous (e.g., correct/incorrect) or based on a rating scale. Just over half of the tools were scored dichotomously, although the proportion varies widely between countries—ranging from all tools scored dichotomously to all tools scored through a rating scale. Of the 43 open format tools that were identified by the local researchers as being scored through a rating scale, no rubrics are available; thus, it is unclear how these were scored. Examples of dichotomous, rating scale, and open format tools are in Appendix F.

Scoring and reporting mechanisms

For each tool, country participants identified whether 1) the tools that target or tap into 21CS are scored separately, and 2) whether the score is reported separately for 21CS (i.e., in addition to a global score, a separate 21CS score is also reported). No tools were verified as scoring or reporting 21CS separately. It can be concluded that this is due to the fact that the tools were not specifically designed to capture 21CS. They were identified as having the capacity to tap into 21CS as incidental to their primary function—which was to measure the core domain in which the 21CS are embedded.

Specific 21st century skills and subskills captured by tools

The country participants examined each tool collected at the national and school levels and identified skills at the construct level (e.g. problem solving). Based on descriptions of the skills (see Appendix E), they then identified capture of the skill at a more detailed level. For example, an item can be described as capturing conflict resolution at the construct level and targeting the ability to identify areas of agreement and disagreement at a more detailed level.

The skills for which the country researchers sought

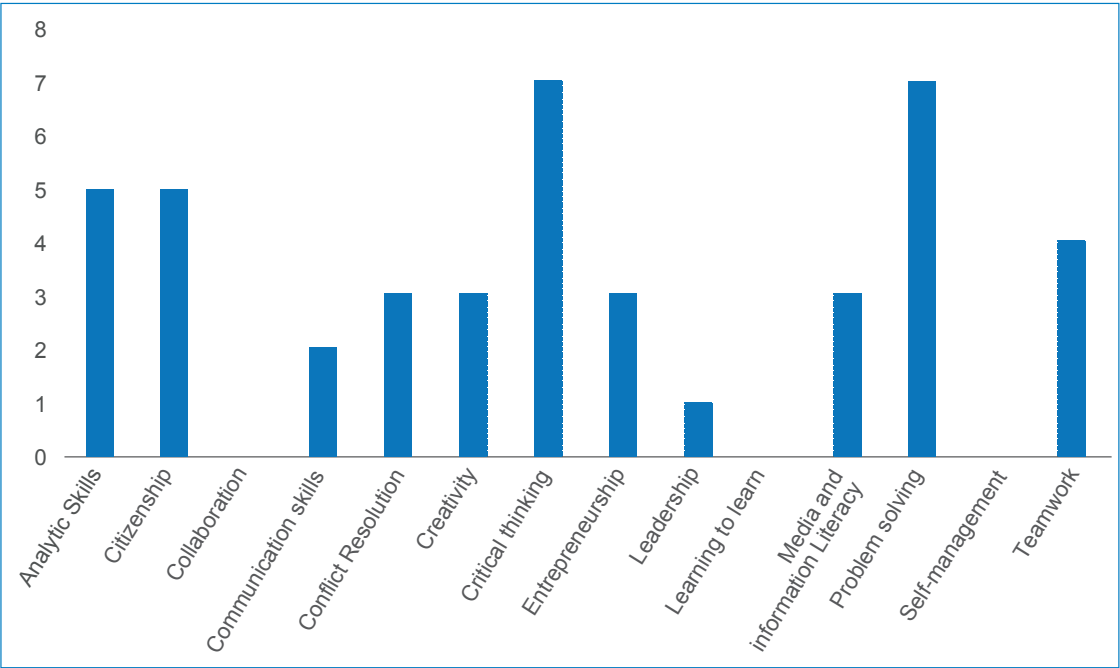
assessments were derived from a list of 21st century skills compiled by the participating countries. Each country identified the skills that were valued by their education contexts. Those that were endorsed by multiple countries constituted the final list. See Appendix G for the initial list of generated skills. The final list can be found in Table 3.

Skills at the construct level

Figure 8 shows the 21CS that the tools have the capacity to indirectly assess. This information includes only the 28 tools (Table 2b) that were identified as having the capacity to capture 21CS indirectly. Note that a single tool can capture multiple 21CS. Critical thinking and problem solving, followed by analytic skills, were the most commonly identified skills, accounting for nearly half of the tools provided. Several skills identified by the nine participating countries as being highly valued in their countries - including collaboration, learning to learn, and self-management - were not targeted by the tools provided. This may be

due to the recency of skill prioritization, lack of knowledge about how to assess, the broad and elusive nature of the skills, and the relatively small scale of the study. For example, learning to learn is defined as “the process of understanding how one learns, being able to reflect on one’s own thinking, and reflecting critically on learning experiences and processes in order to inform future progress” (Appendix E). How to assess this skill, and what behavioural indicators would be observed in students, is complex. In terms of collaboration, the countries were more likely to identify tools that capture teamwork rather than collaboration. Perhaps teamwork is easier to identify (e.g., working together in a physical group) than collaboration (e.g., ability to work with diverse others, exercise flexibility, and compromise to accomplish a common goal). These issues highlight the need for continued work on defining and describing these skills in order to better understand the contributing subskills (Care, Kim et al., 2019).

Figure 8. Numbers of tools that indirectly assess 21st century skills



Source: Country Studies (2018, 2019): OAA Mini-Study, UNESCO

Sub-skills

Information at sub-skill level was not provided for all tools. However, for those for which the information is available, their descriptions are provided in Table 3. The most commonly identified sub-skills were

“evaluate and make judgements” and “intentional, goal-directed” (critical thinking); and “analyze, reflect, evaluate, and synthesize information” and “gathering information” (analytical skills).

Table 3. Description of sub-skills associated with 21st century skills constructs²

| 21 st century skill constructs | Description |
|---|---|
| Creativity | Ability to use a wide range of creation techniques to create new and worthwhile ideas and observable creations |
| Entrepreneurship | Ability to use a wide range of creation techniques like brainstorming to create worthwhile ideas; Analyze and evaluate ideas to improve and maximize creative efforts |
| Communication skills | Ability to articulate thoughts and ideas through oral and written communication |
| Teamwork | Ability to work with others towards a common goal; ability to negotiate |
| Conflict resolution | Ability to identify areas of agreement and disagreement, reframe a problem, and analyze issues necessary to manage and resolve conflicts |
| Problem solving | Making informed choices; assess different options |
| Critical thinking | Intentional, goal-directed, reflective thinking; evaluate and make judgements; learn new concepts |
| Citizenship | Ability to recognize sets of rights and values and to promote them |
| Leadership | Ability to guide and inspire others |
| Analytic Skills | Identify patterns; gather information; analyze, reflect, evaluate, and synthesize information to make logical decisions |
| Self-management | Accommodate others' view and manage one's use of time (planning, prioritizing, organizing) |
| Media and Information Literacy | Ability to obtain and analyze information through ICTs |

Opportunities for assessment of 21st century skills in current tools

Although only a small subset of the items/tools (31%) were identified as indirectly capturing skills, the country participants found opportunities for modification and/or extension of current tools to capture 21CS. Table 4 shows selected examples of items and explanations of the processes that are being target-

ted, as provided by the Senegalese national research team. The insights demonstrated through these item analyses, considering which processes, skills, and subskills are being targeted, is a critical step for countries moving towards an explicit focus on the teaching and learning of 21CS.

2. These broad descriptions are based on various sources, including the OECD definitions of key competencies and the Partnership for 21st Century Learning (P21) definitions of 21st century student outcomes.

Table 4. Items identified by Senegal as potentially reflecting 21st century skills

| 21 st century skills assessment items (abbreviated) | Explanation by the Senegalese team of skills elicited by item |
|---|--|
| Your school does not have a national flag. The director wants to make an order with a tailor. You are responsible for proposing a model. Instructions: Draw the model | [Skills targeted: creativity, citizenship] This item aims to have students imagine and create a national flag design. It also relates to the promotion of citizenship using Senegal's values and symbols. |
| In Senegal, several families live in the same house. After an investigation in the community, a group of students identified in a confused (disordered) way the causes, the consequences of this phenomenon and the solutions recommended to face this population problem. [See Figure F2 for the full item] | [Skills targeted: problem solving, analytical skills] Through this item, students are asked to research the causes and consequences of population problems and propose solutions. To this end, the learner must use basic cognitive processes to identify problems, evaluate the different consequences, and propose relevant solutions to remedy them. |
| Two classmates do not agree on a point of view. They verbally attack one another and are ready to physically fight. Instructions: Propose two solutions to this difference of opinion. | [Skills targeted: conflict resolution, problem solving] The student must identify the points of disagreement and analyze the issues and perspectives before proposing solutions to resolve the conflict. |

Source: Senegal Country Study (2019): OAA Mini-Study , UNESCO

In addition to items that reflect 21CS and processes, the participants provided items that were seen as not constituting potential 21CS items (Table 5), and offered explanations as to why the items do not capture the skills. Unlike the Table 4 21CS items, Table 5 items

tend to ask students to remember and repeat learned information within a topic area, rather than integrate 21CS complex processes and apply them to different situations.

Table 5. Items identified by Senegal as not reflecting 21st century skills

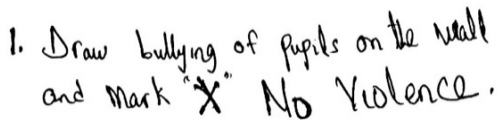
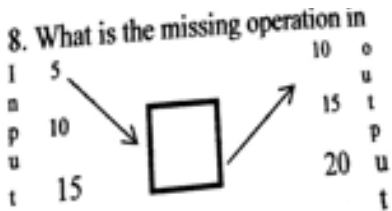

| Items that do not reflect 21 st century skills | Explanations by the Senegalese team |
|---|---|
| Context: Your friend wants to classify the following animals according to whether they are herbivorous or carnivorous: sheep, lion, ox, dog, goat, and cat. | Classifying animals according to their feed-type is not targeting 21 st century skills. In order to answer this item, students only need factual information. |
| Instructions: Build a circle of 3 cm radius. Trace two perpendicular diameters AB and CD. Join the ABCD points. Name the figure obtained. | This geometric construction activity does not capture 21 st century skills. This item can be answered by following the instructions, and does not require problem solving processes, such as reflection and analytical thinking. |

Source: Senegal Country Study (2019) : OAA Mini-Study , UNESCO

For The Gambia, opportunities for current tool usage in the assessment of 21CS were clearly evident (see Table 6). This is not the outcome of deliberate attempts to feature them but an artefact of their original design and content. Some tools have: 1) the potential to be modified and extended so that they

can target skills, and 2) underlying elements that can be generalized across multiple subject areas. Table 6 shows the original items that were provided, as well as examples of possible modifications and extensions.

