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Education Insights from Cambridge

Preparing learners fairly for the future

TRANSFORMING SOCIETIES THROUGH EDUCATION

Contents

Introduction

There's no doubt that we are living through a period of intense and rapid change. Technological advancements and accelerating globalisation, compounded by political, social, economic, and environmental uncertainty, render the future both unknown and unpredictable.

These drivers of global change disrupt established norms and pose challenging questions for anyone working within education:

- How do we equip learners with skills that will be valuable in the future?
- How do we prepare them to respond effectively to change?
- How can we do this in a way that is fair and equitable?

To address these challenges and develop equitable solutions, Cambridge University Press Education Reform asked a series of leading education practitioners, researchers and policy experts for their insights into how we can prepare learners for the future.

The contributions explore the skills that learners will need in order to thrive, such as adaptability, resilience and lifelong learning, and how they can be successfully implemented within education systems and beyond.

Each contributor has given their individual opinions and expertise, exploring a wide variety of equitable solutions for contexts around the world.


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Equipping learners fairly for the future: views from around the world

Accelerating globalisation and advances in technology are, among other factors, shifting the skills that learners need in order to to thrive. To shed light on this challenge, we spoke to Africa Code Week (ACW), an initiative that supports sustainable learning across Africa, and teachers based in Thailand, Oman, and Ghana. Here, we present some of the themes that emerged from our discussions.

Claire Gillissen-Duval

Director of EMEA Corporate Social Responsibility and Global Lead for Africa Code Week at SAP

Lydia Quansah

Head of Academics, Dayspring International Academy, Ghana

Roqaia Al.Wahaybi

English Language Lecturer at Saham Vocational College, Oman

Talib Mandan

Headteacher at Amnuay Silpa School, Thailand

Providing learners with skills for a global economy

Thriving within an increasingly borderless world requires a global outlook and a skill set to match.[1] Teachers from all regions recognised that learners must be equipped for life and employment within a global economy. Lydia Quansah, Head of Academics at a school based in Ghana, noted:

"Due to globalisation and its attendant effects, the skills that today's students will need in the future are not necessarily geographically specific. At some time in their academic or professional careers, learners will encounter a different country, culture, or system, either physically or virtually, and will have to adapt to survive within that new system."

As political, economic, and cultural networks of affiliation expand, learners not only require globally transferable skills but also the ability to understand, relate and adapt to different cultures and perspectives.

Talib Mandan, a Headteacher based in Bangkok, highlighted that there is a growing need for language, communication, and interpersonal skills, to enable students to transcend cultural barriers. As more multinational companies start to do business in Thailand, he anticipates that his students will be increasingly required to respond to the complex dynamics of globalisation. One direct result is that learners in Thailand are now, more than ever, expected to communicate in a second language. As a result, he said that 'there is a push on the national government for English to be taught in school'.

In Oman, the growing impetus for globally transferable skills has been addressed through education reform and curriculum change. The Oman 2040 Vision, launched in January 2019, positions education as a central pillar of the region's future. In order to meet the demands of an increasingly globalised world, the provision of internationally competitive skills was established as a key priority. Roqaia Al Wahaybi, an English teacher based in the region, noted that:

"Globalisation has brought changes in education and, as a result, the education system in Oman has introduced the Information Technology curriculum, as well as specialisation in schools and higher education institutions, which will equip Omani learners with new knowledge and skills needed for the global economy."

However, there was a broad consensus among interviewees that education systems must do more to prepare learners for life as global citizens. Some solutions, explored within this article, include the implementation of curriculum skills frameworks, preparing learners for an increasingly digital environment, adjusting to work in a world of automation and connectivity, and building an ethos of lifelong learning.

[1] Blum, N., Bentall, C., & Bourn, D. (2010). *The response of further education college and training providers to the challenges of globalisation.* Coventry: LSIS

Addressing the gap between skills demanded and skills taught

Problem solving, team working, and communication, among other skills, are increasingly important for employees. A report by The Sutton Trust (2017) found that, for success in the workplace, 94% of employers deem that life skills are at least as important as academic results.[2] Teachers across across Ghana, Bangkok and Oman agreed that, as the demand for life skills grows, education systems must facilitate their development. Ms Quansah noted:

"life skills, such as critical thinking, problem solving, empathy, teamwork, flexibility, and creativity, seem to cut across as the core skills that every learner needs today."

It is problematic that, while the demand for life skills has risen, The Sutton Trust (2017) found that only 20% of students in the UK feel that lessons in school help them 'a lot' with the development of these skills. On page 21 of this report, Ben Knight outlines a central reason for the gap between skills demanded and skills taught:

"Teachers and educational policymakers will often struggle with the wide array of terminology and advice on transferable life skills as an evolving area of education. Different models of life skills, 21st-century skills, employability skills, social and emotional learning, global competency, etc can be confusing and contradictory."

