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Reconceptualizing and Repositioning Curriculum in the 21st Century

A Global Paradigm Shift

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**INTERNATIONAL
BUREAU
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EDUCATION**

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relevant education and
lifelong learning



This is the first of a series of normative documents intended to guide the future of curriculum at a global level. This first Document calls for a global paradigm shift for curriculum. In the new paradigm, curriculum is reconceptualized and repositioned to best meet current and future challenges and opportunities. This first Document also anchors the rest of the Documents in the series, which seek to guide the operationalization of the new paradigm.

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Executive Summary

This is the first of a series of normative documents intended to guide the future of curriculum at a global level. Other documents so far prepared for the series focus on: *future competences and the future of curriculum; transforming teaching, learning and assessment to suit competence-based curricula; and creating enabling systemic environments for effective implementation of competence-based curricula*. More operational documents will be prepared in the course of 2018 to guide the application of the normative ones.

This first Document calls for a global paradigm shift for curriculum. In the new paradigm, curriculum is reconceptualized and repositioned to best meet current and future challenges and opportunities. Key drivers of change in the 21st century that impel the reconceptualization and repositioning of curriculum are outlined. The Document sets off with an acknowledgement of existing conceptualizations of curriculum, but argues that they understate its significance, role, and potential impact in the 21st century. It notes that current conceptualizations position curriculum almost exclusively within the education sector; tightly associate it with general education (K-12), with children of K-12 age, and with schools. This further limits the significance, role, and impact of curriculum. Curriculum is much more than that. This Document therefore offers a new definition of curriculum that rids it

of its current limitations and better aligns it with the new paradigm. Curriculum is herein defined as *a dynamic and transformative articulation of collective expectations of the purpose, quality, and relevance of education and learning to holistic, inclusive, just, peaceful, and sustainable development, and to the well-being and fulfillment of current and future generations.*

The Document underscores that attaining and sustaining current and future relevance demands curricula to set out competences that learners (both young and old) require to thrive, to be fulfilled, and to drive individual, national, and global development within fast changing and mostly disruptive 21st century development contexts. It notes that the fourth Industrial Revolution (Industry 4.0) is an unstoppable accelerant to the complexity and velocity of change in the 21st century. This places more demands on curricula to sustain the relevance of competences within contexts of rapid change. The second Document in the series therefore presents in detail future competences and the future of curriculum. It argues that sustained development-relevance of competences demand curricula to not only adapt to contextual changes, but more importantly, to stimulate and lead change. It also broadly conceives development as holistic, inclusive, just, and sustainable.

This Document acknowledges that the articulation of curriculum is both a political and technical process that engages a broad base of stakeholders, and engenders stakeholder support and ownership. Credible curricula processes are necessarily inclusive and consultative. Involved stakeholders reach far beyond the boundaries of the education sector and of technical experts in education. They include professional, local, national, and global communities at large. This is because curricula determine the fate of individuals, communities, countries, and the world, by determining what, why, when, and how people learn.

The new paradigm recognizes curriculum as a more dynamic, complex, and multi-dimensional concept than its current conceptualizations portray. It therefore calls for a reconceptualization of curriculum along the following key dimensions:

- the first operational tool for ensuring the sustained development-relevance of education and learning systems;
- a catalyst for innovation, disruption, and social transformation;
- a force for social equity, justice, cohesion, stability, and peace;
- an integrative core of education systems;
- an enabler of lifelong learning;
- a determinant of the quality of education and learning;
- a determinant of key cost drivers of education and learning systems; and
- a lifelong learning system in its own right.

This document points out that each of the eight dimensions implies a repositioning of curriculum at a sectoral, national, and global level. It cautions that some of the dimensions have potential risks, and outlines necessary considerations and potential risk mitigations.

This first document also anchors the rest of the documents in the series, which seek to guide the operationalization of the new paradigm.

Current Conceptualizations of Curriculum

Conceptualizations of curriculum have evolved over time, driven mainly by contextual factors¹ and by intellectual perspectives. However, there is still no universal definition of curriculum. The term curriculum is also not universally used, though it is progressively becoming mainstream. Some regions of the world use expressions like: study programs, course of study, syllabi, teaching subjects, courses, etc. Although still conceptually applicable, the term curriculum is rarely used in reference to post-secondary education. Commonly used at the tertiary level are study programs and courses. Current conceptualizations of curriculum have closely associated it with general education (K-12), young learners, and schools.