Table 6. Items and modification inputs identified by The Gambia as potentially reflecting 21st century skills

| Original Item | Modifications inputs by The Gambia team |
|---|---|
|  | <p>Although the original item targets aspects of creativity and citizenship, such as the ability to recognize sets of rights and promote them, this item could be expanded to target additional skills, such as problem solving. For example:</p> |
|  | <p>This item captures analytical skills within the context of numeracy. However, it could be expanded to target skills such as critical thinking and communication.</p> |
|  <p>Assessment 3 You will need fresh milk and a clean container.</p> <p>Assessment</p> <ul style="list-style-type: none"> • Pour some amount of fresh milk into a container. • Taste it and cover it for about 24 hours. • Taste it again after 24 hours. • Write down your observation and discuss your findings with your teacher in the next session. | <p>While the original item may capture some aspects of critical thinking within science, this item could be modified to target additional skills, such as problem solving and communication. For example:</p> |

Source: Gambia Country Study (2019) : OAA Mini-Study , UNESCO

These examples show that the current assessment items are a good starting point for developing assessments that target 21CS. Although the items may be subject or topic-specific, the type or format of the item is one that can be used regardless of the subject area. For example, rather than asking for one answer, having students provide two or three different options provides opportunities for critical and analytical thinking. Asking students to identify a problem, as well as possible solutions, can provide opportunities to generate, evaluate, and analyze ideas that can have real-life applications. That these items are currently being used in schools and classrooms means that teachers, school leaders, and students are familiar with them. This provides a

good starting point—rather than developing items and tasks that are completely unfamiliar and may not be realistic in classroom settings, starting from what is familiar may be more effective when it comes to assessments of 21CS.

Factors influencing implementation of 21CS

The education sector recognizes the importance of 21CS. In fact, most of the countries participating in this study have education policy documents that specifically identify teaching, learning, and assessing 21CS as important goals as indicated in Table 1. The various countries identified different issues that impede implementation.

1. **There are inadequacies in the understanding of definitions and nature of 21st century skills.**

For example, in Côte d'Ivoire, the participants mentioned that there was no information on 21CS prior to this study. Thus, when asking teachers to provide classroom assessments that target skills, the researchers were faced with the challenge of not only defining what these skills were, but also conveying it within a classroom context that the teachers could recognize. Similarly, The Gambia and Kenya both stated that teachers lack the knowledge necessary in this area and as a result, are unaware of how to teach and assess these skills. Understanding the nature of the skills has been identified by Care and colleagues (Care & Luo, 2016; Care et al., 2019) as essential if education systems are to reform their curricula to integrate 21CS and more importantly, if they are to be able to implement this agenda. Therefore, this challenge underlies all other identified explanations.

2. **The current system is designed to target subject-based (or disciplinary) skills.** Many countries around the world acknowledge that 21CS are necessary for success (Care et al., 2016). However, in many countries, there is a general belief that learning 21CS is a natural outcome of any education system and there is therefore no need to teach these skills explicitly. For instance, in Côte d'Ivoire, only disciplinary skills³ have been targeted in the development of their educational programs. In DRC, there is recognition of the value of 21CS, but teaching and assessing these skills is problematic as the skills transcend the disciplines that are taught and for which teachers have explicit responsibility. The education system does not seek to categorize or systematically and explicitly evaluate cross-curricular competencies.

3. **There are few tools and assessments that measure 21st century skills.** As mentioned by DRC, teaching is focused on discipline areas, and consequently assessments are also discipline-based. Through the data collection for this study, it became apparent to many countries that there

were no clearly identifiable items that could be determined as explicitly capturing 21CS. In addition, the limits of traditional educational approaches to assessment were recognized. Specifically, The Gambia stated that the pen and paper format system that is common across education systems makes it difficult to accommodate the assessment of 21CS, as it does not easily allow for capture of the varied behaviours that demonstrate the skills.

4. **There is a lack of assessment literacy among teachers that is necessary for the development of both standardized and classroom tools to measure 21CS.** There are resource challenges for teaching these skills and a lack of teacher training. The participating countries were all in agreement that teachers found it difficult to teach, assess and identify these skills in their classroom practices. In The Gambia, it was acknowledged that there are inadequate teaching and learning materials, which also impacts the ability of teachers to translate the concept of 21CS into effective daily classroom practices and classroom-based assessments. Similarly, teachers in DRC indicated that they were experiencing difficulties in adapting their teaching and assessment practices to the teaching of 21CS. Participants from Senegal suggested that one way to increase awareness for teaching 21CS may be through apprenticeships, so that teacher training is grounded in practice, rather than theory.

5. **There are issues of alignment between the educational goals, assessment, and pedagogy.** Consistent with previous research (Care, Kim et al., 2019), country participants identified the lack of alignment across the components of the education system to be a major challenge around 21CS. For example, going into classrooms to talk with teachers and observe what assessments are used was an eye opener for the central Ministry-level researchers in Lesotho. Despite changes to the curriculum and assessment policy, teachers were still using the old methods of assessing. In Kenya, although formative assessments,

3. Note that in this document, disciplinary skills and subject-specific skills are equivalent. Note that different countries use these terms to refer to content-based knowledge rather than transferable competencies.

such as classroom observations and providing feedback, are formally part of assessment policy, they are undertaken inconsistently. Instead, the assessments being conducted are largely pen and paper examinations through zonal examinations or commercially sourced papers. Countries such as Senegal and Chad note that although 21CS goals are referred to in the curricula, how to translate what is written into classroom practice is another matter. This recognition of the lack of alignment is a very real positive step toward integration across policy and practice.

Policy intervention recommendations

There are some policy implications and possible areas for policy interventions that can be considered in order to address some of the limitations in the assessment and implementation of 21CS. These recommendations have been reached through analysis of the study outcomes and reference to the three case studies that will be discussed below.

1. Communication and advocacy: Increasing awareness on 21CS, specifically regarding their definitions and the nature of the skills, and their relevance for lifelong learning and work;
2. Strengthening of 21CS policy: Systematic consideration of 21CS in education policies, monitoring and certification systems, and the curriculum, as well as other education resources, such as manuals, teacher guides, and evaluations;
3. Capacity building for effective implementation: Capacity building of stakeholders at all levels, including policymakers, education administrators, curriculum developers, assessment experts, teachers, and parents, on issues related to 21CS and assessment literacy;
4. Continuing guidance and support: Development of materials to support teachers on how to teach and assess 21CS in their classrooms and provide adequate training on various pedagogical practices that can support the development of skills in their students; research on ways to improve learning associated with 21CS.

These recommendations are discussed further in relation to specific countries below.

4. Focus on Senegal, The Gambia, and Chad

Participation in the study prompted the country teams to examine in depth the nature of their learning systems, structures, resources, and needs. While much of this review echoed the general need to improve the quality of education, it should be noted that much of it was also triggered by an awareness of what current aspirations for 21CS learning outcomes imply in practical terms. The case studies of Senegal, The Gambia, and Chad illustrate how the policy intervention recommendations of this study can help improve the context for effective teaching and learning of 21CS.

The case of Senegal – Cheikhena Lam

In Senegal, a holistic view of skills is mentioned in strategic documents—the General Policy Letter and the Quality, Equity, and Transparency Improvement Program. The mission entrusted to the Senegalese education system is “to cultivate a Senegalese person anchored in a conscious and active, republican and democratic citizenship; dedicated to the respect and promotion of national and African values; committed to sustainability in their behaviour and lifestyle; competent and motivated in his/her profession and in the service of the country; integrated in a culture of science and technology for the 21st century; and engaged in lifelong learning”. However, neither 21CS nor the pathways for learning those skills, are explicitly identified in the official curriculum. Nevertheless, the participants of this study identified assessment approaches that do elicit certain 21CS processes, although they were not necessarily developed for this purpose.

The study enabled key Senegalese experts from the Ministry (pedagogical and technical directors) to benefit from an update (training workshop) on 21CS and to undertake a critical reading of existing planning and evaluation tools, in light of these new capacities. Both the collection of items and the selecting, and coding of exercises facilitated the application of these new capacities. Furthermore, the Ministry was able to identify new challenges and to explore a re-structure of curricular documents, learning materials, and assessment tools for a

systematic consideration of 21CS—foundational skills needed for the lives of modern citizens.

These challenges call for the following reforms:

- systematic consideration of the 21CS in the next curriculum revision;
- capacity building of stakeholders at all levels on issues related to 21CS (policy makers, education administrators, curriculum developers, teachers, parents, evaluators, etc.) and raising awareness on their relevance for meaningful learning;
- revision of didactic tools: manuals, guides, evaluation booklet;
- upgrading the system of performance monitoring and certification of knowledge to increase the presence of these skills.



Students at a school garden for a lesson on Social and Environmental Studies (SES)

The case of The Gambia – Momodou Jeng and Ousmane Senghor

Skills are prominently featured in the education policy documents of The Gambia. For example, according to the vision and mission statements of the Ministry of Basic and Secondary Education of the Republic of the Gambia, the goal of the education system is to provide «a responsive, relevant, and quality education for all Gambians» so that Gambian children will be equipped with the skills needed to make them fully functioning members of society who contribute to the success and development of the country. Skills such as creativity and the development of a critical and analytical mind are included in the educational aims

of the Education Sector Policy 2016-2030. In keeping with the country's commitment to the Sustainable Development Goals, the education sector is committed to promoting Life Skills Education to help learners acquire not only knowledge and skills, but also behaviours (adaptive and positive) relevant to their self-fulfillment in a changing social and economic environment.