To address this challenge, what's needed is a unified approach, or common framework that explicitly defines and measures the development of life skills within education.[3] Ms Quansah noted that Ghana's Ministry of Education has made progress in this area:

"In April this year, the government launched a new 'modern' curriculum, which will be rolled out in September this year. This curriculum is supposed to inculcate all the skills that a 21st-century learner needs to survive, with a special focus on creativity and innovativeness."

Preparing for and navigating the digital world

It is essential to ensure learners have the right skills for an increasingly digital world.[4] Claire Gillissen-Duval, Director of EMEA Corporate Social Responsibility for SAP, noted that:

"With new technologies emerging and advancing faster than ever and lines of code running every aspect of our daily lives, developing STEM skills is critical to equip young people with the skills they will need to thrive in the future workforce."

As technological advances continue to impact industry and commerce, digital literacy is increasingly necessary for inclusive labour markets, innovation, productivity, and growth.[5] Despite the progress in digital technologies, at the end of 2018, 48.8% of the global population were still not using the internet.[6] This is due, in part, to a disparity in resource provisions. Ms Quansah noted:

"[In Ghana] you will enter a school with all the current technology and resources available which can [match] any school in the developed world, and just down the block from that school, you will find a school which doesn't have enough resources to print exam questions on paper."

Similarly, Ms Gillissen-Duval noted that, in some regions of Sub-Saharan Africa, her team is faced with the fundamental challenge that not all schools have a physical classroom, desks, computers, or electricity. In an ever more digital world, a disparity in digital resources and skills has the potential to significantly increase current inequality. To address this challenge, ACW has joined forces with over 130 public, private, and non-profit partners to introduce coding skills to students in the region. Ms Gillissen-Duval encapsulates the scale of the challenge:

"In Botswana, we enabled more than 150 children to experience a computer for the first time as part of ACW 2018, all thanks to using solar-powered devices. In some countries, we face language barriers, which we tackle by translating the entire ACW materials from English into French and Portuguese for the Francophone and Lusophone regions."

While the disparity in digital skills is concerning, where resources are abundantly available, the challenge of ensuring safety arises. Mr Mandan maintained that students in Thailand often have high levels of digital literacy, and that the challenge is not teaching them how to use devices, but how to use them responsibly:

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[2] Cullinane, C., Montacute, R. (2017). *Life lessons: Improving essential life skills for young people.* London: The Sutton Trust

[3] Kashefpakdel, E.T., Newton, O. & Clark, J. (2018). *Joint Dialogue: How Are Schools Developing Real Employability Skills?*, London: Education and Employers

[4] OECD. (2016) *Skills for a digital world.* OECD: Paris.

[5] Ibid.

[6] International Telecommunication Union (2018). *Measuring the Information Society Report 2018.* Volume 1, Chapter 1. Geneva: ITU.

"One of the issues we have is that students exist in a relatively unregulated environment. Often, they are too young to be able to understand the power that they have in their hand, so a big part of our work is working with parents and students on using the internet safely and responsibly."

As such, not only must we prioritise digital literacy and endeavor to provide equal access to the resources necessary, we must also teach learners the implications, consequences and best practices for engaging with technology.[7]

Adapting to the era of automation and connectivity

One of the concerns surrounding the rise of technology and globalisation is increased labour market inequality and unemployment. Technological advances pose a threat to routine jobs, due to the computerisation and mechanisation of certain production processes.[8] What's more, stages of the production are increasingly located across different regions, as companies restructure through outsourcing and offshoring.[9]

As middle-skill and routine tasks are increasingly computerised or offshored, some regions may experience rising job polarisation. This occurs when a drop in demand for middle-skill workers coincides with an increase in demand for high-skill workers, who can utilize, operate and benefit from advanced technology.[10] Research found that, in the US and Europe, the middle of the skill distribution has declined as employment polarises into high-skill, high-wage jobs and low-skill, low-wage jobs.[11]

However, some regions are likely to benefit from advances in technology and increases in international trade. Global connectivity makes it possible for companies to recruit internationally and generate employment in diverse geographical regions. Ms Gillissen-Duval noted that if these transformations are managed wisely, there would be economic benefits for certain regions:

"Africa could become the major labour engine that drives tomorrow's global economy – provided we join forces to empower young Africans with the right set of skills, and provided that no girl is left behind."

What's more, the informed consensus is that as tasks are automated, the labour market will evolve. It is possible that we will see as much job creation as job destruction, with new opportunities and new ways of working. The evolving world of work may, in fact, be advantageous to some traditionally marginalised groups of workers, such as those with physical disabilities and those with domestic care responsibilities.

Lifelong learning: collaboration between education and industry

The extent to which learners will benefit from shifts in the labour market will depend on whether they can adapt. Education and learning must be regarded as a lifelong commitment, with individuals on a constant journey of upskilling, reskilling, or diversifying their knowledge and skills. Ms Gillissen-Duval notes that:

"[As] new work opportunities increasingly require young people to develop new skills and new ways of learning throughout their life, our education systems also need to place emphasis on engendering a culture of lifelong learning."