Among key conceptualizations of curriculum, the most enduring and pervasive finds its roots in the Latin word *currere* meaning a race course or a course to follow. From these roots, curriculum is commonly conceived as “a course of study” or “a plan for learning” (Taba, 1962), or “all student learning planned and directed by schools to attain educational goals” (Tyler, 1949). Curriculum is also commonly conceptualized as “an attempt to communicate the essential principles and features of an educational proposal in a form capable of effective translation into practice, yet remaining open to critical scrutiny” (Stenhouse, 1975). Its structure is most often outlined across four dimen-

¹ Contextual factors can be grouped as: individual (Dewey, 1889, 1910; Bruner, 1960, 1970), cultural, social (Bernstein, 1971; Cohen, 2007), political (Braun et al., 2010; Young, 2008), Ritzvi and Linguard, 2010; Griffiths, 2005), geopolitical (Wise, Hayward, and Pandya, 2016), economic, and technological (Dede, 2010), among others.

sions “aims or objectives, content or subject matters, methods or procedures, and evaluation or assessment” (Scott, 2008).

A broader concept that goes beyond structured programs defines curriculum as *the totality of the experiences a pupil has, as a result of the provision made and the values that underpin and guide it in practice* in terms of the intention of the planners; the procedures adopted for the implementation of those intentions; the actual experiences of the pupils resulting from the teachers’ direct attempts to carry out their intentions, or the planners’ intentions; and the “hidden” learning that occurs as a by-product of the organization of the curriculum, of the school and indeed of society (Kelly, 2008). This definition introduces societal values as integral to the concept of curriculum. It highlights that beyond just a course of study and a plan for learning, curriculum is “an expression of what society values and what it therefore expects from its education system”. Accepting curriculum as a signal of what society values brings in exclusion as another form of expressing value. This widens the concept of curriculum beyond what is included to what is excluded, omitted, or neglected: or the “null curriculum” (Eisner, 1994).

The definition also introduces what is commonly referred to as a continuum of curriculum, comprising the: (i) official, intended, written, formal, ideal, planned, specified curriculum; (ii) implemented, mediated, taught, operational, or in-use, curriculum; (iii) actual, experiential, learned, received, achieved, internalized curriculum; and (iv) assessed curriculum (Cuban, 1992; Harland et. al., 2002; UNESCO, 2012). It introduces the unintended or the hidden curriculum and broadens curriculum to cover all that learners learn from schools be it intended or unintended.

The IBE’s definition of curriculum as “a roadmap for achieving socially agreed development and education goals” (IBE-UNESCO, 2015) aligns well with Kelly’s (2009) description. It highlights that curriculum is an expression of societal expectations, a collective endeavor that captures the “why”, or the goals of education and learning as perceived by the society.

With the recognition that education and learning are not necessarily confined to schools or education institutions, there emerged categorizations of curriculum by learning contexts: formal, non-formal, and informal or societal curriculum (Cortes, 1981).

Globalization, buttressed by Internationally Agreed Goals (IAGs) and the push for decentralization, gave rise to another categorization of curriculum by levels: (i) the supra curriculum at the global, regional, or international comparative level; driven by international agencies; (ii) macro curriculum at the level of a nation, state, and society; driven by governments and their national and sub-national agents; (iii) the meso curriculum of an institution, school, or program; driven by senior education experts and managers; (iv) the micro curriculum of a classroom, group, or lesson; driven by teachers and learners; and (v) a nano

curriculum; driven by behaviors, needs and aspirations of individual learners and their families (Akker et al., 2006; Scott, 2014).

This Document addresses curriculum at a supra or global level. It does not reflect country-specific or any lower level contexts. It proffers a new definition of curriculum as *a dynamic and transformative articulation of collective expectations of the purpose, quality, and relevance of education and learning to holistic, inclusive, just, peaceful, and sustainable development, and to the well-being and fulfillment of current and future generations*. This definition aligns with the new paradigm for curriculum propagated in this Document. The dynamism of curriculum is even more so in the 21st century where the only thing constant is change. Industry 4.0 is recognized as a formidable accelerant to the velocity and complexity of change in the 21st century. The transformative aspect of curriculum underscores the point that, more than just adapting to fast changing 21st century contexts, curricula must lead change, and be part of constructive disruptors. Given the reality that curricula are embedded in education and learning systems are sluggish to change, this is a tall order.

Key Drivers of Curricula Change in the 21st Century

The transition to knowledge and technology driven growth: The most significant wave of change that continues to impact curricula are from the economy, and specifically the micro economy. The transition from natural resource dependent to knowledge and technology dependent growth fueled demand for different skills for jobs, work, and life. It stimulated global dialogue on skills for knowledge-based economies (KBEs), and on the need for curricula to reflect these skills if they are to remain relevant. The recent depletion and/or devaluation of natural resources is further pushing dependent countries to find diverse sources of growth, particularly growth that is driven by innovation and human ingenuity. Countries are also pushed to turn their comparative advantage into competitive advantage through the application of knowledge and technology to add value to their natural resources and to stop exporting them as raw materials at worst, and primary products at best. This calls for competences that enable people to take up opportunities in their local, national, regional, and global contexts. It requires close analyses of contextual challenges and opportunities as integral first steps to curriculum design and periodic reforms. Countries are more aggressively questioning the adequacy of their education and learning systems to enable learners to acquire competences required to lead their transition to KBEs, and to lead innovation,

efficiency, and competitiveness. This dialogue directly questions the adequacy of curricula.