Although the skills are mainstreamed in curricular materials, many teachers lack the knowledge and skills to transform the concepts into effective daily classroom practices and classroom-based assessments. The lack of alignment between the intended curriculum, the taught curriculum, and the assessment practices is evident; the skills are not adequately featured in any of the assessments or examinations conducted in The Gambia. This was confirmed through the collection of tools at the national and school levels as part of the study. However, for The Gambia research participants, opportunities presented by their current tools for the assessment of 21CS were clearly evident (see Table 6).

Having assessments of 21CS is only the first step. If these assessments are to be used effectively, they need to be embedded in and aligned with the existing national system. The Gambia sector-wide Education Policy 2016-2030 "Ensure inclusive and equitable quality education and promote life-long learning opportunities for all" has triggered critical analysis about policy, its implementation, and monitoring.

- What would be our new strategies in terms of data collection, data sources, frequency of data collection, and coordination of data collection?
- Is there any institutional restructuring requirement to be done for rapid data compilation?
- What networking arrangements do we need to consider for secondary data collection?
- How do we ensure, at national level, the coordination of information and data?

- Do we have the necessary local capacity to report on all SDG4 indicators?
- How do we align policy goals and targets with the SDG4 indicators?
- What are the financial and human resource requirement for the achievement of the targets and in terms of data needs and data collection?

The Education Policy 2016-2030 dictates a better articulation between learning goals, curriculum relevance, teacher training needs, development of materials, and students' learning outcomes: "Curriculum is defined as the totality of the experiences the pupil has as a result of the provisions made in terms of content, teaching and learning material development, pedagogical approach, assessment, school culture and organization, and teaching and learning environment." As the learning goals constitute a fundamental element of the education system (determining what is to be taught and learned at each education level) the participants from The Gambia believe that it is critical that any meaningful and sustainable education reform start with curriculum reform as the key element that forms the basis of the teacher training program. Thus, The Gambia's approach for the integration of the 21CS will prioritize the following steps:

- Revise curriculum to address the missing learning objectives and targets that relate to the 21CS;
- Develop materials to give teachers opportunity to access materials for the teaching and assessment of 21CS (for new content areas or to reinforce existing materials);
- Train teachers to address new emerging pedagogical issues;
- Develop assessment guidelines to establish learning progression that relate to the 21CS;
- Formulate educational policies.

The case of Chad – Oumar Ali Moustapha



Students of the kitera nomadic school, Fitri department, Yao sub-prefecture.

Chad is classified as a fragile and conflict-affected country (FCAC) and is one of the 10 poorest countries in the world (ranked 163th out of 169 countries in the Human Development Index). This has implications for the education of their children and the system more widely. One of the challenges, which the primary education system will need to address over the next decade, is to reduce the disparities between school-aged population, through increased access to and completion of education. This can be accomplished by focusing efforts first and foremost upon the recruitment and training of teachers and the development of community-based teachers.

Chad's Interim Education Plan reflects the vision for the development of education in the country and is linked to Sustainable Development Goal 4 and to the National Development Plan ("Our Vision for Chad in 2030"). The National Development Plan outlines aspirations for improved schooling, education system standards, and level of financial investment in the sector by 2020. For this reason and in order to tackle the high drop-out and repetition rates, the Government, through its assessment system, has recommended methods to increase success rates by including formative and summative assessments to promote student success.

The education sector does not include specific goals for 21CS, and participation in the study highlighted several challenges with regard to the introduction of 21st century skills into school curricula and implementation in classrooms. A major difficulty is that the national education system in Chad does not have a reliable system at the national level for assessing student

achievement, nor actual assessment tools. Three specific system-level needs were identified as followed:

- 1) An operational and efficient assessment system at the national level
- 2) Improved policies and remediation measures in a participatory and transparent framework
- 3) Reform of educational programs, methods, and practices.

Identifying these challenges points to immediate areas for action and capacity building. First and foremost is the challenge of establishing a national level system of assessment of prior learning, informal, and non-formal education. This is currently being addressed through a feasibility study supported by GPE. This project will explore the feasibility and initial costs for the establishment of a new system of national assessment, as well as the creation of an entity for national assessment. Other challenges include:

- Preparation and organization of large-scale national assessments of the formal and non-formal systems
- Design and development of the tools of the national assessment system
- Training stakeholders on national assessment frameworks
- Institutional support for the functioning of national assessment systems
- Capacity building of the Statistics Directorate in the data collection related to the national assessment system
- Multi-disciplinary training of officials of the Ministère de l'Éducation Nationale et de la Promotion Civique (MENPC) to ensure the autonomy of the assessment body for the long-term operationalization of the national assessment system.

These case studies illustrate the relevance of the recommendation. First, countries are aware of the need to look not only at the curricular level, but at how the curricular intentions can be delivered through their assessments and pedagogical practices. Second, they are able to explain what processes students are engaging in that fall under the targeted skills. Regardless of whether or not tools currently capture skills, there is increasing recognition on how to modify and expand the items in order to target 21CS. Third, countries are aware of the issues that they face and are identifying what is needed in order to implement a 21CS agenda.

5. Next steps

The participating countries provided sets of tools that were either thought to be capturing 21CS or that had the potential to do so. There was a strong degree of similarity in the types of tools across countries, indicating the dominant use of items that invite responses that can be scored as correct (based on numeracy or on learned knowledge in school subjects), or items that require students to demonstrate their literacy. The vast majority of items reflect these perspectives.

A major difference between the countries' provisions of assessment tools and similar provisions in the UNESCO Asia study (Care, Vista et al., 2019), is the research participants' a priori identification of the potential of tools for re-framing to fit current needs. This pragmatic stance symbolizes both a readiness to implement change and strong self-efficacy on the part of the countries. It demonstrates the preparedness of the countries' representatives to effect change from the ground up, rather than assuming that changes in practice need to be imagined initially at policy level. Notwithstanding the seniority of the country representatives that

took part in this study, their willingness to visit and explore their schools to understand the current state of play, and their engagement in the detailed analysis of their data, equipped them in a way that bridges the gaps between policy and practice.

The study has provided us with recognition of the capacity of the country teams to act on their understandings of 21CS without major external contributions. As a consequence, three countries in Africa, including Democratic Republic of Congo, The Gambia, and Zambia, are now engaging in an initiative⁴ to develop assessment tools in a way similar to their suggested modifications to tools provided in this study. One output of the initiative will be a small number of tools for a limited number of skills targeted to a relatively narrow range of student ages and grades. However, a substantive outcome will be the greater understanding of how we can adjust and re-frame assessments to serve purposes beyond those they currently serve, and guidelines for how educators can extend the approach.

4. For more information about the Optimizing Assessment for All :Measuring 21st century skills initiative, please see <https://www.brookings.edu/product/optimizing-assessment-for-all/>

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Appendix A: Study timeline and activities

| Event | Dates | Location | Mini-Study Activities |
|------------------------------------|----------------------------|------------------|---|
| Workshop 1 | 16-17 July, 2018 | Dakar, Senegal | Attend two-day meeting for introduction to the study, familiarization with 21 st century skills concepts, description of the mini-study method, and information to start the study |
| Collect Sample Tools | Aug-Sep 2018 | In-country | Contact ministry/department of education to sample national assessment examples, identify and recruit schools to sample from, collect sample tools |
| Meeting 1 | 5-6 Sep, 2018 | Conference Calls | Participate in calls with other mini-study country participants to review data collection |
| Workshop 2 | 8-9 Nov, 2018 | Dakar, Senegal | Attend 2-day meeting to present sample of tools collected, develop coding processes, and to start coding |
| Coding of Tools | Nov-Dec 2018 | In-country | Code the tools collected |
| Meeting 2 | Nov 2018 (as requested) | Conference Calls | Participate in virtual webinars with other mini-study country participants to finalise coding and prepare final information for the synthesis of all countries' contributions |
| Data analysis and synthesis | Jan-Feb 2019 | In-country | Analyze and synthesize data |
| Report and Dissemination | mars-19 | In-country | Drafting of report and dissemination of findings |

Appendix B: Study participants

| Country | Participant | Title | Organization |
|---|--------------------------------------|--|---|
| Chad | Ali Moustapha Oumar | Directeur de la promotion des écoles nomades, insulaires et des enseignements spécialisés | Ministère de l'Education Nationale et de la Promotion Civique (MENPC) |
| Côte d'Ivoire | Coulibaly Fatogoma | Inspecteur de l'enseignement secondaire ; sous-directeur de la formation pédagogique continue à la Direction de la Pédagogie et de la Formation Continue | Ministère de l'Education Nationale de l'enseignement technique et de la formation professionnelle |
| | Coulibaly Youssouf | Chef du service du suivi des réformes et des programmes - Direction de la veille et du suivi des programmes | Ministère de l'Education Nationale de l'enseignement technique et de la formation professionnelle |
| Democratic Republic of the Congo | Kasang Nduku | Secrétariat permanent d'appui et de coordination du secteur de l'éducation | Ministère de l'Enseignement Primaire, Secondaire et Professionnel |
| | Jovin Mukadi | Conseiller chargé de la coopération internationale | Ministère de l'Enseignement Primaire, Secondaire et Professionnel |
| Gambia (the) | Momodou Jeng | Director of Science and Technology Education and Head of In-service Training Unit | Ministry of Basic and Secondary Education |
| | Ousmane Senghor | Secretary General Gambia National Commission for UNESCO (NATCOM) & Head of Assessment Unit | Ministry of Basic and Secondary Education |
| Kenya | Andrew Ngugi Gatonye | Chief Curriculum Development officer | Kenya Institute of Curriculum Development |
| | Assumpta Kamene Mulila | Senior Subject officer and Head of national assessment Centre | Kenya National Examinations Council |
| Lesotho | Methalali Bridget Khoarai | Director – Produce Development and Standards | Examinations Council of Lesotho |
| | Mamposi Masoloja Anastacia Motlomelo | Director - Teacher Training and Development | Ministry of Education and Training |
| Mali | Mohamed Maïga | Directeur du Centre national des examens et concours | Ministère de l'Education Nationale |
| | Mamadou Bamory Kone | Chef de la division recherche pédagogique et évaluation | Ministère de l'Education Nationale |
| Senegal | Cheikh Sène | Planificateur à la Direction de l'enseignement élémentaire | Ministère de l'Education nationale |
| | Abdoulaye Diop | Inspecteur à la Direction de l'enseignement élémentaire | Ministère de l'Education nationale |
| | Cheikhna Lam | Directeur de l'INEADE | Ministère de l'Education nationale |
| | Ndeye Aby Ndaw | Directrice de l'enseignement élémentaire | Ministère de l'Education nationale |
| Zambia | Victor Stanslas Mkumba | Principal Education Standards Officer-Tertiary | Ministry of General Education Standards and Curriculum |
| | Banda Lazarous Yobe Kalirani | Principal Curriculum Specialist - Social Sciences Faculty | Ministry of General Education Curriculum Development Centre |