For Ms Quansah, the key is to inspire students while they are at school, developing their sense of curiosity and nurturing their passion for learning:

"We have to stop asking students what work they would want to do, and rather ask them what problem they want to solve."

However, the challenge of ensuring that a country has the skills it needs to thrive economically is not only the responsibility of teachers and education ministries – it must be shared with industry, as the issue significantly affects the sustainability of many businesses. Industry leaders must collaborate with educational institutions around the world in order to develop relevant skills through work-based and on-the-job learning, as well as high-quality apprenticeships. On page 16 of this report, Paul Comyn explains:

"[Stakeholders] must re-engage with the concept of lifelong learning as an organising principle of education and training systems. A nation must

[7] Dotterer, G., Hedges, A., & Parker, H. (2016). 'Fostering digital citizenship in the classroom'. *Education Digest*, 82 (3), 58.

[8] Breemersch, K., J. Damijan and J. Konings (2017). 'Labour Market Polarization in Advanced Countries: Impact of Global Value Chains, Technology, Import Competition from China and Labour Market Institutions'. *OECD Social, Employment and Migration Working Papers, No. 197*, OECD Publishing, Paris

[9] Ibid.

[10] Ibid.

[11] Goos, M., A. Manning and A. Salomons (2014). 'Explaining Job Polarization: Routine-Biased Technological Change and Offshoring'. *The American Economic Review*, 104(8), 2509–2526.

look at its learning system holistically, rather than as individual sectors with separate administrative, regulatory, and financial systems."

Governments, workers and employers, as well as educational institutions, share the responsibility of building and participating in effective lifelong learning solutions.[12]

[12] International Labour Organization (2019), *Work for a brighter future: Global commission on the future of work*, Geneva: ILO.

Building education systems that teach children how, not what, to think

Andreas Schleicher

Director for Education and Skills, and Special Advisor on Education Policy to the Secretary-General at the Organisation for Economic Co-operation and Development (OECD).

If all we do is teach our children what we know, they may remember enough to follow in our footsteps. But it is only by helping them to build reliable navigation skills through an increasingly complex, volatile and ambiguous world that they will be able to go forward.

When we could still assume that what we learnt in school would last for a lifetime, teaching content knowledge and routine cognitive skills were rightly at the centre of education. Today, the world no longer rewards us for what we know (Google knows everything) but for what we can do with what we know.

Building human skills that complement technology

These days, the algorithms that drive social media are sorting us into groups of like-minded individuals. They create virtual bubbles that often amplify our views but leave us insulated from divergent perspectives; they homogenise opinions and polarise our societies. So tomorrow's schools need to help students think for themselves and join others, with empathy, in work and citizenship. They need to help them develop a strong sense of right and wrong, a sensitivity to the claims that others make on us, and a grasp of the limits of individual and collective action. People will need a deep understanding of how others live, in different cultures and traditions, and how others think, whether as scientists or artists.

Due to technological development, many things that are easy to teach and test have become digitised and automated. It is now possible to instantly access vast amounts of knowledge that students learnt in the past with great effort. Similarly, computers can do calculations or process images much faster than humans can. In the past, education won the race with technology, but there is no certainty that it will do so in the future. Students growing up with great smartphones but a poor education face unprecedented risks.

Although computers have become very good at handling structured knowledge and routine processes, non-routine cognitive and manual skills are still the domain of humans. The growing complexity of modern living for individuals, communities and societies means that the solutions to our problems will be complex. In a structurally imbalanced world, the imperative of reconciling diverse perspectives and interests in local settings with global implications, means we need to become skilled at handling tensions and dilemmas. Striking a balance between competing demands – equity and freedom, autonomy and community, innovation and continuity, efficiency and democratic process – will rarely lead to an either/or choice or even a single solution.

We need to think in a more integrated way and recognise interconnections: our capacity to navigate ambiguity is key. Creative problem solving requires the capacity to consider the future consequences of our actions, and reflect on them in the light of experiences and personal and societal goals. The bottom line is, if we want to keep up with technological developments, we have to find and refine the qualities that are unique to our humanity, and that complement, not compete with, the capacities we have created in our technology. Schools need to develop first-class humans, not second-class robots.

The challenge of changing education

It can seem like an uphill struggle to make change happen in education. It's so much easier to educate students for our past, than for their future. Schools are inherently conservative social systems: as parents we get anxious when our children learn things we don't understand, and even more when they no longer study things that were important to us. Teachers are more comfortable teaching how they were taught, than how they were taught to teach. And policymakers rarely win elections on the issue of education, because it takes so much longer than one election cycle to translate good intentions into better results.

Because the status quo has so many protectors, it's often hard to bring stakeholders on board. And during times of accelerating change, such as now, systems that are generally slow to adapt appear even more cumbersome.

The good news is that our knowledge about what is needed in education and about what works in education has improved vastly. Still, knowledge is only as valuable as our capacity to act on it. To transform education at scale, we need not just a radical vision of what is needed and what is possible, but also smart strategies that help make change. The laws, regulations, structures, and institutions, on which educational leaders tend to focus, are just the tip of the iceberg.

