SKILLS FOR A
CHANGING WORLD

May 2016

How Education Systems Approach Breadth of Skills

Esther Care and Kate Anderson

Esther Care is a Senior Fellow
at the Center for Universal Education at Brookings

Kate Anderson is a Project Director and Associate Fellow
at the Center for Universal Education at Brookings

Skills for a Changing World is a project of the Center for Universal Education at Brookings and the LEGO Foundation that seeks to ensure all children have high quality learning opportunities that build the breadth of skills needed to create vibrant, healthy societies in the face of changing social, technological, and economic demands.

Acknowledgments

Many thanks to our colleagues who provided input and feedback during the writing of this report. In particular, we would like to thank Tyler Ditmore for his editing assistance and recommendations, and Emily Gustafsson-Wright, Kathryn Hirsh-Pasek, Eileen McGivney, and Priya Shankar for their thoughtful comments.

Support for this publication and research effort was generously provided by the LEGO Foundation.

Brookings recognizes that the value it provides is in its absolute commitment to quality, independence, and impact. Activities supported by its donors reflect this commitment, and the analysis and recommendations are not determined or influenced by any donation.

The skills we need to succeed in this century must encompass societal responses to changes in technology and increased connectivity, which in turn means educational change will become a constant.

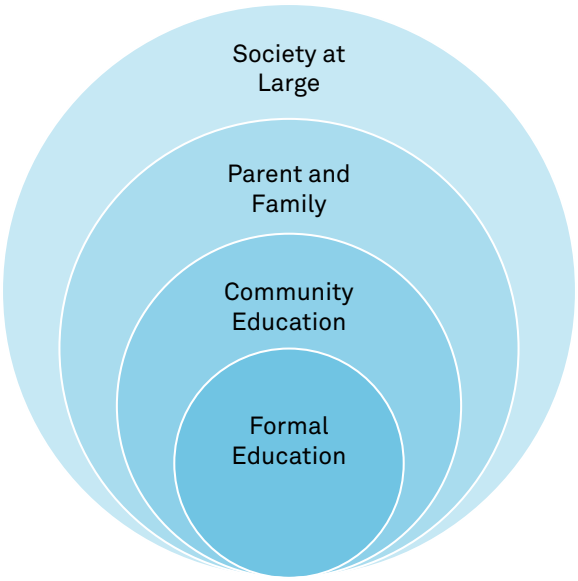
Skills for a Changing World, a collaborative project, seeks to identify how a new generation of skills can best be developed and enhanced in young children and students so they can navigate education and work in the face of changing social, technological, and economic demands. The focus of Skills for a Changing World is breadth—breadth of skills, breadth across ages, and breadth of learning opportunities, both inside and out of school.

WHAT DO WE MEAN BY BREADTH OF OPPORTUNITIES?

Society as a whole is responsible for the education of its members, and we acknowledge the importance of both the formal education system and the informal education opportunities for learning. The formal system houses certain mechanisms for providing education, particularly the more familiar structures like school. Other mechanisms naturally belong to communities, parents, and society at large and constitute the informal system. Together they constitute the learning ecosystem and fulfill society's responsibility for education.

We are interested in the learning ecosystem as characterized in **Figure 1.** The layered circles describe the degree to which a learner engages in formal and informal learning opportunities. At the center, "Formal Education" constitutes the least frequent but most structured activities and learning opportunities, whereas the largest circle, "Society at Large," symbolizes the learners' entire environment and includes the most frequent but least structured activities.

Figure 1 **Learning Ecosystem**



Thus the ecosystem's two dimensions are: 1) opportunities for learning, which occur across the ecosystem, and 2) structure of learning opportunities, which vary from most formal in the smallest circle of the ecosystem to increasingly informal with the individual's exposure to the wider community and society. Like all ecosystems, the four layers are permeable and interrelated, and internal and external factors impact each layer.

Within the Skills for a Changing World project, our work focuses on formal education within the learning ecosystem, and will explore the context in which the formal education system adapts to a changing world.

WHAT DO WE MEAN BY BREADTH OF SKILLS?

Education of the 20th century was characterized mainly by content and knowledge accumulation. Skills development was dictated largely by the needs of the Industrial Age, which was in turn dominated by rote tasks and manual labor. Literacy and, to a lesser degree, numeracy were perceived as necessary in that they provided increased access to content and knowledge. In the 21st century both literacy and numeracy remain key skills. They are emphasized as the major goals of educational systems across the globe, and viewed as primary means to open doors for children to participate effectively in society.