Appendix C: Background information

Côte d'Ivoire: Ministry of National Education, Technical Education and Vocational Training

Located in West Africa, the Republic of Côte d'Ivoire has an area of 322,463 km for a population of 23.7 million (2016). Its political capital is Yamoussoukro, and Abidjan is its economic capital. It has about seventy (70) national languages. The official language is French. The country is bordered to the north by Mali and Burkina Faso, to the east by Ghana, to the west by Liberia and Guinea, and to the south by the Atlantic Ocean. In Côte d'Ivoire, the political vision is to bring the country to emergence.

The purpose of the school is to contribute to the achievement of this objective and to produce competent citizens in all fields.

Structure of the Education System

Côte d'Ivoire's education system is governed by the Act No. 2015-635 of 17 September 2015 amending the Act No. 95-639 of 7 September 1995 on Education. This law introduces compulsory education for all children aged 6 to 16.

The education system comprises three levels of education: pre-school and primary education; secondary education; and higher education. Table C1 summarizes each of the levels.

Table C1

| Level | Age Group | # of classrooms | # of pupils | # of teachers | Sub-cycles | # of years |
|---|-------------|---|-------------|---|---|------------|
| Preschool Education | 3-5 years | 7,042 | 188, 147 | 9,533 | 3 sub-cycles: small, medium, and large sections | 3 years |
| Primary Education⁵ | 6-12 years | 95,866 | 4,003,884 | 96,255 | 3 sub-cycles: Preparatory Course (CP), includes CP1 and CP2; Elementary Course (CE), includes CE1 and CE2; and Middle Course (CM), includes CM1 and CM2 | 6 years |
| General Secondary Education⁶ comprises two cycles: First cycle and Second cycle | | | | | | |
| First Cycle (College)⁷ | 12-15 years | 37,077 classrooms in first and second cycle | 1,603 770 | 61,388 teachers in first and second cycle | 2 sub-cycles: observation (6th and 5th) and orientation (4th and 3rd) | 4 years |
| Second Cycle (Lycée)-Upper secondary | 16-18 years | | 506,729 | | Leads to Baccalaureate | 3 years |

Source: DSPS/MENETFP 2018-2019

5. The primary cycle ends with the Certificate of Primary Elementary Studies (CEPE).

6. General secondary education has 1,778 schools, 1,923,763 pupils and 59,356 teachers.

7. Access to secondary education is conditional on successful completion of the national primary education examination. The end of this cycle is sanctioned by the Brevet d'Etudes du Premier Cycle (BEPC).

Assessment

In Côte d'Ivoire's education system, three types of learning assessment are employed to measure the level of students' skills acquisition. These are:

- Continuous daily checks, monthly essays at the class level in primary education, standardized compositions at the inspection district level (whose dates are fixed by order of the Minister of National Education), mock examinations for the CM2 class (preparation for the final examination), continuous classroom tests (written, oral, supervised classwork, homework, report of practical work) in general secondary education, and mock examinations at school level for grades 9 and 12. These different evaluations highlight not only problem solving but also communication, collaboration, and team spirit.
- National primary school leaving examination (CEPE/Entrée en 6^{ème}); national secondary school leaving examination (BEPC) at the end of the 4th year of secondary school and the national secondary school leaving examination (BAC) at the end of the 7th year. These national examinations at the end of the cycle are organised by the Examinations and Competitions Directorate (DECO). These are certified evaluations that cover the entire program. The tests of these different assessments are designed by subject development/selection committees composed of general inspectors, secondary education inspectors, pedagogical inspectors, primary education inspectors, pedagogical advisers and teachers.
- Standardized assessments of learning achievements. These are mainly thematic and diagnostic evaluations. They are managed by the Direction de la Veille et du Suivi des Programmes (DVSP) and by the PASEC national team for the PASEC international evaluation.

Democratic Republic of Congo (DRC): Ministry of Primary, Secondary and Vocational Education

The vision for DRC's education system is to promote the diversity and richness of local cultures while developing intelligence, the spirit of initiative and creativity, mutual respect, tolerance, and the protection of the local culture and environment.

Structure of the Education System

Education in the DRC, in terms of management, is subdivided into two regimes: public and private. The public system is subdivided into non-confessional public schools (managed directly by State structures) and confessional schools. Confessional schools are directly managed by the community or religious conventions.

The Ministry of Primary, Secondary and Vocational Education manages three levels of education: pre-school, primary, and secondary. The kindergarten or preschool level is organized in a three-year cycle; the primary level is organized in a six-year cycle; and the secondary level includes a two year first cycle of general education (ex-orientation cycle), and a second cycle of general humanities, technical and professional humanities.

The Ministry of Higher and University Education is responsible for higher and university education, access to which is reserved for holders of a national diploma. The Ministry of Social Affairs (MAS) is responsible for literacy and non-formal education:

- Primary school catch-up for school drop-outs or out-of-school children aged 9 to 14. The duration of the training is 3 years;
- Literacy training for young people in school (1 to 3 years) to develop basic skills in writing, reading, arithmetic, and environment;
- Professional apprenticeships provided by centres to prepare children to enter a trade according to their abilities. The duration of the training is 3 years;
- Functional adult literacy of variable duration (1 to 6 months) according to learners' needs;
- Adult education or lifelong learning. These are the various cultural activities (conferences, debates, cinema, and libraries) organised for adults.

Assessment

To date, the large-scale evaluations organized in the DRC's education system have all had a summative focus. These are the national certifying evaluations systematically organised at all levels. They target the learning outcomes of students at the end of the cycle and lead to end-of-cycle diplomas. The primary cycle culminates with the TENAFEP (Test national de fin d'études primaire / National test of end of

primary studies). Secondary education is completed by a state diploma after six years of secondary education, or a diploma of professional proficiency for the short cycle, after four years of secondary education.

Standardized evaluations have not yet been systematically organized. However, a major reform in this area is currently being implemented. The goal of the reform is to organize standardized evaluations at the primary and secondary levels of the Congolese education system. The focus is not on achievements of individual pupils, but on the whole of the education system or a clearly defined part of a system. To carry out these evaluations, an Independent Learning Assessment Unit (CIEAS) was created within the Ministry of Primary and Secondary Education by a ministerial decree of 27 February 2016. CIEAS works closely with the Ministry structures that lead the other evaluations and with the Permanent Secretariat for Support and Coordination in the Education Sector (Secrétariat permanent d'appui et de coordination du secteur de l'éducation or SPACE).

With regard to classroom assessment practices, the Congolese education system envisages three types of assessment in the primary cycle:

- Quarterly exams organized in each school and recorded on the student's report card. These exams cover all subjects taught during the term. The questions and items are developed by the teacher and validated by the head teacher. The student's transition to the next grade is subject to a positive average of the marks during the three terms.
- Formative evaluation exercises at the end of each teaching sequence. The teacher must check the level of assimilation of the learning in order to eventually remedy the deficiencies observed. This classroom assessment by the teacher has an essential function of informing teaching and learning.
- Homework (at school or at home) in order to allow the student to better assimilate to learning through more personal work.

The Gambia: Ministry of Basic and Secondary Education

The Gambia is one of the smallest countries in main land Africa, with a population of about 1.8 million people. The Gambia has a youthful population with more than 40% of the population being children of school going age.

Structure of the Education System

The Gambia's current formal education system follows a 6-3-3-4 structure with six years of Lower Basic (LBE) which officially begins at age 7, followed by three years of Upper Basic education (UBE). Together, LBE and UBE cover grades 1-9 and constitute the basic education level. This is followed by three years of senior secondary education and four years of tertiary or higher education. The government encourages participation in the Early Childhood Development (ECD) programs and has been proactive in expanding access. However, this level of education remains optional.

Assessment

In The Gambia, assessment is conducted at various levels for different purposes:

1. Classroom assessments (or school-based assessment) support teaching and learning on a daily basis. This is conducted by the teacher and is used to gather evidence of student learning on a regular basis. However, current practices at school level highlight significant deficiencies in terms of organization, planning and implementation of meaningful classroom-based assessments. Classroom-based assessment is solely managed by teachers with little or no supervision by Heads of Department or school leaders. This raises concerns in terms of test reliability and validity.
2. School cycle certification examinations select students into higher levels of education. The Gambia has two such examinations, which are managed by the West African Examinations Council: the Gambia Basic Education Certificate Examination (GABECE) at the end of grade 9, and the West African Senior Secondary Certificate Examination (WASSCE) at the end of grade 12.

These assessments, summative in their purpose, demonstrate the extent of a learner's success in meeting the assessment criteria used to gauge the intended learning outcomes of a subject. The GABECE and WASSCE are used for both assessing student achievement at these levels and determining which students are ready for higher levels of education and training.