The reason it is so hard to move school systems is that there is a much larger part under the waterline. This part contains the interests, beliefs, motivations, and fears of people who are involved in education – including parents and teachers. This part of educational reform tends to go under the radar of public policy. Reforms are rarely successful unless leaders build a shared understanding and collective ownership of change, and create the right policy climate – with accountability measures designed to encourage innovation rather than compliance.

Many teachers and schools are ready for this. To encourage change, policy needs to shift towards inspiring and enabling innovation, identifying and sharing best practice. That shift will need to be built on trust: in education, in educational institutions, in schools and teachers, in students and communities. In all public services, trust is an essential part of good governance. But it can only be nurtured and inspired through healthy relationships and constructive transparency.

Steps towards a more equitable future

Rt Hon Charles Clarke

Former UK Secretary of State for Education and Skills

It is universally recognised that a high-quality education can dramatically improve a child's future prospects. There are four steps that every society should take in order to provide such chances for every child.

For centuries, people from all social and economic backgrounds, and in all countries, have understood that the best way to secure their children's futures is through a good education that prepares them for working life. This sentiment becomes truer and stronger with every new generation. Furthermore, in a world of accelerating economic, social and technological change, vocational education is becoming even more important as traditional forms of work become redundant, and new skills and talents become essential.

Parents have long been prepared to sacrifice a great deal to provide for their children the chance to flourish. Access to educational opportunity, however, is not always fair:

- Many children are not able to attend (or even commute to) high-quality primary and secondary schools.
- Many parents cannot afford to provide their children with the school education, or the educational resources, they need.
- Much school education gives insufficient priority and status to the vocational training and skills demanded by the future workplace.
- For a range of reasons, many families do not fully understand the value of education so do not give adequate support to their children's education.
- Some parents, even today, do not consider that their daughters deserve the same chances as their sons. This is a major issue in some countries.
- Children with special educational needs, including language difficulties, may require specialist, personalised help. This sort of support can be difficult to secure.

The exact ways in which these issues influence a child's education vary greatly by circumstance and by country.

The most important, indeed fundamental, requirement to address this inequity is a commitment by government – national, regional and local – that the state school system is forward-looking, of high-quality and enables every child to thrive and to find work in later life.

No country in the world has fully achieved this ambition so far. However, the desire to do so is why political slogans such as 'No Child Left Behind' and 'Education, Education, Education' have been so powerful and electorally successful. The ambition for a strong education system that caters for every child is a powerful political aspiration. Such a commitment must be the foundation for any education system that aims to prepare today's learners, without discrimination, for the future and for the world of work.

This commitment, important though it is, is only the first step.

The second step has to be the establishment of a strong and collaborative network of primary and secondary schools that, together, can turn this objective into reality. Such a network requires:

- high-quality teachers
- a modern curriculum comprising academic and vocational subject areas, with high standards and supportive assessment systems
- high-quality teaching and learning materials.

Challenging though this aspiration may be for any government, no successful education strategy can bypass this stage. A strong and effective education system needs strong and effective schools.

The third step is to identify, analyse and address the educational inequalities and disadvantages specific to a country.

- Which children can't attend a good school? What needs to happen to enable them to do so?
- Do girls have an equal chance to get a good school education?
- Does the curriculum give proper status to both vocational and academic education?
- Is there sufficient specialist and supplementary educational provision to meet every child's special educational needs?

The answers to these questions will be different, often substantially, between and even within countries. The questions are difficult to answer and the answers themselves may be challenging and uncomfortable for school and government leaders. It is, however, important that they are answered as they are fundamental in ensuring local accountability of schools to students, parents, and the local community.

The fourth step in building a school system that prepares today's learners fairly for the future is to use the range of available performance data to focus ruthlessly on raising education standards for every child. That is what was done in the London Challenge, which successfully improved schools in London over a number of years.

The dream of raising education standards for every learner is the most worthy and most necessary of all political, governmental, and professional aims. Its fulfilment requires significant focus, energy, creativity, and commitment, but the results will be well worth the effort.

Enabling learners, young and old, to develop competences they need for the 21st century

Dr Mmantsetsa Marope

Director of UNESCO's International Bureau for Education.

Reconceptualising and repositioning curriculum in the 21st century is crucial. Compentence-based curricula will prepare learners for the future we do not know and the future we hope to build. For a better chance of success, such curricula have to be fully aligned and integrated with teaching, learning, and assessment.

One might ask, what is so special about the 21st century? The future is always, to some degree, unpredictable and unknown. However, the speed and sophistication of change in the 21st century presents a unique challenge. Accelerated by globalisation and advances in technology, among other factors, the fast pace of change requires learners to be adaptable, resilient and prepared for lifelong learning.

To address this challenge, the International Bureau of Education articulated a global futures competence framework that identifies core competences all learners need to thrive in fast-changing 21st century contexts.