However, in what is referred to as the "Information Age" or "knowledge economy," we need to apply a broader suite of skills for learning, work, and life. Skills are enablers—they provide us with the means to access a multiplicity of mental and physical activities. These skills rely not only on cognition, but also on the interdependencies of cognitive, social,

Figure 2 **Mission Statements and Visions for Learners**

Republic of Rwanda — The mission of the Ministry of Education is to transform the Rwandan citizen into skilled human capital for socio-economic development of the country by ensuring equitable access to quality education focusing on combating illiteracy, promotion of science and technology, critical thinking, and positive values.

(Ministry of Education, 2016)

Ontario, Canada — Ontario is committed to the success and well-being of every student and child. Learners in the province's education system will develop the knowledge, skills, and characteristics that will lead them to become personally successful, economically productive, and actively engaged citizens.

(Ontario Ministry of Education, 2016)

Republic of Korea — The Seventh Curriculum defines the desired image of an educated person as follows:

- A person who seeks individuality as the basis for the growth of the whole personality.
- A person who exhibits a capacity for fundamental creativity.
- A person who pioneers a career path within the wide spectrum of culture.
- A person who creates new value on the basis of understanding the national culture.
- A person who contributes to the development of the community on the basis of democratic civil consciousness.

(Korean Ministry of Education, 2016)

Republic of Mauritius — To develop a culture of achievement and excellence by promoting an efficient and effective education and training system that is inclusive and integrated, comprehensive, and holistic. To foster innovation and to generate new knowledge for the socio-economic and sustainable development of the nation.

To ensure learning opportunities accessible to all, provide learners with values and skills to further their personal growth, enhance their critical and exploratory thinking and encourage them to innovate and to adapt to changes in an increasingly globalized environment.

(Ministry of Education and Human Resources, Tertiary Education, and Scientific Research, 2016)

and emotional characteristics. Shifts in skills, away from the narrow focus on literacy and numeracy and toward breadth of skills, are needed to navigate our changing societies (Brynjolfsson & McAfee, 2016) and for individuals to function as responsible citizens.

Many governments are aware of this need for a broader range of skills and make this explicit in different ways and to varying degrees. For example, countries such as Australia or Singapore provide specific guidelines for the integration of both cognitive and social-emotional skills into schooling. Australia identifies several "general capabilities," including literacy, numeracy, information and communication technology competence, critical and creative thinking, personal and social competence, ethical behavior, and intercultural understanding. These general capabilities are the key "set of knowledge, skills, behavior, and dispositions that can be developed and applied across the curriculum to help students become successful learners, confident and creative individuals and active and informed citizens" (ACARA, 2016). The general capabilities are integrated within and across the content of key learning areas as appropriate. The Australian online curriculum provides links to show where the general capabilities have been incorporated in key learning area descriptions, and also provides examples and guides for their implementation into teaching and learning.

Singapore's approach calls for the integration of 21st century skills into both the academic and the non-academic curricula, and sees this as part of the country's "holistic education." Singapore notes that responsibility for development of these skills is placed with both the formal education system and parents and the two layers must work together, "hand in hand." The Singaporean framework also notes that knowledge and skills must be underpinned by values. The skills referenced in Singapore's approach include social-emotional competencies and "emerging" competencies such as communication, civic literacy, and critical thinking.

Many other countries express similar goals around breadth of skills, such as in Rwanda, Ontario Canada, South Korea, and Mauritius where the education ministries' websites feature mission statements and visions for learners (see **Figure 2**).

Although the skills identified in these mission statements are described differently, they share common ground. From high- to low-income countries, a trend toward broadening of curriculum is emerging, at least in terms of aspirational statements. The extent to which this breadth is reflected in the implementation of education systems is less clear.

As far as global aspirations are concerned, the Sustainable Development Goal 4 (United Nations, 2015) names only literacy and numeracy skills specifically (target 4.1), although other skills are implied in various targets. These targets include readiness for primary education (target 4.2), technical and vocational skills (target 4.4), and skills needed to promote global citizenship and sustainable development (target 4.7). These targets signal an emphasis on the breadth of skills necessary to comprehensively prepare children, youth, and adults for 21st century citizenship and life.