3. National large-scale assessments are used to monitor learning at the national and sub-national levels. These assessments provide evidence of how well the system is performing and to inform policy on the level of learning outcomes in basic education and by the same token suggest strategies to address any inherent weaknesses. The Gambia administers:
 - a. Early Grade Reading Assessment (EGRA) and Early Grade Mathematics Assessment (EGMA) in grades 1, 2 and 3. EGRA and EGMA are individually administered oral assessments of the most basic foundation skills for literacy and numeracy acquisition in early grades.
 - b. National Assessment Test in grades 3, 5, and 8. National Assessment Tests (NATs) were introduced for all pupils in grades 3 and 5 in 2008, and for grade 8 in 2012. The tests are curriculum-based assessment and they comprise of English Language, Mathematics, and Integrated Studies for grade 3 and English, Mathematics, Science, Social and Environmental Studies for grades 5 and 8

Kenya: Ministry of Education, Science and Technology

Kenya's education mission statement is "to provide, promote and coordinate quality education, training and research; and enhance integration of Science, Technology and Innovation into national production systems for sustainable development".

Structure of the Education System

The current education system in Kenya is comprised of eight years of primary school, four years of secondary school and four years of university education (8-4-4). Significant to note is that at the time of writing this report, Kenya was undertaking curriculum reform, with the Competency Based Curriculum, which is expected to replace the 8-4-4, being nationally piloted at Grades 1 and 2. The

structure of the new curriculum will comprise two years of Pre-primary, six years of Primary, six years of Secondary, and three years of University education (2-6-6-3). This curriculum is based on a curriculum Education Framework developed to address various issues in the Kenya Education System.

Assessment

Evaluation of student learning is largely carried out through summative examinations where learners sit for the Kenya Certificate of Primary Education (KCPE) at Class 8 and the Kenya Certificate of Secondary Education at Form 4. These examinations are administered by the Kenya National Examinations Council (KNEC), which is the national examinations board. Although the two examinations are summative in nature, it is significant to note that a formative assessment is still undertaken to inform improvement of the teaching and learning process at classroom level. Examples of formal assessments include homework, midterm, and end of term examinations, classroom assignments and projects, and zonal examinations. School based assessments are also carried out at the secondary school level, specifically in technical subjects such as Computer Studies where KNEC gives project tasks to candidates. The candidates are assessed and awarded marks, which contribute to the candidate's overall grade in that subject.

The Competency Based Assessment Framework, designed to be aligned with the new competency-based curriculum, emphasizes the balance between summative and formative assessments, with formative assessments prioritized as a means for providing continuous feedback not only to the teacher, but also to the learner and the parent. Continuous reporting on the acquisition of the core competencies will be conducted through assessment strategies, such as classroom observations, portfolio and projects, self and peer assessment, authentic assessments, and other tools. In addition, formative assessment and feedback through Kenya Early Years Assessment (KEYA) will be carried out at the end of Grade 3 to establish learner acquisition of knowledge, skills and attitudes.

It is also worth noting that in addition to national examinations, Kenya undertakes regular monitoring

of learner achievement through the National Assessment System for Monitoring Learner Achievement (NASMLA) Framework. Using this framework, sample based national assessments are undertaken to establish learner achievement levels and report on areas of intervention as they transit to different levels of basic education. National assessments, unlike national examinations, are formative in nature. Besides assessing pupil/student acquisition of knowledge and skills and attitudes demonstrated in specific subjects, they also gather empirical information on the factors such as teacher and student characteristics that influence learning outcomes and give policy suggestions on appropriate interventions. Conventionally, National Assessments are undertaken after every 3 years. At Grade 3, the National Assessment System for Monitoring Learner Achievement (NASMLA) is undertaken to monitor learner achievement in Literacy and Numeracy, as well as learner acquisition of life skills.

Regionally, Kenya has been participating in the Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ, now SEACMEQ) which assesses achievement levels in reading and mathematics among Grade 6 pupils. At secondary school level, Monitoring Learner Achievement (MLA) studies are undertaken to monitor learner achievement in mathematics and language. The most recent MLA study assessed learner achievement in mathematics, sciences, and languages.

Lesotho: Ministry of Education and Training

Education policy in Lesotho calls for more radical approaches to teaching. First, pedagogy must shift towards methods that can develop creativity, independence, and survival skills of learners. In essence, learners should assume greater responsibility for their own learning processes.

Second, the new trend should move from teaching to facilitating learning; from the transfer of facts to student construction of knowledge; from memorization of information to analysis, synthesis, evaluation, and application of information; from knowledge acquisition to development of knowledge, skills, values, and attitudes; from categorized knowledge (traditional subjects) to integrated knowledge (broader learning areas); from

didactic teaching to participatory, activity-centered, and interactive methodologies.

In 2012, Lesotho introduced “Integrated curriculum” and “Continuous assessment” in schools. These initiatives are part of a reform-package which aims at improving the quality of education of the country by addressing challenges brought by summative assessment. The reforms are also meant to address educational inequity, which has been a long time concern in the country. Lesotho has followed an incremental implementation of these initiatives to enable the integration of an evaluation of the reform, allowing for the identification and design of mitigation strategies in a timely manner. In 2018, the reforms were implemented up to grade 9.

Structure of the Education System

The education system is now comprised of ten years of basic education (seven years primary and three years junior secondary), two years of senior secondary education, and four years of tertiary education (degree).

Assessment

The basic education portion has three phases (lower, intermediate and higher basic education). At the end of each phase, learners take end of level assessments. At Grade 4, all learners take an end-of-level assessment in Numerical and Mathematical, Linguistic and Literary (Sesotho and English) and Scientific and Technological. The purpose of the assessment is to check the effectiveness of instruction and the readiness of learners to transit to the next academic phase. The Examinations Council of Lesotho (ECOL) develops the assessment instruments which are administered by teachers in the schools. The Council also provides marking guides for teachers. The marking is done by teachers in schools and mark-sheets with selected sample scripts are sent to ECOL to evaluate the accuracy for further teacher training on the marking strategies.

Plans are still underway to devise data collection strategies, which will enable the Council to have an audit trail of learners’ achievement in the core subjects at the different academic phases (Grade 4, 7, 11 and 12). This data will not only help to evaluate the effectiveness of the interventions, it would also provide a basis for remediation.

Assessment at Grade 7

Grade 7 marks the end of intermediate basic education and a transition to higher basic education. Learners take another end-of-level assessment in Sesotho, English, Science and Technology, Mathematics, and Social Science. These are developed and marked centrally by ECoL. ECoL then releases statements of achievement or reports to candidates and schools to give further instruction for Grade 8. The performance of learners is classified into either advanced, proficient, basic or below basic. The Assessment on Creativity and Entrepreneurship is a school-based project.

This encourages learners to produce artefacts or projects that improve their home or school environments as well as their wellbeing. ECoL provides schools with a theme and a scoring rubric for teachers annually. Teachers submit the mark-sheets for incorporation of learners' performance into the overall reports. To encourage commitment to the assessments standards and motivate teachers to support learners, ECoL performs random school spot checks, inspects artefacts, and interviews learners to establish their level of knowledge of their products. Assessment on Life Skills Based Sexuality Education (LSBSE) is also school-based, as teachers submit learners' achievement records to ECoL.

Grades 10 and 12

In the current system, students take an examination at Grade 10 or at the Junior Certificate level. Their performance is categorized into first, second, third class or fail. Their performance qualifies them for senior secondary or Grade 11 education. At grade 12, students take another examination for selection into tertiary education. This can either be university, technical college, teacher training colleges, nursing school, or armed forces. Lesotho is currently piloting the Advanced Subsidiary level in a few selected schools.

Assessment Guidelines

To support teachers in schools the Ministry of Education and Training has developed assessment packages which guide teachers in the development of assessment tasks in lower and intermediate basic education. At the higher basic education, the assessment framework for the development of items

for the assessment of skills such as problem-solving, creativity and entrepreneurship in various subjects is still underway.

In addition to achievement assessments, Lesotho conducts surveys of National Assessments of Educational Performance at grades 4, 6 and 9 every two years. This assesses the health of the education system against set strategic goals for appropriate remedial interventions.

Mali: Ministry of National Education

The aim of the Malian educational system is to train a patriotic citizen and builder of a democratic society, a development actor deeply rooted in their culture and open to universal civilization, mastering popular know-how, and capable of integrating knowledge and skills related to scientific progress, technology, and modern technology.

Structure of the Education System

Mali's education system is regulated by amended Act No. 99 / 046 / of 28 December 1999, known as the Education Orientation Act. Mali's education system is governed by two ministries: the Ministry of National Education and the Ministry of Higher Education and Scientific Research. The Ministry of National Education manages basic education, normal education, general secondary education, technical and vocational education and non-formal education. The Ministry of Higher Education and Scientific Research manages universities, colleges and research institutes.

The education system in the Republic of Mali comprises the following levels of education:

- Pre-school education;
- Basic education;
- Secondary education;
- Higher Education

Basic education comprises two cycles. The first cycle includes six years of study and goes from 1st (starting at the age of 6 or 7) to 6th grade. The second cycle includes three years of study and goes from 7th to 9th grade. In 9th grade, the student is given an examination called the Diploma of Fundamental Studies commonly called DEF (from the French Diplôme d'Etudes Fondamentales),

which corresponds to the Certificate of First Cycle Studies (in French: Brevet Etudes du Premier Cycle or BEPC) in the sub-region. After receiving a diploma, the student is placed in a general secondary school, normal education, or technical and vocational education.

Secondary education comprises two levels of education. General secondary education includes lycées. A pupil aged 13 to 16 years and oriented to the lycée does three years of studies if he/she does not repeat a class. In the final year, he/she is called to do the Baccalaureate (BAC) in one of the following fields according to his/her orientation: Arts and Humanities, Languages and Literature, Exact Sciences, Economic Sciences, Experimental Sciences, Social Sciences.

For Normal education, students with a DEF or a BAC have an entrance exam to the Teacher Training Institutes (in French Instituts de Formation des Maîtres or IFM). Students with a BAC do two years of studies if they do not repeat. Those with the DEF do four years of studies if they do not repeat the year.