Essential macro competences

In the 21st century, learners must be equipped with seven macro competences that are relevant across contexts:

↘ Lifelong learning

Knowing how to learn is a critical future competence. Learners must acquire knowledge, skills and values, but in the context of rapid change, they can become obsolete very quickly. As contextual demands shift, its necessary for learners to continually acquire new knowledge and skills. They must become effective lifelong learners with agility to adapt, continuously reinvent themselves, and remain resilient.

↘ Self-agency

Self-actualised agents know what they need to achieve and have the initiative to achieve it. They go out and make things happen. In the 21st century, learners need the resourcefulness to face the unknown and emerge accomplished.

↘ Interacting with others

Challenges and opportunities in the 21st century are complex and while self-agency is vital, learners cannot depend solely on their own skills, knowledge, and values. Effective interaction enables individuals to augment their own competences with the competences of others around them. This allows them to develop integrated responses to complex challenges and opportunities, benefiting both the individual and the collective.

↘ Interactively using diverse tools and resources

Learners must become acutely aware of the resources at their disposal and how to use them responsibly. For instance, a learner who doesn't recognise other learners as a resource may miss out on powerful peer learning. As globalisation and advances in technology continually shift the environments in which learners live and work, they must remain aware of the resources at their disposal. Interacting with resources is also a responsibility and an entry point to sustainable consumption and sustainable living.

↘ Interacting with and in the world

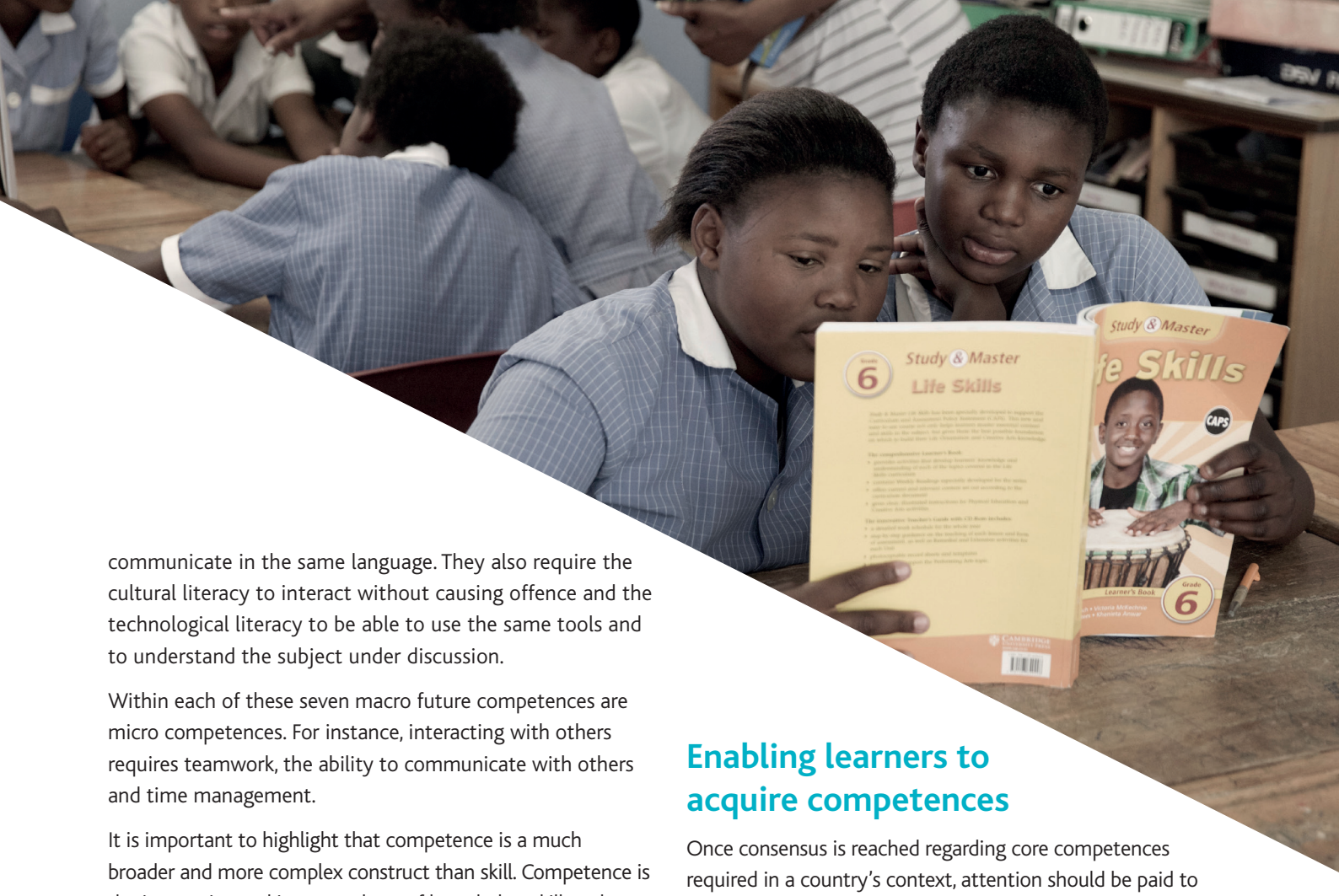
Learners need to be able to expand their circle of influence beyond themselves. Interacting with the world requires understanding the broader, global environment beyond local or national contexts. This competence enables awareness, sensitivity, and advocacy for collective challenges and opportunities at a local, national, regional, and global level. It entails multi-cultural, multi-religious, multilingual perspectives that embrace diversity as an enriching asset.