In the Skills for a Changing World project, we study the alignment of the worldwide aspiration for breadth of skills with its implementation. As with the execution of any vision, particularly large-scale transformations, the application of breadth to education systems varies greatly from country to country. We focus on the factors that fuel the uptake of breadth of skills as well as the elements that lay the foundation for breadth within the formal education ecosystem.

HOW WILL FOCUS ON SKILLS DEVELOPMENT INFLUENCE THE FORMAL EDUCATION SYSTEM?

The formal education system will need to undergo wholesale change to provide breadth of skills for its students and graduates.

Since education was acknowledged as a human right nearly 70 years ago, educational endeavors have primarily focused on content and knowledge accumulation. Accordingly, teachers focused on content (primarily on its delivery); curricula focused on content (not on how to use it effectively); and assessment focused on content (particularly on its accumulation or lack thereof). Refocusing our activities from content accumulation to skills development sharply impacts each of these three components. This project focuses on the extent to which this interdependency is recognized and acted upon and the degree to which it facilitates the implementation of breadth of skills in curriculum, pedagogy, and assessment. All three will need to be reformed in the drive for breadth of skills.

Curriculum

Curriculum is the education system's roadmap. It has a starting point and an end point. It outlines both the objects along the way, such as subjects, topics, and activities, and the route (or routes) to take. It can describe different ways of using the objects and different ways to navigate the routes. When breadth of skills is valued in the curriculum, the roadmap focuses on how the objects along the way are used in the service of the end goals, whereas a curriculum valuing content knowledge simply notes their existence or emphasizes memorization of their origins and purpose. Consequently, within a skills development context, the curriculum needs to be explored and analyzed in a way that optimizes these objects as learning stepping stones rather than as discrete learning objectives.

Pedagogy

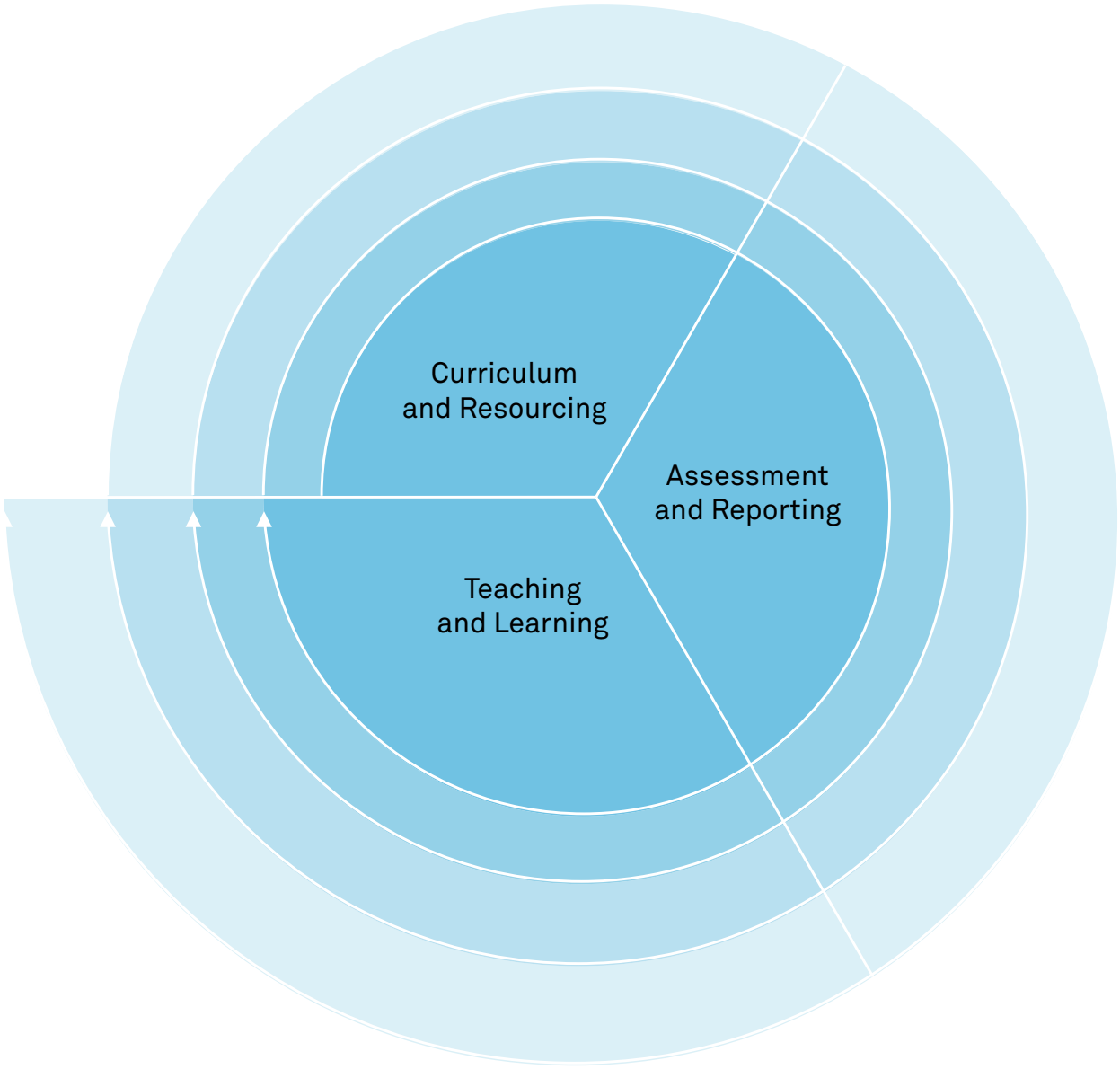
Teaching is not the mere provision of content knowledge from instructors to students. Teachers are the primary navigators and implementers of the curriculum, and as a broad range of skills becomes valued as "core business" for education systems, teachers will need to teach these skills and their application. Teaching for these skills may require a specific set of pedagogical strategies, with new methods and tactics adapted to the changing roadmap. Therefore, one of the consequences of including a breadth of skills in the curriculum is the need to reexamine pedagogical practices.