Technical and Vocational Education comprises technical high schools and vocational schools. A student between 13 and 16 years of age, who is oriented to technical high schools, does three years of studies. In the final year, he/she is called to do the BAC Technique in one of the following fields according to his/her orientation: Accounting and Finance, Civil Engineering, Management and Commerce, Electrical Engineering, Energy Engineering, Mechanical Engineering. In vocational schools, students over 18 years of age are required to take the Certificate of Professional Ability (in French Certificat d'Aptitude Professionnel or CAP) after two years of study in the following fields: commerce, accounting, plumbing, administration, electricity, construction, car mechanics. Those between the ages of 17 and 18 are required to take the Technician's Certificate (BT) in the following fields: commerce, accounting, plumbing, administration, electricity, construction, car mechanics.

Assessment

At the level of the Ministry of National Education,

the National Centre for Examinations and Competitions in Education (in French Centre National des Examens et Concours de l'Éducation or CNECE) is responsible for organising examinations and competitions in Education: DEF, BAC, CAP, BT, IFM entrance examinations; designing and drawing up examination papers and making them available to the Directorates of the Academies of Education (D.A.E); and supervising the conduct of written and practical examinations. CNECE is also responsible for issuing the corresponding diplomas.

In general, the various purposes of assessment include:

1. Award of a diploma or completion of a course of study;
2. Monitoring learning outcomes at national level;
3. Teacher training needs;
4. Need for adequate educational materials;
5. Control quality of teaching;
6. Review the curriculum;
7. Political decision-making to plan educational reforms.

At the school and classroom levels, various tasks are used for formative assessment purposes. These tasks include supervised homework in class, presentations, writing compositions, practical problems, drawings, and project work.

Senegal: Ministry of National Education

Senegal defines the following vision for its education system: « a peaceful and stable education and training system (SEF), diversified and integrated to include equality in each and every one, motivated and qualified for the success of all, and relevant and effective as a tool for developing the skills necessary for the emergence of a prosperous and supportive Senegal » (LPGS MEN 2018-2030). The implementation of Senegal's education policy is ensured by several ministries, including the Ministry of National Education (MEN). This mission is carried out through its educational departments, which implement the curriculum and the monitoring of learning. They are supported in their actions by cross-functional

technical departments such as Examinations and Competitions Directorate (DEXCO) for certification evaluations and the Institut National d'Études et d'Action pour le Développement de l'Éducation (INEADE) for non-certification studies and evaluations. At the de-centralized level, the Academic Inspections (IA) and the Departmental Inspections of Education (IEF) coordinate educational action.

Structure of the Education System

Senegal's education system comprises two sectors: formal and non-formal.

Non-formal education includes basic education for youth and adults (EBJA) and modern daara.

- Basic education for youth and adults (EBJA) is a non-formal education offer that develops alternative models (basic community schools and bridge classes) to care for out-of-school and out-of-school youth aged 8 to 15 and other learners aged 15 and over in functional literacy classes (FLC).
- Modern daara provides education for children aged 3 to 13 on Koranic, religious, basic reading, mathematical and life skills.

Formal education includes the following:

- Integrated development of early childhood (DIPE) is intended for children aged 3 to 5. It comprises three levels: the junior section (3-year olds), the middle section (4-year olds) and the senior section (5-year olds).
- The basic cycle consists of two complementary programs: the elementary and the general means. Together they make up the compulsory school age of 6 to 16 set by Act No. 2004-37 of 15 December 2004.
 - o Elementary education welcomes children from 6 to 11 years old and is organized for a period of six years. The six (6) years of study are sanctioned by the Certificate of Completion of Elementary Studies (CFEE) and the entrance examination for the sixth year (Collège).

- o General intermediate education, provided in middle schools (CEM), receives students at the age of twelve (12) for a duration of four years of studies culminating in the Certificate of Completion of Medium Studies (BFEM).

- General secondary or technical education is an intermediate level that receives graduates from the "Collège" and prepares them for higher education. The studies last three years and culminates with the acquisition of the baccalaureate.
- Vocational and technical training (FPT) is a network composed of vocational training centres both in the counties and in the districts. The studies are sanctioned by the CAP, the Diploma of Professional Studies (BEP), and the BT according to the level of studies.
- Higher education in Senegal is organized according to the Licence Master Doctorat (LMD) reform. The development of distance education thanks to the advent of the virtual university facilitates the access of baccalaureate holders to higher education.

Assessment

Senegal, through the technical structures of the Ministry of Education, has implemented an evaluation system in the education system. It is structured around national, regional and international assessments.

Summative evaluations (CFEE and BFEM) are organised by the DEXCO and the baccalaureate by the Baccalauréat Office. Continuous and standardised evaluations are organised at the level of education and training inspections and academy inspections.

Survey and impact evaluations are conducted by INEADE.

Table C2 describes the different types of evaluation implemented.

Table C2. Types of evaluation implemented in Senegal

| Level | TYPES OF ASSESSMENT | | | | Impact evaluations |
|----------------------|--|---|--|--|---|
| | Summative | Continuous | Standardized | Survey and studies | |
| Local | | <ul style="list-style-type: none"> - self-corrective cards, - individual monitoring form, - Daily homework - SAI (SE) | <ul style="list-style-type: none"> - Local standardized assessments (IEF, IA) - Compositions | | |
| National | <ul style="list-style-type: none"> - Certificate of completion of elementary studies (CFEE) - Entry in the sixth year (competition) - Middle school leaving certificate (BFEM) - Baccalauréat | <ul style="list-style-type: none"> - PALME: Bank of items, | <ul style="list-style-type: none"> - PALME: annual pre/posttest CP CE2 CM2 Reading, math - QBQAP Assessments: Monitoring of Performance Contracts (PCA) Indicators (Basic, Daara and Average QBQAPs) | <ul style="list-style-type: none"> - Elementary National System for the Evaluation of Educational Achievement (SNERS) 1, 2, 3, 4, 5, 6 CP CE2 French, Math, ESVS - Middle SNERS (database) 3rd year college (4th) Math, Science, French and English | <ul style="list-style-type: none"> - Baseline PALME - Baseline ARED: study of bilingual experimental classes - PAEBCA study: teacher competencies in French (TNEF), science and math (elementary, middle) - Baseline daara PAQEEB |
| Regional | | | | <ul style="list-style-type: none"> - PASEC (CONFEMEN) Grades 2 and 6 Reading comprehension and math | <ul style="list-style-type: none"> - ELAN: assessment of bilingual classes - ROCARE (4th grade): transnational study on the employability of young college students |
| International | | <ul style="list-style-type: none"> - LMTF: monitoring learning levels in French, math and science - NALA | | <ul style="list-style-type: none"> - PISA-D (OECD) 15 years old children School and out of school (French, Wolof) | |

Source: Senegal Country Study (2019): OAA Mini-Study, UNESCO

Chad: Ministry of National Education and Civic Promotion

The Government of Chad has prepared an Interim Education Plan (PIET) for the period 2018-2020, which follows the Interim Strategy for Education and Literacy (SIPEA). The plan aims to increase the supply of educational services, improve the quality of learning, balance funding and development ambitions, promote equity and reduce disparities, make management and training more effective, and improve governance of the education sector.

Structure of the Education System

Chad's education system is structured across pre-school education, elementary education (primary school and middle school), secondary education, and higher education. Pre-school education is provided within specialised facilities, namely nursery schools and kindergartens designed for children aged between three and six years, and lasts for three years. Elementary education is divided into two phases: primary school and middle school. The primary school phase lasts for six years and is provided for children aged between six and twelve years. To complete this phase, pupils must pass the CEPE (Certificate of Elementary Primary Education).

Middle school lasts for four years. It is provided by general education colleges, and students must pass the Undergraduate certificate of studies (in French BEPC - Brevet d'Études du Premier Cycle.) Secondary education is organised into general pathways and into technical and professional pathways. Students who progress to secondary education have completed their elementary education and have met the requisite selection criteria for their chosen pathway.

General secondary education is provided by general education colleges and consists of a single phase lasting three years. At the end of the three years, students must pass the Baccalaureate of Secondary Education (A4, A Arabic, A4 Bilingual, C, C Arabic, D and D Arabic).

Technical and professional secondary education is provided by Technical and Professional Training Centres (CFTPs), by Colleges for Technical and Professional Training (CETPs) or by Lycées for Technical and Professional Training (LETPs). CFTPs accept students aged least fifteen years who have completed elementary school, and over a two-year period the CFTPs prepare these students to sit the Final Diploma of Technical and Professional Training (DFFTP). CETPs, on the other hand, are suitable for students who have obtained their diploma of elementary education. The CETPs prepare their students to sit the Diploma of Professional Studies (BEP).

LETPs accept students who have obtained a diploma of elementary education such as those offered by colleges of elementary education. Over three years, the LETPs prepare their students to sit the Baccalaureate of Technical and Professional Education (G1, G2, G3, F1, E). Higher education is open to candidates who have obtained their Baccalaureate of Secondary Education, or any other qualification deemed to be equivalent.

Assessment

In the context of learning assessments at classroom and national levels, the Chadian education system does not have a national evaluation body. There have been attempts to set up an evaluation and monitoring service, but they were unsuccessful to date. Nonetheless, the country has two main types of evaluation: formative and summative.

At the national level, Chad has the Brevet d'Étude Fondamental (BEF) exams which take place in the 4th year of secondary school and the BAC exams which take place in the 3rd year of secondary school.

Assessments at the school level comprises the following modalities:

- Formative evaluation that takes place at the time of the teaching/learning process. It is carried out through continuous tests in the classes and after each module. It allows the

student's difficulties to be identified in order to take appropriate corrective measures. For example, to ensure that learners have understood, the teacher occasionally asks them oral or written questions during and at the end of the lesson.

- Summative evaluation consists of establishing a balance and assessing the situation. It takes place at the end of a cycle or programme of study and makes it possible to check whether the learner has mastered the content of the programme taught in order to decide whether to move on to the next grade or repeat a year. Examples of summative evaluations include passing exams and final exams (diploma, certificate, etc.).