Not surprisingly, the second decade of the 21st century witnessed a flurry of efforts to define “skills” for KBEs, and 21st century “skills” that should be included in curricula (see Document 2 for a detailed overview of these efforts).

The broadening concept of development: The recognition of knowledge and technology as drivers of growth undoubtedly left an indelible mark on curricula across the world. At the same time, growth should not be misconstrued as development, albeit a very critical part of it. The understanding of development has actually evolved from the predominantly economic views of the 20th and even early 21st century. Development is a “more complex and holistic concept that includes economic growth, peace, political stability, social equity, sustainability, human capabilities and conditions, human rights and freedoms, culture, politics, ethics, morals, religion, knowledge, and technology among others” (Marope et al., 2015), underpinned by core values of equity, inclusion, equity, justice, and reconciliation. Beyond growth, countries expect their education systems to support holistic, inclusive, equitable, just, and sustainable development (hereafter referred to as development). The expanded view of development has equally left a clear footprint on curricula. Curricula are not of good quality if they do not promote justice, equity, and inclusion (IBE-UNESCO 2008). Concerns for peace, justice, rights, ethics, equity, inclusion, climate, and sustainability have led to curricula for global citizenship education. More specifically, growing concerns for global security, peace, and stability have led to a resurgence of Delors’ “learning to live together” across curricula.

Internationally Agreed Goals (IAGs) for propelling development: The broadened understanding of development is reflected in IAGs, lately, the Sustainable Development Goals (SDGs). Goal 4 emphasizes equity of education quality and lifelong learning for all as key enablers of development. Key markers of SDG4 (equity, quality, sustainable relevance, and lifelong learning) place direct demands of curricula. It is through curricula that countries identify and package competences that are relevant to their development contexts. Curricula also determine the quality of education through their power to guide what is learned and how it is learned. Curricula also guide education processes that are indispensable to the quality of education vis teaching, learning, and assessment. SDG4 therefore demands more and heightened effort from curricula to ensure its achievement.

The information and technology revolution: Proxy measures of ownership of technological devices show that the times have dramatically changed from 1955, when the world had 250 computers,

mainly mainframes (Abbott, 2017). By the end of the first decade of the 21st century (2010), the combined shipment of desktop personal computers (PCs), laptops, and tablets had reached 377 million units worldwide, 435 million by 2016, and is forecast to reach 448 million by 2021. By 2013, 2,038.27 million mobile phones (of all types) were shipped worldwide, and the number is forecast to reach 2,419.34 by 2019 (Statista, 2016). Industry 4.0 is exponentially accelerating the permeation of technology in all aspects of life like never before.

These contextual changes are bringing new competences into the core of curricula. These new competences include digital and technology literacy, technology savvy, coding as a key language, understanding digital content, and the digitization of the curriculum itself. Technology is also becoming an integral part and facilitator of other core competences. One needs technology to collaborate with others in applying information and technologies in collaborative efforts to solve complex problems as well as to create and share new ideas across zones (geographical, time, cultural, linguistic, virtual, etc). The acquisition and application of all competences is facilitated by technology, as technology is a primary tool for learning, a core part of enabling learning environments, and a competence in its own right.

The technological revolution is supporting the information revolution. The Internet has become a major source of information and knowledge. It is rapidly becoming accessible not only to people but also to intelligent objects as well (Germany Trade and Invest, 2017). Industry 4.0 speaks of the Internet of Things (IoT). Information is available faster than teachers can cope with, more extensive than an encyclopedia can summarize, and more comprehensive than any library can catalogue. It is estimated that the New York Times provides more information in one week than any person was likely to encounter in a lifetime during the 18th century. More information will be generated in the current year alone than it was in the previous 5,000 years. Google registers 31 billion searches each month. Again, Industry 4.0 will only accelerate the pace and complexity of this revolution.

Increasing ease of access to information is also bringing new competences to the core of 21st century curricula. Information “filterers and explainers” are more and more vital to learning processes. Learners (of all ages) require skills to not only use ICTs to access information but, more importantly, competence to evaluate the credibility, relevance, and applicability of that information in addressing challenges, and in taking up opportunities across diverse and fast changing 21st century contexts. This requires a shift from emphasis on what to learn to more emphasis on how to learn and what to do with what is learned. It is also a call to rethink the role of curriculum developers, teachers, learners, and assessors, whose prior role has been preoccupied to compiling vital information, teaching it, learning it, and assessing if it was learned.