Assessment

Assessment is the way we evaluate learners' progress toward the endpoints of the roadmap. In an education system focused on breadth of skills, the learning target is the students' capacity to process and use information, not their ability to store and recall facts. Thus the assessment target also changes to evaluating that processing capacity, which poses a challenge for assessment experts. Assessing whether a student knows a fact is relatively simple for test development. Assessing whether a student can identify how that fact can be used is complex. We shift from a well-defined goal to an ill-defined goal (Care & Griffin, 2014; Fischer, Greiff, & Funke, 2012). In the context of classroom assessment, we move from a "closed" question—where a student can respond yes or no, correct or incorrect, true or false, or provide the fact itself—to an "open" question or prompt, where a student can demonstrate understanding and application within parameters that capture student proficiency in an efficient and standardized way.

Figure 3 provides an illustration of the assessment, curriculum, and pedagogical interdependencies and how change in one requires change in the others. Our goal is to work with education systems to understand

Figure 3 **The Interdependency of Assessment, Curriculum, and Pedagogy**



how these interdependencies are considered and to contribute to reform efforts associated with adopting breadth of skills in formal education. Accordingly, for this project, this implies a deep look at the education systems and practices across the countries that are part of our project.

THE GLOBAL MOVEMENT TOWARD BREADTH OF SKILLS

Skills for a Changing World seeks to understand the factors that propel systemic reform at the national and global levels as well as the factors that might inhibit such reform. Why have some countries fully integrated breadth of skills across ages and opportunities into their education systems? Why have others included this breadth in name only (for example, in vision statements or curricula, but not in practice), and why have some not included it at all? Our project will attempt to answer these questions.

Changing Workforce Demands

The work of researchers from the Massachusetts Institute of Technology and Harvard University provides evidence that technological change is driving the major shift in workforce demand for skills, particularly with respect to the transition toward more educated workers. Autor, Levy, and Murnane (2003) and Levy (2010) show how the workforce since 2000 has increasingly demanded "non-routine" competencies in employees. Routine activities are those which could in principle be scripted (Acemoglu & Autor, 2010), and that are procedure- or rule-based activities; non-routine activities, whether abstract or manual, are less predictable and require flexibility and adaptability.