Republic of Zambia: Ministry of General Education

The educational aspiration of the Republic of Zambia is to provide "quality long-life education for all which is accessible, inclusive and relevant to individual, national and global value system" and to "enable and provide an education system that will meet the needs of Zambia and its people." There are five statutory institutions under the Ministry of General Education, including the Zambia Education Publishing House, Zambia National Commission for UNESCO, Examinations Council of Zambia, Teaching Council of Zambia, and the Zambia Education Projects Implementation Unit, that work toward achieving their mission and vision.

Structure of the Education System

Zambia's formal Education system runs from early childhood education through primary and secondary up to tertiary education. Early childhood education caters for children within the age range of 3 to 6 and is divided into two levels namely Nursery (age 3-4) and Reception (age 5-6). Primary education is from grade 1 to grade 7, with grade 1-4 designated as lower primary and grade 5-7 as upper primary. Secondary education is divided

into junior secondary and senior secondary. The junior secondary is from grade 8 to 9 while senior secondary runs from grade 10 to 12. Tertiary education is offered upon successful completion of grade 12.

Assessment

The fundamental purpose of assessment in the Zambia education system is that it is used to help make a difference to both teaching and learning. Assessment is used to measure attainment of learning in order to offer feedback and support to improve teaching and learning in the Zambian school classrooms.

Zambia offers a two-tier education system. National assessments are prepared and conducted by two examination bodies namely Examinations Council of Zambia (ECZ) and Technical and Vocational Education and Training Authority (TEVETA). ECZ deals with the academic administration, management and certification of national examinations at grade 7, 9, 12 and teacher education diploma levels. ECZ also conducts periodic national assessment surveys at grade 5 level and information generated from the surveys forms the basis for policy formulation or revision. The country has also participated in PISA, TIMSS and PIRLS. TEVETA on the other hand assesses the vocational skills (i.e., practical skills) of learners and awards trade test certificates at three levels.

Formative assessments occur at all grade levels of the school system, from lower primary through senior secondary, through class exercises, homework, topic-based tests, mid-term tests, excursions and projects. When planning, teachers are encouraged and expected to plan how formative assessment will be integrated into learning experiences, as well as use the information obtained to set learning goals and provide constructive feedback both to the learner and to the teacher.

Appendix D: Sources of data

| Location | School Name | Grade Level | Setting | Type | Size | SES | Achievement |
|--|-------------------------------------|-------------|------------|--------------------|---------|---------|-------------|
| <i>Côte d'Ivoire</i> | | | | | | | |
| Abidjan District | Lycée Sainte Marie de Cocody | Secondary | Urban | Public | Large | High | High |
| Yamoussoukro | Collège Municipal de Yamoussoukro | Secondary | Urban | Public | Large | Low | Average |
| Bouake; Gbêkê Region | Collège Moderne de Languibonou | Secondary | Rural | Public | Average | High | Average |
| Korhogo, Poro Region | Collège moderne de Tioroniaradougou | Secondary | Rural | Public | Average | Low | Low |
| Bondoukou, Gontougou Region | Lycée moderne de Bondoukou | Secondary | Urban | Public | Large | Low | Low |
| Abidjan | EPP Port-Bouet Phare 1 | Primary | Urban | Public | Small | Low | Average |
| <i>Democratic Republic of Congo</i> | | | | | | | |
| Kinshasa | EP 1 Collège Boboto | Primary | Urban | Public; Catholic | Large | High | High |
| Kinshasa | EP Mbudi | Primary | Urban | Public; Catholic | Large | Average | Low |
| Kinshasa | Collège des Savoirs | Primary | Peri-Urban | Private registered | Average | Average | Average |
| Kongo Central | EP1 Boko | Primary | Rural | Public; Catholic | Average | Low | High |
| Kongo Central | EP 2 Nsadisi | Primary | Rural | Public | Small | Low | Low |
| <i>The Gambia⁸</i> | | | | | | | |
| Banjul | Albion | Grades 3-6 | Urban | Public | Large | Average | Average |
| Old Jeswhang Kanifing Municipal Council (KMC) | Old Jeshwang | Grades 3-6 | Urban | Public | Large | Average | Average |
| Farato, West Coast Region | Yalding | Grades 3-6 | Semi-Urban | Public | Small | Low | Low |
| Brikama, West Coast Region | Al-Madina | Grades 3-6 | Rural | Public | Small | Low | Low |
| Brikama-Ba, Central River Region | Brikama-ba | Grades 3-6 | Rural | Public | Large | Average | Average |
| Banjul | JC Faye | Grades 3-6 | Urban | Private | Large | High | Average |
| Bwiam, West Coast Region | St. Martine | Grades 3-6 | Rural | Private | Large | Average | High |

8. School based assessment were collected in grades 3, 5, 6, and 8; National assessment test items were collected in grades 3, 5, and 8; Public examination items were collected in grade 9.

| Location | School Name | Grade Level | Setting | Type | Size | SES | Achievement |
|--|-------------------------|----------------|---------------------------------------|----------------------------------|---------|-----------|---|
| Kenya | | | | | | | |
| Kitui County in Eastern Region | Katheka Primary School | Grades 3 and 6 | Rural/Arid and Semi-Arid Lands (ASAL) | Public | Average | Low | Average |
| Kiambu County in Central Region | Kenyatta Primary School | Grades 3 and 6 | Urban | Public | Average | Low | Average |
| Nairobi County in Nairobi Region | Riara Primary School | Grades 3 and 6 | Urban | Private | Average | Average | High |
| Kajiado County in Rift Valley Region | Kibiko Primary School | Grades 3 and 6 | Peri-Urban/ASAL | Public | Average | High | Low |
| Lesotho | | | | | | | |
| Thaba Tseka District (Central Region) | Auray | | Rural (Mountain) | Government | Small | Low | Average |
| Berea District (Central Region) | Leseli Community | | Urban | Community | Small | High | Average (includes special needs students) |
| Mafeteng District (South Region) | Mafeteng LEC | | Urban | Lesotho Evangelical Church (LEC) | Large | Average | High |
| Leribe District (North Region) | Letlotlo | | Urban | Private | Average | High | High |
| Maseru District (Central Region) | Tholo | | Rural | Anglican Church in Lesotho (ACL) | Small | Low | Low |
| Mali | | | | | | | |
| Académie d'Enseignement de Kati CAP de Kalaban-Coro | Tièbani A | Grade 6 | Rural | Public | 74 | Average | Not available by class |
| | | Grade 9 | Rural | Public | 36 | Average | Not available by class |
| Académie d'Enseignement de Kati CAP de Kalaban-Coro | Tièbani B | Grade 6 | Rural | Public | 70 | Average | Not available by class |
| | | Grade 9 | Rural | Public | 40 | Average | Not available by class |
| Académie d'Enseignement de Bamako Rive Droite CAP de Torokorobougou | Les Castors | Grade 6 | Urban | Private | 28 | Very High | Not available by class |
| | | Grade 9 | Urban | Private | 20 | Very High | Not available by class |
| Académie d'Enseignement de Bamako Rive Gauche CAP de Bamako-Coura | Mamadou Konaté D | Grade 6 | Urban | Public | 80 | High | Not available by class |
| | | Grade 9 | Urban | Public | 45 | High | Not available by class |
| Académie d'Enseignement de Bamako Rive Gauche CAP de Bamako-Coura | Dravela A | Grade 6 | Urban | Public | 65 | High | Not available by class |
| | | Grade 9 | Urbain | Public | 46 | High | Not available by class |

| Location | School Name | Grade Level | Setting | Type | Size | SES | Achievement |
|--|---|--------------------|------------|---------|---------|---------|-------------|
| Senegal | | | | | | | |
| Pikine-Guédiawaye, Dakar Region, Keur Massar Municipality | Elhadj Pathé | Grades 1-6 | Semi-Urban | Public | Medium | Mixed | Average |
| Pikine-Guédiawaye, Dakar Region, Pikine | Ibrahima Ndaw | Grades 1-6 | Urban | Public | Large | Mixed | Average |
| Pikine-Guédiawaye, Dakar Region, Pikine | Darou Khoudoss | Grades 1-6 | Urban | Public | Large | Mixed | Average |
| Rufisque, Dakar Region, Sangalkam | Keur Ndiaye Iô 1 | Grades 1-6 | Rural | Public | Medium | Mixed | Low |
| Rufisque, Dakar Region, Sangalkam | Kounoune 1 | Grades 1-6 | Rural | Public | Large | Mixed | Average |
| Chad | | | | | | | |
| N'djaména | Communale A Dembé | Primary Level | Urban | Public | Large | Low | Average |
| N'djaména | Complexe « petits Génies » | Primary Level | Urban | Private | Medium | Middle | High |
| Zambia | | | | | | | |
| Lusaka | Kabulonga Girls Secondary School | Grade 8 | Urban | Public | Large | High | High |
| | Vera Primary School | Grades 5, 6, and 7 | Urban | Public | Average | Average | High |
| | Mahatma Ghandi Primary/Junior School | Grades 5, 6, and 7 | Urban | Public | Average | Average | Average |
| Chongwe | Mwachiyeya Secondary School | Grade 8 | Rural | Public | Large | High | High |
| | Rafiki Primary/Secondary Private School | Grades 5, 6, and 8 | Rural | Private | Average | Average | High |
| | Bimbe Primary School | Grades 5 and 6 | Rural | Public | Low | Low | Average |
| | Matipula Primary/Junior School | Grades 5, 6, and 8 | Peri-Urban | Public | Average | Average | Average |

Appendix E: Brief definitions of skills

These are broad definitions from various sources, including the OECD definitions of key competencies, the Partnership for 21st Century Learning (P21) definitions of 21st century student outcomes, as well as the country participants themselves. These definitions are not exhaustive, are only for guidance, and are not meant to be prescriptive.

Creativity – the ability to use a wide range of creation techniques (such as brainstorming) to create new and worthwhile ideas (both incremental and radical concepts) as well as observable creations (such as artworks and performances). This include the skills necessary to elaborate, refine, analyze and evaluate their own creations in order to improve and maximize creative efforts.