New demands of work and workplaces: 21st century workplaces demand in-depth knowledge of subject matters required for specialized work such as engineering, medicine, plumbing, teaching, etc. Curricula that prepare people for the 21st century workplace need to ensure high mastery of subject matters that are foundations for diverse specializations. However, technical specialization is necessary but not sufficient for success at work and in the 21st century workplaces. Specialists also need soft skills, or 21st century skills like creativity, communication, collaboration, critical thinking, problem solving, ethics, positive attitudes, technology savvy, etc., to round up their technical knowledge into effective competences (see Document 2 for details).

Industry 4.0 is bringing new demands to work and workplaces, the direction and details of which are not yet fully known. Thus far, Industry 4.0 frontline workers require competences in new forms of human-machine interfaces. They need to manage production processes executed by intelligent machines in smart factories. Backroom workers require competences to innovate, design, analyze, and develop sensors that connect cyber physical systems (CPSs), open systems, big data, connectivity, and virtual communication systems, that sustain the Industry 4.0 production paradigm. There is also need for managers and experts with competences too; Industry 4.0 demands senior experts and managers have competences to guide the work of technologists through clear articulation of the ultimate purpose of their smart factories, innovative creation of products, design of production models, and competitive positioning.

Curricula need to respond to these demands while safeguarding the core functions of education and learning. They need to account for the reality that many current jobs will disappear due to technological advances, robotics, and digitization, and new jobs and workers will emerge. How curricula should prepare for these unknowns is addressed in Document 2.

New ways of working: As globalization accelerates, the world becomes more connected, and outsourcing services across borders becomes the norm, people require competences to collaborate across national and virtual boundaries to share information and emerging knowledge. Those wishing to be highly rewarded in the workforce of the future need to be adept at using a wide range of communication technologies such as teleconferencing, text messaging, social media, and “sprint” sessions, where virtual teams collaborate 24 hours a day in virtual environments on joint products.

New tools for working: Changes in the nature of tools required in 21st century work places are also stimulating demand for new competences for effective and efficient performance at work. 21st century workers need the competence to interface a wide range of established, emerging, and unknown future tools to create integrated solutions for

addressing complex problems and for taking up complex opportunities. Friedman (2005) identified four major “flattening” influences arising from the expansion of technology that have made it possible for learners and businesses to connect, collaborate, and compete in world markets. These include: the introduction of personal computers that allow anyone to author content in digital form that can then be manipulated and dispatched; the invention of internet browsers, resulting in the proliferation of websites and the investment in fibre optic cable that has wired the world; the development of transmission protocols that makes it possible for computers and software to be inter-operable so that everyone has the potential to become a collaborator; and the expansion of transmission protocols so that individuals can upload and download in digital formats, giving rise to open source courseware, blogs, and Wikipedia, just to name a few (Griffin, McGaw, and Care, 2012).

Climate change is persistently disrupting human livelihoods, while widening and deepening vulnerabilities. It drives the need for education for sustainable development and for the educational grooming of new global citizens with sustainable lifestyles and exemplary environmental custodianship. This implies certain competences that have to be included in 21st century curricula.

Social fracture and political instability: Beyond climate change, vulnerabilities are deepening due to injustice, inequity, exclusion, oppression, social fracture, and political instability. The 21st century is turning out to be among the most violent in human history. Terrorism related deaths increased by 80% between 2014 and 2015, the largest increase over the last 15 years. Acts of violence are concentrated in a few countries, but their impact is global. The impact is dramatically changing foreign policy, international relations, and shared responsibilities. In 2015, nearly 60 million people were displaced due to violence, the highest number since the end of the World War II. One in 122 people was either a refugee, internally displaced, or seeking asylum. While the number of active wars declined since 2008, the number of deaths tripled due to a relentless intensification of violence (IISS, 2015; UNHCR, 2015). These developments sparked a new global discourse on the prevention of violent extremism through education, introducing another dimension to global citizenship education that can nurture peaceful, multicultural, and reconciled 21st century citizens. The discourse has highlighted the importance of culture and humanities in future curricula interfaced with technology. For instance, concerns for multiculturalism, inter-religious dialogue, peace education, human rights education, and ethics interface with technology around issues of cyberattacks, security, and peace.

Multiple youth disengagement: Especially for young societies, youth are multiply disengaged from education, work, jobs, families, and

communities. Youth multiple disengagement is due mainly to: lack of education opportunities, disillusionment with education that does not deliver the opportunities youth had expected, unemployment, exclusion from collective processes even when they concern youth, and a perception of being misunderstood by families and societies. The demonstrable anger of youth has forced debates and action on the holistic engagement of youth and their grooming as future leaders, drivers of growth, and pillars of societies. Another force is the borderless youth culture and voice that demand space in curriculum design, development, and implementation.