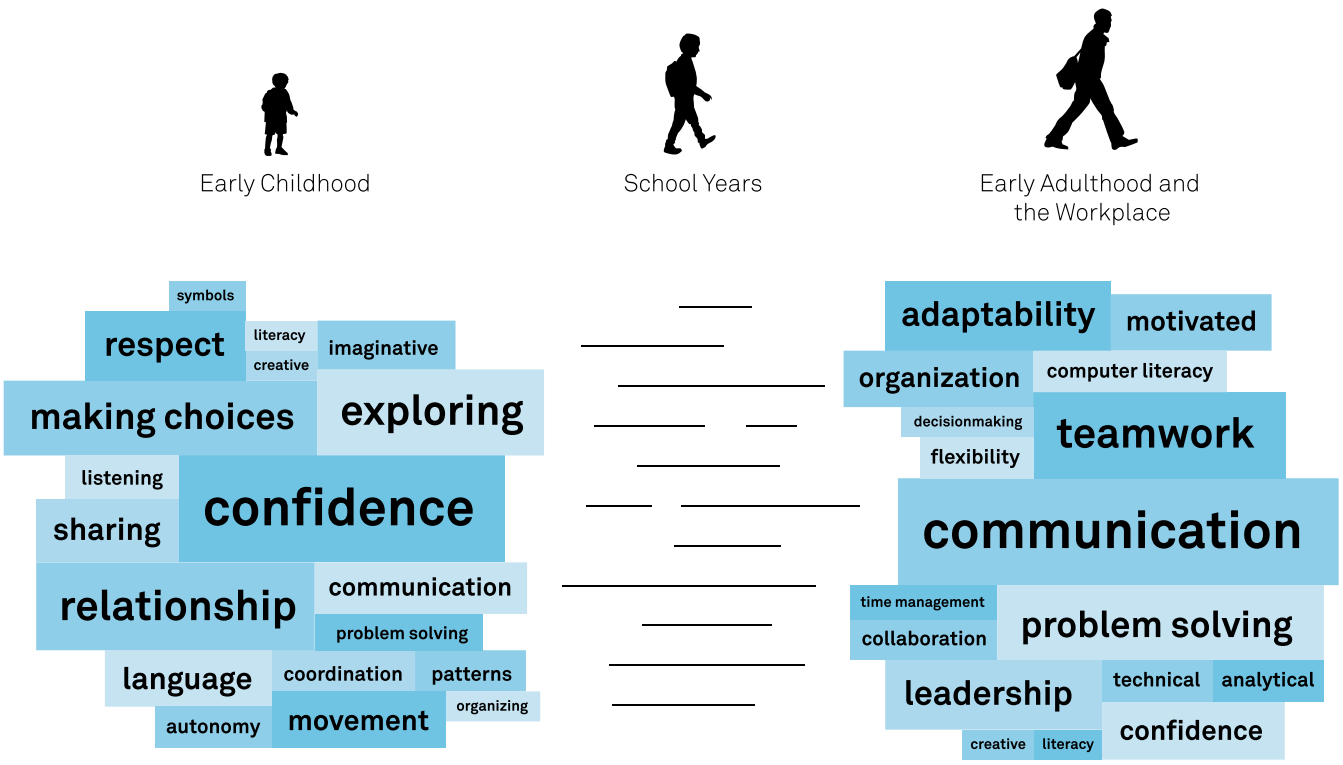
Extensive reviews of the nature of skills and characteristics valued globally in the 21st century have been undertaken. Substantial works include that of Binkley and colleagues (Griffin, McGaw, & Care, 2012), Hilton and Pellegrino (National Research Council, 2013), and the World Economic Forum (2014). These reviews rely on substantive contributions from UNESCO's DeLors Report (1996) and Organisation for Economic Co-operation and Development (OECD)'s DeSeCo Report (2001).

While there is much overlap in the skills and characteristics presented in these reports, researchers, and practitioners have diverse views on the most useful frameworks, organizing principles, and specific skills and characteristics. These views may reflect some of the technical concerns around assessment and measurement, pedagogical concerns around effectiveness of skills development, and research concerns around predictive capacity of skills enhancement for study and work outcomes.

Figure 4 shows results from a quick web search of the most frequently used terms associated with early childhood development, on the left; and, employability and life skills, on the right. In this project, we will be exploring the common ground between these two life stages, as well as the characteristics and skills that are highlighted in the formal education system in the years between. What is notable just from the skills and characteristics noted in Figure 4 is the common ground between what is valued at the two life stages. Whether or how these skills are addressed in the school years is at the heart of this project.

Skills for a Changing World will undertake a review of the evidence of skills development in the formal education system. The review will have two components. The first is an analysis that describes salient characteristics in early childhood development and identifies the associations of these characteristics with skill development in adolescence and early adulthood. This analysis will draw especially upon the fields of psychology and education. The second component is a study describing the workforce demand in the focus countries and linking it with the skills implied by the analysis of the demand.