↘ Trans-disciplinarity

Challenges and opportunities in the 21st century are complex and require sophisticated solutions. Learners will need to be able to integrate knowledge from multiple disciplines in order to access opportunities and address challenges. They must, therefore, be equipped with a functional understanding of a broad range of disciplines, over and above their narrow specializations.

↘ Multi-literateness

The sophisticated 21st century demands that learners use a broad range of literacies (digital, cultural, financial, health, media, etc) depending on the context. For example, if a learner is required to work with a college based in another region, they need the basic literacy of being able to



communicate in the same language. They also require the cultural literacy to interact without causing offence and the technological literacy to be able to use the same tools and to understand the subject under discussion.

Within each of these seven macro future competences are micro competences. For instance, interacting with others requires teamwork, the ability to communicate with others and time management.

It is important to highlight that competence is a much broader and more complex construct than skill. Competence is the interactive and integrated use of knowledge, skills, values, dispositions, ethics and technology in a particular context, to be able to be effective and to thrive in that context.

Developing curriculum frameworks in different contexts

The seven macro competences are, regardless of context, broadly beneficial to learners around the world. However, we do not try to force all countries to fit into this framework. For example, while all 21st-century learners must be multi-literate, different contexts demand different literacies. A technology-rich context may require digital literacy, but a cross-cultural context may require cultural literacy. As such, we aim to understand each country's needs and adapt its curriculum framework accordingly.

Understanding a context starts with determining a country's long-term development vision. This requires a holistic appreciation of a country's context, including its economic, political, social, cultural dimensions among others. Curriculum design and development should identify competences required to enable the country to meet its long-term vision.

There are, of course, commonalities across contexts. Within each region, learners are prepared to contribute to the economy, social cohesion, to know and exercise their rights, and so on. However, during our consultations with education ministries, we find that some core competences are highly region-specific. For example, some stakeholders want to encourage pride in their nation's culture or instil religious values.

Enabling learners to acquire competences

Once consensus is reached regarding core competences required in a country's context, attention should be paid to learning areas and disciplines which can best facilitate their development. The mapping of competences to traditional subject matters is key to ensuring generic competences are not facilitated at the cost of knowledge areas, and also that domain specific competences are not lost. Often, one learning area or discipline can develop multiple competences. Various learning areas within the arts, such as dance, can increase cultural literacy and non-verbal communication, as well as improve concentration and self-discipline.

The successful implementation of a competence-based curriculum requires integration across learning, teaching and assessments. To successfully change the learner's curriculum, countries must also adapt the teacher's curriculum. If teacher competences are not aligned with the competences that we expect learners to acquire, successful implementation will not occur.

It is also important that assessment collects evidence of progressive development of competence and not just discreet recall of information, discreet demonstration of certain skills, and regurgitation of values. Learners must live and enact values, not just know them.

Assessments must be used as a tool for collecting evidence that learners are actually developing the competences they need.

This is an abridged version of an interview with Dr Mmantsetsa Marope. For the complete interview, go to: https://www.cambridge.org/gb/educationreform/insights

Using skills policies to promote relevant lifelong learning

Paul Comyn

Senior Skills and Employability Specialist for the International Labour Organisation (ILO)

To adequately prepare for the future of work, we must learn to implement educational policy via a holistic and coordinated approach to education, training and informal learning that is appropriate for the 21st century.

As technology continues to change the jobs and skills landscape at an ever-increasing rate, it is imperative that education and training systems become more responsive to those changes. Response to the labour market has been the driving principle of educational reform over the past 40 years, and as such there is no shortage of policy advice on how we can prepare learners for a changing work environment.

In order to capitalise on this advice, stakeholders must support its application in classroom teaching, assessment, and reporting. At the same time, they must re-engage with the concept of lifelong learning as an organising principle of education and training systems. A nation must look at its learning system holistically, rather than as individual sectors with separate administrative, regulatory, and financial systems. It must:

- Re-examine the arguably artificial distinction between higher education (HE), and technical and vocational education and training (TVET).
- Look at how it can make accreditation more flexible and portable.
- Explore how it should finance and incentivise such a system, with a view to radical change.

Although we are fairly knowledgeable about the types of skills required by the labour market of the future, education and training systems have been slow to ensure the effective development, assessment and reporting of the relevant generic skills. A key imperative, therefore, is the professional development of teachers and trainers so that they are able to facilitate the learning of the technical and sociocultural skills required in contemporary workplaces.