Heightening recognition of student and teacher agency: Thanks to technological advancements, teachers and learners can more easily create and share their own content. This is increasing the recognition of teachers and learners as co-curricula designers, a role that has mostly been centralized on specialists at ministry headquarters. Technology is also easing direct learner access to knowledge and information, and reducing the significance of teachers as providers of knowledge and information. Teachers are progressively recognized as learners, and learners as teachers, both engaged in collaborative teaching and learning. These ideas are not entirely new. They align with John Dewey's concepts of experience and transaction; with Jean Piaget's concept of development and re-equilibration; and with Jerome Bruner's concept of learning and thought. In this conception, curriculum development is seen as a collaborative effort and transformative process which favors constructivist meaning-making and higher tolerance for ambiguity. The resurgence of student and teacher agency is more strongly recognizing them as co-designers of curricula. This calls for higher flexibility in curriculum development, and for the need to leave space for curricula interpretation, contextualization, and creativity at the micro level of teachers and classrooms.

Advances in our understanding of learning: Burgeoning insights from the sciences of learning research are stimulating a shift in our understanding of learning, including the appreciation of the biological basis for learning. Research is also giving a fresh emphasis to concepts such as emotion and action in learning. It emphasizes learning through enactment. For example, neuroscience research suggests complex sensorimotor networks store the information in an extended way. This confers stability on the representation of the knowledge and leads to enhanced learning (Macedonia and Mueller, 2016). Neuroscience is progressively shedding light on deep learning and by implication, on deep pedagogies. Neuroscience is also providing insight into how emotion can bias a learner's attention, revealing the mechanisms by which rewarding environments can support learning (Howard-Jones and Jay, 2016), and by which fearfulness and anxiety can obstruct it (Young, Wu, and Menon, 2012). Through understanding the processes

by which emotional stimulation and activity can engage and support the learner, the sciences of mind and brain offer a scientific basis for developing and implementing micro or classroom level curriculum. This is critical because curriculum implementation at the micro level is what gives effect to curriculum statements at the supra, macro, and meso levels. These developments also promise to address the age-old challenge where mostly micro curricula are diminutions of the macro curricula. Insights from the sciences of learning can optimize curricula impact by narrowing the gap between the official (macro level) and the taught and learned curricula (micro level). Even more importantly, such insights increase the possibility of transforming micro curricula into an enrichment of the macro curricula, which would heighten teacher and learner agency in curriculum design, development, and implementation.

Industry 4.0: The onset of Industry 4.0 is a formidable accelerant to change in the 21st century, anchored mainly in production technologies (see Document 2 for details). It is described as a technological revolution whose velocity, scale, scope, complexity, and transformative power will be unlike anything humankind has experienced before (Schwab, 2015) Though the details and directions are not yet known, Industry 4.0 will disrupt patterns of demand for competences in the labor market, in work and in life. Because of the unequalled velocity of change, Industry 4.0 also demands increased foresight and anticipatory capacity of curricula, if they are to sustain relevance. For instance, current jobs will disappear and unknown ones will emerge. Tools and ways of working will transform into unknown directions. Industry 4.0 is more than just about the economy and production technologies. It is about the disruptive effect of technology in all facets of life as we know it. People will therefore need new competences not just for jobs and work, but more importantly for life. This unprecedented wave of change is further questioning the readiness of education and learning systems, and more specifically curricula, to prepare learners (young and old) for the unknown future.

Overall, the pace and intensity of change in the 21st century are likely to exert more influence on curriculum more than all the past centuries combined. This demands a fundamental paradigm shift that appropriately reconceptualizes and repositions curriculum to effectively play its role and to bear desirable impact in the 21st century.

A Case for Reconceptualizing and Repositioning Curriculum

The fact that curriculum means many things to many people reflects a healthy complexity of the concept. However, current conceptualizations are inadequate for ensuring optimum contribution of curriculum in meeting demands and opportunities of the 21st century in general, and of SDG4 and Industry 4.0 specifically. Current conceptualizations tend to confine curriculum to pre-tertiary general education. The reconceptualization proffered in this Document applies curriculum to all levels and types of education and learning; as well as to all levels and types of learners. This allows for the vertical articulation of curricula, which is critical for ensuring a smooth learner transition through levels of education and training, and for supporting lifelong learning. Existing conceptualizations also tightly associate curriculum with education institutions, especially schools; however, education and lifelong learning occur across diverse settings including formal, non-formal, and especially informal settings. Herein, curriculum is used to apply to all learning settings. This allows for horizontal curricula articulation, synergies, complementarity, and mutual reinforcement, for further reinforcement of lifelong learning. Current conceptualizations have tended to equate curricula relevance with responsiveness. Herein, relevance is used to mean both responsiveness and initiative. 21st century curricula must respond to fast-changing, unpredictable and often

disruptive contextual challenges and opportunities. Even more importantly, they must initiate and catalyze positive contextual changes and disrupt the negative status quo. They must be innovative systems.