Figure 4 **Skills Valued Through Early Childhood to Work**



Global Context

Many global initiatives have touched upon the skills necessary for the 21st century, and some major documents and reports from the past few years demonstrates the global context for our project.

The third Education For All (EFA) goal of 2000, for youth and adults, was somewhat unclear about the concept of life skills, although they were acknowledged. EFA saw skills as developed through intentional experiences—in education and work contexts.

EFA's Global Monitoring Report (GMR) of 2012 focused on "livelihood" skills for employment and separated these skills into three categories: foundation, transferable, and technical or vocational. Foundation skills are the most vital for learners, and transferable skills are the characteristics that allow learners to utilize knowledge. The GMR, however, used access to secondary education as a proxy measure for the development of literacy and numeracy, thus emphasizing the primacy of these two foundation skills over

transferable skills like problem solving, creativity, and communication.

Even so, the Dakar Framework for Action in 2000 clearly emphasized that youth and adults should be provided with opportunities to develop skills, values, and attitudes to equip them for work and for citizenship. UNESCO's 2014 report on global citizenship education also confirmed the salience of competencies including knowledge, cognitive, non-cognitive skills, and behavioral capacities.

Some reports have looked simply at a subset of the necessary skills. The OECD report "Skills for Social Progress" (2015) attempted to synthesize existing evidence around the salience of social emotional skills

for life and work. The OECD is planning a cross-national longitudinal study to explore measurement of social emotional skills with the aim of assessing their impact on life outcomes. Unfortunately, research with a similar focus on transferable cognitive skills is lacking.

In the several years leading up to the adoption of the SDGs, the many commissions, panels, and working groups set up to influence the post-2015 agenda recommended a focus on breadth of skills. The U.N. Secretary-General Ban Ki-moon's High Level Panel of Eminent Persons on the Post-2015 Development Agenda proposed learning outcomes be measured broadly, stating, "Of course, education is about far more than basic literacy and numeracy... Education should also encourage creative thinking, teamwork, and problem solving." (U.N. HLP, 2013, p. 37). The Sustainable Development Solutions Network thematic report on Education (SDSN, 2014) similarly suggested that "a comprehensive framework of learning underlines the learning goals—one that fulfills basic numeracy and comprehension skills, but also prepares students for life and livelihoods." The Learning Metrics Task Force (2013), which was co-chaired by the Center for Universal Education, recommended a broad set of seven learning domains (physical well-being, social and emotional, culture and the arts, literacy and communication, learning approaches and cognition, numeracy and mathematics, and science and technology) as an aspiration for what all children should learn.

Regardless of their varying emphases on the categories and sub-categories of skills, these initiatives demonstrate global institutions' growing acknowledgment of the importance of breadth of skills. This trend gives rise to two imperatives for education ecosystems—disseminating information about, as well as a rationale for, breadth of skills, and implementing actual development of skills within formal education systems at scale.

IMPLICATIONS FOR THE FORMAL EDUCATION SYSTEM

There are several reasons why breadth of skills is not prioritized in many education systems. One is that these skills are not part of mainstream curricula in the majority of countries. Literacy and numeracy typically are considered the enabling skills that must be learned for individuals to engage in continued learning processes. Together these two tend to underpin most academic subjects, and then the academic subjects themselves tend to take prime place in education.

Although education ministry mission and vision statements increasingly reference breadth of skills, including transferable skills, the practical implementation of these visions naturally lags behind. There are several implications for implementation across the three pillars of the formal education system.

Curricula need to be reviewed to identify opportunities for the teaching and application of skills. Different subjects or academic disciplines provide different types of opportunities; some will provide opportunities for one type of skills, like cognitive or social emotional, while some subjects will be more suited to other skills. Education systems will need to explore options for teaching of skills within subjects, within trans-disciplinary approaches, and across subjects.

Teachers need to be trained to include breadth of skills in their teaching practice. They may currently use pedagogical approaches that emphasize memorization and do not lend themselves to teaching and learning skills such as communication, collaboration, and critical thinking. For teachers to be trained for this, higher education institutions responsible for teacher training need to adjust their pre-service courses, and these institutions will need to further develop their own training capacities. This requires major reform efforts throughout the education sector.

Assessment systems and paradigms need to be reviewed. Examinations typically determine what is taught, how it is taught, and what is learned or not learned (Greaney & Kellaghan, 1995), and examinations systems in many countries focus on traditional academic disciplines such as language, mathematics, and to a lesser extent, science (Education Policy and Data Center, 2015). Given the high-stakes nature of national school examinations in many countries, failure to learn the content reflected in an exam can mean the end of a child's formal education, and so content—not skills—is the focus of their education. However, where skills and their application are valued, different modes of assessment will be required.