On a broader scale, we need to develop comprehensive national approaches to supporting individuals through life's key professional transitions: from school to work, and from job to job. While there is no universal strategy for implementing lifelong learning, there are three policy themes that arise repeatedly.

These themes are:

1. establishing foundation skills (numeracy and literacy) and core employability skills (digital and workplace skills such as teamwork, collaboration, leadership)
2. ensuring equitable access to learning for disadvantaged groups at all stages of their lives
3. recognising all learning – not just formal courses – and enabling learners to easily move between programmes, building a portfolio of skills and knowledge.

As part of all policies, we need to ensure that young people and adults receive the information and guidance that they need to make informed career choices. This requires joined-up policy planning from government programmes that address the priorities and coordination of all stakeholders.

We must reconsider the validity and necessity of separating tertiary education into two systems: academic HE and TVET. Instead, both systems would benefit from drawing on each other's strengths. In both pathways, we need to see more opportunities for work-based learning (through apprenticeships, internships, work placements and work experience), allowing learners to develop relevant, high-quality skills in a work environment.

Of course, there is a financial cost to modernising the education system in this way. Additional public resources are needed, along with new mechanisms to attract private resources, in order to strengthen those parts of the system that are currently under-resourced. Spending on education and training can be increased by progressively enlarging and broadening the tax base. Governments also need to consider what financial and non-financial incentives may be required to increase employer participation in work-based learning, but also to increase the opportunities they provide for existing workers.

The vital role of employers in supporting lifelong learning has been recognised by the International Labour Organisation's Global Commission on the Future of Work, which notes the need 'to explore viable options to incentivize businesses to increase their investment in training, including looking at how accounting standards treat training costs'.[13] Furthermore, the commission proposes linking education and training to a reconfigured 'employment insurance system', highlighting the important link between lifelong learning, active labour market programmes and social protection systems.

Financing of lifelong learning presents a complex challenge, but it is one that must be overcome by governments to ensure that skills policies have equitable outcomes, and are suitable for all regions and contexts.

[13] International Labour Organization, (2019). 'Work for a brighter future – Global Commission on the Future of Work'. International Labour Office. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---cabinet/documents/publication/wcms_662410.pdf

Striving for gender equality within and beyond education

Elaine Unterhalter

Professor of Education and International Development, and Co-Director of the Centre for Education and International Development (CEID) at University College London (UCL).

Achieving gender equality and supporting women's rights requires a combination of interventions. We must challenge norms, change institutional culture, and invest in resources and infrastructure.

Every society places some form of learning at the centre of its identity and vision for the future. Sometimes, this vision has an explicit commitment to improving gender equality and promoting women's rights. However, all too often, a future without gender inequality is assumed, without a clear articulation of how that vision will be achieved.

Some believe that, to move beyond inequality and secure women's rights, one must simply improve access to education and encourage greater participation in every phase of schooling, from early years to doctoral programmes. Others associate addressing gender inequality with improving the outcomes of education, ensuring more girls and young women break glass ceilings, enjoy more academic success, and take on greater responsibilities in society. For others still, gender equality comes from escaping the sticky floors that have prevented girls and women venturing into fields associated with high-status knowledge: science, technology, engineering and mathematics (STEM), theology or military strategy.

Addressing gender inequality through female enrolment and academic success can improve and expand girls' education. However, such an approach is not sufficient to take on the full meaning of gender equality and women's rights, or to prepare learners for a substantive future without gender inequality. Indeed, some countries have higher female attendance in schools and universities, but inequality in employment opportunities and political representation restricts women's ability to succeed in adult life. [14] Even in societies where women succeed academically, gender stereotypes survive, reinforcing forms of discrimination, injustice, and misogyny.[15]Although well qualified, they are still less likely to own property and are more likely to be victims of gender-based violence.

Combining interventions

Achieving gender equality and supporting women's rights requires a combination of interventions.

↘ Changing norms and including the most marginalised in education decision-making

Those working towards gender equality must also work collaboratively with those engaged in addressing social division and injustice linked to race, ethnicity, poverty and lack of citizenship.

Girls from poorer backgrounds, for example, often face intersecting barriers to education. To create parity for all members of a society, it's essential to understand the complexity of marginalisation.We must work towards this by generating policies, budgets and plans, as well as structures of management and accountability, that put gender equality and women's rights at centre stage.

The collaborative efforts of key people, including parents and other family members, teachers, community leaders and NGO workers, can help girls negotiate pathways through the immense barriers they face.[16]

↘ Changing institutional cultures

Connections must also be forged between education and other social sectors, such as health, work and housing, to enable all to succeed. This requires attention to be paid to the institutional arrangements, management structures, social norms, relationship dynamics and political-economic issues that shape education. It entails addressing practices that deliver different outcomes for girls and boys, women and men.