Development-relevance positions curriculum beyond education sectors more than has been evident in current conceptualizations. Dialogue and action leading to curriculum design, development and implementation must therefore include a broad base of stakeholders, far beyond educators. It must be anchored in the national development agenda, and must be cognizant of the regional and global development potentials. It must cover all sectors on the demand side of education and learning, if curricula are to attain and sustain relevance. It must include education specialists of course, but must be guided by development specialists, voices of youth, children, and of society at large. It must include the public, parastatal, and private sectors; as well as civil societies. Dialogue that guides curriculum must consider factors beyond national boundaries. By producing the human resources that drive development and that contribute to long term human capital accumulation, curriculum has potential for supporting national geopolitical positioning, as well as regional and global competitiveness.

By confining curriculum to education sectors, general education (K-12), schools, children, adolescents and youth, and by rendering it rather reactive and passive, current conceptualizations grossly limit the role, significance, and potential impact of curriculum in the 21st century, within the Education 2030 Agenda, and within Industry 4.0.

To realize its full potential, the world needs a paradigm shift that reconceptualizes and repositions curriculum in the 21st century, within Education Agenda 2030 and Industry 4.0. This shift should necessarily include factors that are essential for curricula impact, vis. teaching, learning, assessment, and enabling implementation environments. Without a definitive paradigm shift, many curricula will continue to fail to facilitate learning, they will continue to register poor learning outcomes, and they will remain irrelevant for the future. They will perpetuate and even widen inequities between the poor and the non-poor, and between the developed and the underdeveloped world. All this is anathema to the spirit and letter of SDGs and a serious threat to global peace, security, and stability.

Reconceptualizing and repositioning curriculum

This Document accepts the concept of curriculum as a course of study that guides the what, why, when, by whom, how, and how much, of education and learning. But it applies this concept to all levels, types, and contexts of learning. It goes further to present a new paradigm that reconceptualizes curriculum along eight dimensions outlined below. It outlines the repositioning of curriculum implied in some of the eight dimensions, and highlights that this repositioning is fundamentally different from the current marginal positioning and confinements.

The first operational tool for ensuring the sustained development-relevance of education and learning systems: National and global policy statements reflect the universally acknowledged relevance of education to development. However, concrete instruments for giving effect to these policies remain scant and mostly unstated. Not surprisingly, the growing recognition of the development-relevance of education is often accompanied by persisting frustration with the irrelevance of education to development within specific contexts. This is mostly manifest in graduates who do not meet expectations of the demand side of education systems. Examples include graduates who are functionally illiterate in national and/or global contexts, are alienated from their cultures, have poor mastery of their languages, lack skills for em-

employability and for life, lack digital skills required in digital workplaces, lack facility for lifelong learning, etc.

To say that an education system is irrelevant to development is to say that its curriculum does not enable graduates to acquire required competences. It is through the curriculum that societies identify and package competences that enable people to meet current and future development challenges and to take up emerging opportunities. An appropriate selection of these competences depends on a textured understanding of development within specific geographical and temporal contexts. Yet, for many countries, dialogue on the development-relevance of education often excludes mainstream educators such as curriculum developers. More often, it is economists of education and education planners who are involved in this dialogue. In many countries, instruments that communicate national development policies and strategies are not effectively shared, including with curriculum specialists. Furthermore, it is unusual for training programs for curriculum specialists to include development as an area of study.

In sum, those who actually determine and select competences that should constitute curricula content are not necessarily in tune with long term development dialogue, outlooks, policies, and strategies in their contexts. Perhaps then, the perceived or real irrelevance of education to development should not come as a surprise.

Repositioning curriculum at the core of national and global development dialogue, policies, and interventions: Accepting this first conceptualization of curriculum implies its repositioning at the center of the national and global development dialogue, policies, strategies, and interventions. It further identifies curriculum designers and developers as key stakeholders in the shaping of, and in giving effect to national and global development policies.

Key considerations: Development-relevance is as much a strength of the curriculum as it can be its weakness. There is always tension between the core function of education, which is to produce a lifelong learner, and the instrumentalist function, which is contextual relevance. A key risk could be the overcrowding of curriculum and the squeezing out of foundational competences to make space for competences that are perceived to ensure relevance. This risk is particularly high when curricula relevance is expressed by adding new subjects or learning areas instead of through the integration of competences into existing subjects and learning areas. Positioning curriculum at the core of development has to therefore be accompanied with well-deliberated "scope and balance" as core principles of curriculum design.