Solutions in Education

Over the past several decades, we have seen that access to education is not enough. In the same way, we are now seeing that access to literacy and numeracy learning is not enough. Education needs to provide more comprehensive learning opportunities, and it can do this through an emphasis on the whole person in a way that is relevant to the local and global context in which they will learn and work. Focusing on breadth of skills and including transferable skills on the same plane of importance as literacy and numeracy can help counter the setting of narrow goals for children. Those narrower goals grew out of an emphasis on content and knowledge accumulation to the exclusion of much else.

The primacy of teaching and learning the enabling skills of literacy and numeracy in the early years should not distract from the bigger goal of education—to guide an individual out into the world. Literacy and numeracy are not goals in and of themselves, but they are to be valued for the access they provide for the individual to function effectively in our society. We are not interested primarily in literacy and numeracy, but in how these skills enable access to other learning and living opportunities.

The challenge for policymakers and educators is to keep the end goal in focus. The indicators of learning should not be confused with the end goals of education, and we need to be careful not to mistake test performance as a learning outcome. Emphasis on the breadth of skills that we value in childhood and in adulthood provides a reminder that education needs to be designed to produce holistically developed learners who are well-equipped to navigate the challenges of life in the 21st century.

Skills for a Changing World: Country Study

Under the Skills for a Changing World umbrella, our country work will focus on the formal educational system within the context of the learning ecosystem. The factors that play a role in broadening the education that the system delivers, are responses to societal and workforce needs. There are myriad reports on how education is failing students, on how skills beyond the "cognitive" are important, on how the public values particular skills (American Trends Panel, 2014). There is less reflection on how the different parts of an education system work together to conceptualize and implement major change. In this study, we will focus on how an education system works across curriculum, assessment, and pedagogy to provide educational experiences attuned to the needs of the society.

What will this project achieve?

In this project, we will analyze the factors contributing to the shaping of education in the context of the range of skills included in education agenda. We will undertake this activity with a small number of countries. Each study country is at a different stage in education reform, and each is subject to unique national pressures. In the study we will focus on the interaction between reform efforts, the education components of curriculum, assessment and pedagogy, and the learning opportunities available to children. Learning opportunities refer to the enabling environment provided to each child. They include the curriculum, the physical space, the teacher, the resourcing. (It is important to understand that what is known as the intended curriculum, what is stated as the content and goals of a curriculum, is not necessarily the curriculum that is available to the child.)

What will participating countries engage in as part of this study?

The countries will have the opportunity to engage in three sets of related activities.

First, the countries will engage in initial survey activities as respondents at various levels—education policymakers; leaders in curriculum assessment and pedagogy; educators at elementary, secondary, and tertiary levels; parents; and members of the community. These activities will generate a country or regional profile that provides details on teachable and learnable skills in education policy, planning, and implementation.

Second, countries will participate in collaborative development and piloting of a "breadth of learning opportunity" tool. The tool is being designed to capture those aspects of the education system that interface

with the learning environment of the child. Countries will be invited to engage in discussion about tool design, function, and applicability, and most importantly, national and cultural contextualization. The tool will reflect at core how the seven domains of learning described by the Learning Metrics Task Force are reflected in the national curriculum, teacher training, assessments and examinations, and teaching and learning processes in the classroom.

Third, countries will be invited to engage in dissemination and research events designed to explore issues around implementation of Skills for a Changing World in their contexts. These activities will be seeded with findings from the Millions Learning scaling project, with expert input from experts in curriculum reform, assessment, and 21st century skills initiatives. Countries will be expected to contribute to the global discussion on policy and implementation factors that affect their own experiences.

REFERENCES

ACARA (2016). Australian Curriculum: General Capabilities. http://www.acara.edu.au/verve/_resources/information_sheet_general_capabilities_file.pdf / Retrieved 21-Apr-2016.

Acemoglu, D., & Autor, D. (2010). Skills, tasks and technologies: Implications for employment and earnings. In O. Ashenfelter and D. E. Card (eds.), Handbook of Labor Economics Volume 4, pp 1043-1171, Amsterdam: Elsevier.