Entrepreneurship – a combination of technical, business management, and personal entrepreneurial skills necessary to turn ideas into action, as well as plan and manage projects in order to achieve objectives.

Communication skills – the ability to articulate thoughts and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts.

Teamwork – refers to skills necessary to be able to work with others towards a common goal. These include the ability to negotiate, follow an agenda, and make group decisions.

Collaboration – the ability to work effectively and respectfully with diverse teams, including skills necessary to exercise flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal.

Conflict resolution – refers to skills such as the ability to identify areas of agreement and disagreement, reframe a problem, and analyze the issues and interests at stake, that are necessary to manage and resolve conflicts.

Problem solving – a basic cognitive process for identifying problems, assessing different options, and making informed choices when there is not a clear or routine solution.

Critical thinking - intentional, goal-directed, and reflective, used to evaluate, make judgements, and learn new concepts.

Learning to learn - the process of understanding how one learns, being able to reflect on one's own thinking, and reflecting critically on learning experiences and processes in order to inform future progress.

Citizenship—the ability to recognize the set of rights and values agreed upon by the local community, the nation, and the international community, and promote them; deal with situations of conflict and controversy knowledgeably and tolerantly; understand consequences of one's actions; and demonstrate respect and a civic spirit. Citizenship skills are underpinned by systems thinking, critical thinking, prospective thinking, communication and teamwork, and identification of possible actions.

Leadership—the ability to guide, influence, and inspire others to maximize their efforts toward pursuing and achieving a common goal.

Analytic skills—the ability to identify patterns, gather information, analyze, reflect, evaluate, and synthesize information, in order to solve complex problems and make logical independent decisions.

Self-management—the ability to manage oneself, demonstrate self-restraint, accommodate others' views, manage one's use of time (planning, prioritizing, and organizing) and produce desired change in one's behavior.

Media and information literacy

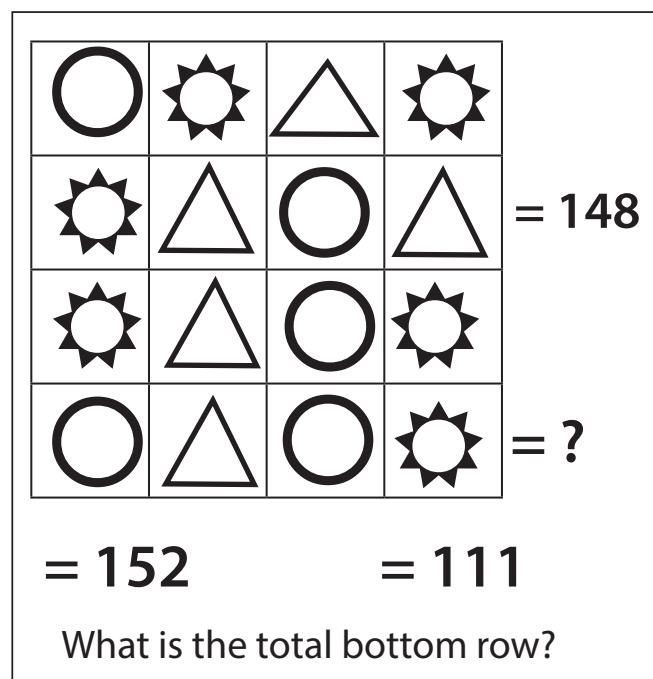
Ability to obtain and analyze information through ICTs – refers to skills required to identify, locate and access appropriate information source (including assembling knowledge and information in cyberspace), and interpret this information and draw conclusions based on analysis.

Ability to critically evaluate information and media content—refers to the skills required to evaluate the quality, appropriateness and value of that information, as well as its sources.

Ethical use of ICTs—refers to the skills required and the ability to apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies.

Appendix F: Examples of tool formats

Figure F1. Example of a dichotomously scored item from The Gambia



Source: Gambia Country Study (2019) : OAA Mini-Study, UNESCO

Figure F2. Example of an item scored through a rating scale from Senegal

In Senegal, several families live in the same house. After an investigation in the community, a group of students identified in a confused (disordered) way the causes and the consequences of this phenomenon, and the solutions recommended to face this population problem.

Here is the information identified by the students:
 Absence of family planning – respiratory and skin diseases – fight against the rural exodus – subdivision of new serviced plots – school failures – slums – conflicts and rivalries – rural depopulation – lack of space – unconstrained housing – ill-health – poverty – education for family life

The teacher asks you to order this information across the three categories of CAUSES, CONSEQUENCES, and SOLUTIONS

Source: Senegal Country Study (2019) : OAA Mini-Study, UNESCO

Figure F3. Example of an open-format item from Zambia.

Give two reasons why the study of civic education is important to pupils. (2 marks)

1. State two ways in which we show commitment to our symbols of national identity. (2 marks)
2. What is the meaning of the term “sovereignty”? (1 mark)

Source: Zambia Country Study (2018) : OAA Mini-Study, UNESCO

Appendix G: Draft list of 21st century skills developed by participating countries

| ENGLISH | FRANÇAIS |
|-----------------------------------|---------------------------------------|
| Creativity | Créativité |
| Initiative spirit (leadership) | Esprit d'initiative |
| Imagination | Imagination |
| Communication | Communication |
| Self-Management (self-regulation) | Auto-gestion (autorégulation) |
| Entrepreneurship | Entrepreneuriat |
| ICT Literacy | Littératie en TIC |
| Cooperation | Coopération |
| Global citizenship | Citoyenneté mondiale |
| Confidence | Confiance en soi |
| Respect | Respect |
| Self-esteem | Estime de soi |
| Meta-cognition | Méta-cognition |
| Critical Thinking | Pensée critique |
| Solving problem | Résolution de problèmes |
| Knowledge application | Application des savoirs |
| Teamwork | Travail d'équipe |
| Self-learning | Auto-apprentissage |
| Conflict resolution skills | Compétences en résolution de conflits |
| Self-efficacy | Auto-efficacité |
| Living Together | Vivre ensemble |
| Patriotism | Patriotisme |
| Environmental awareness | Sensibilisation à l'environnement |
| Self-awareness | Conscience de soi |
| Empowerment of girls | Autonomisation des filles |
| Bilingualism | Bilinguisme/multilinguisme |
| Inclusion | Inclusion |
| Resilience | Résilience |
| Perseverance | Persévérance |
| Collaboration | Collaboration |
| Moral | Morale |
| Tolerance | Tolérance |
| Citizenship | Citoyenneté |
| Leadership | Leadership |
| Innovation | Innovation |

Appendix H: Country reviews on assessment of 21st century skills (unpublished)

| COUNTRY | REFERENCES /BIBLIOGRAPHY (unpublished) |
|------------------------------|---|
| Chad | Moustapha Oumar Ali (2019), 1. Description du ministère de l'éducation nationale et de la promotion civique du Tchad. 2. Mini-étude sur l'OAA – Définition des concepts. 3. Le cas du Tchad: identifier les besoins systémiques de mise en œuvre, UNESCO |
| Côte d'Ivoire | Fatogoma Coulibaly et Youssouf Coulibaly (2018), 1. Structure éducative et cadre d'évaluation à grande échelle de la Côte d'Ivoire. 2. Mini-étude sur l'OAA – Définition des concepts, UNESCO |
| Democratic Republic of Congo | Nduku Kasang et Jovin Mukadi (2019), 1. Amélioration de l'évaluation, l'enseignement et l'apprentissage des compétences du XXIème siècle en Afrique. 2. Mini-étude sur l'OAA– définition des concepts, UNESCO |
| Gambia | Gambia National Commission for UNESCO and Momodou Jeng (2019), 1. The Gambia Education System. 2. OAA mini-study – Definitions of skills. 3. The case of the Gambia: identifying opportunities for modifying and expanding items, UNESCO |
| Kenya | Assumpta Kamene Mulila Matei and Andrew Ngugi Gatonye (2019), 1. Education and Assessment in Kenya. 2. OAA mini-study – Definitions of skills, UNESCO |
| Lesotho | Methalali Bridget Khoarai and Mamposi Masoloja Anastacia Motlomelo (2019), 1. Education System of Lesotho. 2. OAA mini-study – Description of skills, UNESCO |
| Mali | Mohamed Maiga et Mamadou Bamory Kone (2019), 1. Présentation du système éducatif malien. 2. Evaluation des compétences du 21ème siècle au primaire. 3. Mini-étude sur l'OAA – Définition des concepts, UNESCO |
| Senegal | L'institut national d'étude et action pour le développement de l'éducation (INEADE) et le ministère de l'éducation nationale (2019), 1. Présentation du système éducatif et du cadre d'évaluation au Sénégal. 2. Mini-étude sur l'OAA – Définition des concepts. 3. Le cas du Sénégal : identifier les compétences visées, UNESCO |
| Zambia | Banda Lazarous Yobe Kalirani and Victor Stanslas Mkumba (2018), 1. Structure of the Education System. 2. OAA mini-study – Definition of concepts, UNESCO |



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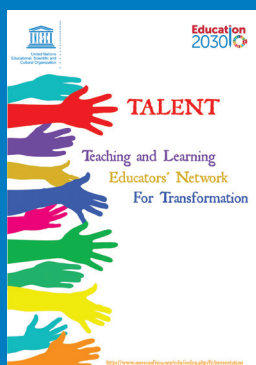
Education
Sector

BROOKINGS

Capturing 21st century skills

Analysis of assessments in selected sub-Saharan African countries

This study conducted by UNESCO Dakar and the Brookings Institution reviews existing learning assessment items to understand to what extent national education systems value teaching and learning of 21ST Century Skills in classroom practices. The authors, in collaboration with national researchers from nine-countries in Sub-Saharan Africa (Chad, Côte d'Ivoire, Democratic Republic of Congo, The Gambia, Kenya, Lesotho, Mali, Senegal and Zambia), analyze several assessment tools and items to suggest potential ways for greater alignment between curriculum, teacher training, pedagogy and assessment. This publication is one of the few in the region that looks explicitly at potential ways to bridge the gap between traditional education needs and the skills children and young people need to thrive in today and tomorrow's world.



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