Another risk is that curriculum can be over-politicized under the guise of relevance. Endless reforms can be prompted by bipartisan

politics, especially at transition points, and by powerful interest groups rather than by national development priorities. National mechanisms for protecting curriculum from political agendas therefore need to be established and institutionalized.

A catalyst for innovation, disruption, and social transformation:

In a proactive role both formal and informal curriculum are powerful catalysts for social change, transformation, and for disrupting the status quo. Curricula can change attitudes and mindsets. Examples include social dispositions towards strategic gender roles, women in STEM, racial groups, sexual orientation, the environment, etc. Curricula can construct and deconstruct social order. Care has to be taken to ensure that curricula support desirable social order marked by equity, inclusion, equality, justice, respect for human right, peace, responsible citizenship, etc.

A force for social equity, justice, cohesion, stability, and peace:

As much as curriculum is transformative, it is among the most profound stabilizing forces. It is through curricula that societies conserve and pass on their values, age-old wisdoms, heritages, and accumulated expertise to new generations. Curricula are key socializing forces and even control that through which societies cohere. The challenge is when to draw a line between desirable and just socialization, and unjust and oppressive socialization that trample the rights of others.

Curriculum as an integrative core of education systems: Adopting and sustaining a systemic approach to education and learning remains a challenge in many countries. Fragmentation of core elements is not uncommon, and this weakens the effectiveness of supposed systems. At worst, core elements may even undermine each other. Because curriculum relates to most elements of an education system, it can serve as an integrative force to engender a systemic approach to education and learning. Curriculum leads teaching, learning, and assessment. Among others, it determines the physical teaching and learning environment (infrastructure, books and learning materials, consumables, furniture, equipment, etc.), and education personnel, especially teachers. Student curriculum determines curricula for initial teacher training and for continuous professional development. Coherence in key elements of the systems is critical for system effectiveness and resource efficiency.

Repositioning curriculum as a systemic core gives a chance at a systemic approach to education and learning. In turn, the coherence of key elements of the systems can only enhance effectiveness and resource efficiency.

Key considerations: Connectedness to virtually all elements of the education system is a key strength of the curriculum. At the same

time, it makes curriculum vulnerable to malfunctions in any part of the system. The overall functioning of the education system is a critical enabling or disabling environment for effective curriculum implementation. To be successful, any curricula reforms have to adopt a systemic approach, without which, such reforms are doomed to fail. They have to take into account the functioning of education systems and address dysfunctions that can undermine the otherwise constructive reforms. For instance, excellent curriculum will fail at implementation if it is plunged into a disabling systemic environment. Examples of dis-enablers include inadequate physical teaching and learning resources; teachers who can't deliver the curriculum; assessment that is misaligned with curriculum; learners, who, for a range of reasons, are not ready to learn, etc. The functioning of an education system is therefore not just desirable, it is essential to the successful implementation and impact of curriculum reforms. Yet, many reforms ignore the system to their own detriment.

Curriculum as an enabler of lifelong learning: The fast pace of change in the 21st century implies that many of acquired competences become obsolete much faster than in prior centuries. Adaptability to fast-changing contexts demand effective lifelong learning, which has become the key source of human resilience. The first and most critical competence that 21st century curricula should enable learners to acquire is “how to learn”. With this facility, the “what” of learning will fall in place. If well designed, curriculum can be a key enabler of lifelong learning. The opposite is the case.

Learning through life in the formal education system, demands smooth transitions through levels of the system. This requires a vertical articulation of curricula, as a basic principle of curriculum design. Yet more often than not levels of curriculum are loosely-coupled rather than articulated. Consequentially, learners experience hurdles rather than facilitation as they transition between levels. This is more evident in between formal education cycles like pre-primary and lower primary, lower and upper primary, and senior secondary and tertiary education. The latter is even more evident in the plethora of university pre-entry courses or foundation courses created on the premise that senior secondary education does not fully prepare learners for post-secondary studies. Other levels of formal education have similar observations on how lower levels do not anticipate learning needs of subsequent levels, or how higher levels misunderstand the learner readiness acquired from lower levels.

Learning through life also requires ease of movement from learning contexts. Horizontally articulated curricula, and clear curricula equivalencies enable movement from formal to non-formal contexts, from general to professional education including TVET, and across geographical contexts including countries within regions that have well defined equivalencies. In higher education, these equivalencies

are expressed through portability of credits. High formalization of horizontal articulation of curricula is often expressed through qualification frameworks and even through conventions and recommendations on the recognition of qualifications and diplomas. Horizontal articulation of formal and informal curricula (in media, learning parks, home, museums, etc.) also serves to consolidate and reinforce learning through life.