American Trends Panel (2014). Pew Research Center. http://www.pewresearch.org/fact-tank/2015/02/19/skills-for-success/ft_15-02-09_skills_overall-2/ Retrieved 29-Mar-2016.

Autor, D. H., Levy, F., & Murnane, R. J. (2003). The skill content of recent technological change: An empirical exploration. *The Quarterly Journal of Economics*, November, 1279-1333.

Bransford, J. D., Brown, A. L., & Cocking, R. R. (1999). *How People Learn: Brain, Mind, Experience, and School.* National Academy Press: Washington DC.

Brynjolfsson, E., & McAfee, A. (2016). *The Second Machine Age*. Norton: NY.

Care, E., & Griffin, P. (2014). An Approach to Assessment of Collaborative Problem Solving. Special Issue: Assessment in Computer Supported Collaborative Learning. *Research and Practice in Technology Enhanced Learning*, 9(3), 367-388.

Education Policy and Data Center. (2015). Mapping national assessments. http://www.epdc.org/sites/default/files/documents/EPDC_NLAMP_report-v3.pdf.

Fischer, A., Greiff, S., & Funke, J. (2012). The Process of Solving Complex Problems. *Journal of Problem Solving* 4(1) 19-42.

Griffin, P., McGaw, B., & Care, E. (2012). *Assessment and Teaching of 21st Century Skills*. Springer: Dordrecht.

High-Level Panel of Eminent Persons on the Post-2015 Development Agenda. (2013). *A New Global Partnership: Eradicate Poverty and Transform Economies through Sustainable Development*. New York: United Nations. Retrieved from http://www.un.org/sg/management/pdf/HLP_P2015_Report.pdf.

Korean Ministry of Education. http://english.moe.go.kr/web/1691/site/contents/en/en_0203.jsp Retrieved 28-Mar-2016.

Learning Metrics Task Force. (2013). *Toward Universal Learning: What Every Child Should Learn. Report No. 1 of the Learning Metrics Task Force*. Montreal and Washington, DC: UNESCO Institute for Statistics and the Center for Universal Education at the Brookings Institution.

Levy, F. (2010). *How Technology Changes Demands for Human Skills*, OECD Education Working Papers, No. 45, OECD Publishing. http://dx.doi.org/10.1787/5kmhds6czqzq-en.

REFERENCES (CONTINUED)

Ministry of Education: Republic of Rwanda (2016). http://www.mineduc.gov.rw/about-the-ministry/mission-of-the-ministry/ Retrieved 28-Mar-2016.

National Research Council (2012). *Education for Life and Work: Developing Transferable Knowledge and Skills in the 21st Century*. Eds. J. Pellegrino & M. Hilton. National Academies Press: Washington, DC.

OECD (2015), *Skills for Social Progress: The Power of Social and Emotional Skills*, OECD Skills Studies, OECD Publishing. http://dx.doi.org/10.1787/9789264226159-en.

OECD (2014), PISA 2012 Results: *Creative Problem Solving: Students' Skills in Tackling Real-Life Problems* (Volume V), PISA, OECD Publishing. http://dx.doi.org/10.1787/9789264208070-en.

Ontario Ministry of Education (2016). http://www.edu.gov.on.ca/eng/about/excellent.html#display Retrieved 28-Mar-2016.

Republic of Mauritius: Ministry of Education and Human Resources, Tertiary Education and Scientific Research (2016). http://ministry-education.govmu.org/English/Pages/default.aspx Retrieved 28-Mar-2016.

Rychen, D. S. E., & Salganik, L. H. E. (2001). *Defining and selecting key competencies. Ashland, USA: Hogrefe & Huber*.

Sustainable Development Solutions Network (2014). The Future of Our Children: Lifelong, Multi-Generational Learning for Sustainable Development. Retrieved from http://unsdsn.org/wp-content/uploads/2014/01/140510SDSNReport-Education.pdf.

UNESCO (2013). *Global Citizenship Education: an Emerging Perspective*. Paris: UNESCO.

United Nations (2015). *Transforming our World: The 2030 Agenda for Sustainable Development,* A/RES/70/1. United Nations. Retrieved from www.sustainabledevelopment.un.org 30-Mar-2016.

World Economic Forum (2014). New Vision for Education http://www3.weforum.org/docs/WEFUSA_NewVisionforEducation_Report2015.pdf Retrieved 21-Apr-2016.

SKILLS FOR A CHANGING WORLD

B | Center for Universal Education at BROOKINGS