Other principles of curriculum design that facilitate lifelong learning include flexible packaging such as modularization, personalized learning, just-in-time learning packages, and technology assisted real-time, any-time, any-where learning.

Collectively, these principles determine the ease or difficulty of learning through life.

Repositioning curriculum at the core of lifelong learning policies and programs:

Many countries and institutions have adopted lifelong learning policies, but in reality, learners experience hurdles and even contradictions as they try to take up lifelong opportunities. Positioning curriculum at the heart of lifelong learning policies could go a long way towards actualizing those policies. Effective implementation of lifelong learning policies has to be taken into account from the design of curricula through all its processes.

Curriculum as a determinant of the quality of education and learning:

Hardly requiring mention, the curriculum determines what is learned, by whom, why, how, when, and in what sequence. It leads key processes that are fundamental to quality education and learning. Key among these are: teaching, learning, and assessment. When these processes are not led by curriculum, there is often a diminution effect along a continuum of the official, taught, learned, and assessed curriculum. Effective curriculum implementation supports the improvement of learning outcomes. Learner centric curricula promote equity of education quality and learning. Overall, it is not possible to attain SDG4 without due recognition to the role, significance, and potential impact of curriculum.

Repositioning curriculum at the core of education and learning quality enhancement:

It is inconceivable that any education and learning quality improvement effort is not anchored in the curriculum. Yet, comparative international assessments and high stakes selective national examinations have often been allowed to hijack and diminish the official curriculum. Disconnects in the “system” especially between the learner and the teacher training curricula, have also lead to chasms between the official and the taught curriculum with teachers teaching what they know rather than what they ought to be teaching. The centrality of curriculum to the quality of education and learning therefore anchors more on the overall coherence of the system.

2 Implications of this transference of secondary education to university level are staggering in terms of per capita cost.

Curriculum as a determinant of key cost drivers in education

and learning systems: For any education system, key cost drivers are the number and level of teachers, and the implied salary bill. Next in significance are teaching and learning materials including textbooks, equipment, and consumables. These are followed by the physical infrastructure. All these elements are determined by the curriculum. Other than the sheer number of learners, the curriculum determines the type and levels of teachers required to deliver it. This is more so for the post primary levels. The curriculum also determines requirements for the physical teaching and learning environment including the physical infrastructure, textbooks and instructional materials, equipment, and consumables. It equally determines the scope of assessments, be they local, national, or global. Analysis of the cost and financing of education systems have to pay particular attention to curriculum as a key determinant of costs, and by implication, efficiencies. Yet, such analyses hardly make links to curriculum. For example, teachers, and the physical teaching and learning environment are factored into analyses as key cost drivers, yet little attention is paid to what drives demand for those cost factors, other than the size of the student population.

Repositioning curriculum at the core of the economics of education:

The curriculum is at the core of the economics of education not only through its centrality to development relevance, but also as a determinant of the cost and financing of education and learning.

Repositioning curriculum at the core of education system resource efficiency gains:

As noted, curriculum drives demand for all key education resources. This includes: (i) human resources, especially teachers; (ii) time for teaching and learning; and (iii) all key elements of the physical teaching and learning environment. Any effort to raise resource efficiency gains has to pay considerable attention to the curriculum.

Curriculum as a lifelong learning system in its own right:

21st century curricula are intensively challenged to sustain relevance to rapid, unpredictable, and sometimes disruptive contextual changes. An even bigger challenge is for curricula to not only react to contextual changes but to also lead them. To effectively play the reactive and proactive role, curricula have to themselves be lifelong learning systems. Mechanisms have to therefore be built to ensure constant self-renewal of curricula sub-systems, lest they risk being irrelevant. The ever-escalating pace of change challenges traditional durations of curricula reforms which often take years. 21st century curricula have to have the foresight, anticipatory, and regenerative capacity for constant self-renewal, to adapt quickly, and to be innovative.

Conclusion

The realization of Education 2030 Agenda demands heightened contributions of curricula. The Education 2030 Agenda will be implemented within the Industry 4.0, whose transformative change is yet unknown. Yet, the framing of the agenda has not seriously factored in the implications of change in the 21st century and in Industry 4.0 specifically. This is a serious blind sight, and one that could break the agenda, if it is not adequately factored in. The unanticipated rapid change is going to steamroll education systems and curricula into dramatic changes, the directions of which are not yet known. The success of the Education 2030 Agenda will lie in its ability to adapt to the unknown and reconsider itself against these realities.

With the onset of Industry 4.0, such curricula that are stuck in the past will be severely challenged to catch up and even more so, to get ahead of the curve. Reconceptualizing and repositioning curriculum in the 21st century in general, in Education 2030 Agenda, and in Industry 4.0 is NOT a choice; it is a moral, social justice, global stability, global security, and global peace imperative!

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