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[14] Unterhalter, E. et al. (2014). *Girls' education and gender equality. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/326205/Girls__Education_Literature_Review_2014_Unterhalter.pdf*

[15] Ibid

[16] Unterhalter, E. et al. (2014).*Interventions to enhance girls' education and gender equality.* https://eppi.ioe.ac.uk/cms/Portals/0/PDF%20reviews%20and%20summaries/Girls'%20education%202014%20Unterhalter%20report.pdf?ver=2015-12-08-165815-117

The task seems daunting but both qualitative and quantitative data (life histories, interviews, large-scale surveys, demographic assessments) show us that small changes lead to significant improvements, both for individuals and across generations.

↘ Investing in resources and infrastructure

A significant amount of research, training, and practice is needed to support this effort, as well as resources that support curriculum review, teacher development, pedagogic reform, and consideration of assessment strategies.

The provision of financial support (e.g. stipends, scholarships, cash transfers, waiving fees, lower fees or child support grants), infrastructure development (e.g. roads, schools, boundary walls, water, sanitation, electricity), improved transport and school feeding programmes can enable girls to overcome the barriers they face.

The audacity to dream of gender equality is a thread in the history of learning throughout countries across the world. Equality would secure women's rights to integrity, dignity, self expression, freedom of movement, political and cultural participation, support and solidarity. Making that dream a reality is something we are now building towards, armed with new knowledge, more representative and better informed institutions, and wider connections within and across countries.

Integrated, equitable and effective: a curriculum for future skills

Ben Knight

Director for Language and Pedagogical Research at Cambridge University Press.

The obstacles to teaching future skills relate not to resources, but to understanding and approach within the education system. So, the solution can be found in a clear but flexible curriculum framework that delivers for the educational context, and for all students within it.

From Warren Buffet to Steve Jobs, those who make good predictions of future trends have a great advantage. For education systems, this requires understanding how demands on knowledge and skills are changing. We can see how a range of factors are changing the nature of work (Figure 1), and we need to anticipate the significance of this for skills development.

There is plenty of evidence[17] to show that employers prioritise 'soft skills' when recruiting or promoting staff. The National Association of Colleges and Employers analyses the skills that employers in the US give most value to (Figure 2). What we also see is that these skills are important not just for employment, but for success within the education system.[18]

But is the development of these skills an advantage that privileged learners acquire more effectively, leaving other people behind in the competition for economic security? Or can the development of these skills be an aid to all learners around the world, giving them better and fairer access to opportunities for career and personal development?

A flexible, single framework for teaching future skills

Unlike many other areas of education, the obstacles to developing these skills are less about resources and technology, and more about understanding and approach. Teachers and educational policymakers will often struggle with the wide array of terminology and advice on transferable life skills, as an evolving area of education. Different initiatives have proliferated, based on a range of needs or motivations, with varying degrees of attention given to research in the field. Different models of life skills, 21st-century skills, employability skills, social and emotional learning, global competency, etc, can be confusing and contradictory.

Driver for change in employment	% of employers rating this as top trend
Changing nature of work, flexible work	44
Mobile internet, cloud technology	34
Processing power, Big Data	26
Middle class in emerging markets	23
New energy supplies and technologies	22
Climate change, natural resources	23
Geopolitical volatility	21
Consumer ethics, privacy issues	16
Internet of Things	14
Longevity, ageing societies	14
Young demographics in emerging markets	13

Figure 1: Drivers for employment change

Source: World Economic Forum (2016). The Future of Jobs: Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution. Global Challenge Insight Report.

Competencies	Weighted average rating (2019)*
Critical thinking/problem solving	4.66
Teamwork/collaboration	4.48
Professionalism/work ethic	4.41
Oral/written communications	4.30
Digital technology	3.84
Leadership	3.65
Career management	3.38
Global/multi-cultural fluency	2.78

*5-point scale, where: 1 = Not essential, 2 = Not very essential, 3 = Somewhat essential, 4 = Essential, 5 = Absolutely essential.

Figure 2: Competencies most valued by employers

Source: National Association of Colleges and Employers (2019). Job Outlook 2019.

[17] See, for example, World Economic Forum (2016). *The Future of Jobs: Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution.* Global Challenge Insight Report; and Vivian, D. et al. (2016). *Employer Skills Survey 2015: UK Results.* UK Commission for Employment and Skills.

[18] See http://www.atc21s.org/ for example.

To help educationalists have a shared understanding of these skills, Cambridge set up a project to create a single framework for the full range of skills, providing a coherent view and set of terms across the range. The Cambridge Life Competencies Framework[19] (the Framework) also shows how these skills or competencies can be built up over the different stages of education – from pre-primary to adult lifelong learning (Figure 3).

One of the most significant aspects of the Framework is its Can Do Statements which provide descriptions of observable behaviour by learners, to illustrate the reality of each component of skill. These descriptors are extremely useful for the development of learning objectives in a national or school curriculum. They have also a basis for developing criteria for monitoring learners' progress in developing these skills. One of our guiding principles has been that different educational environments will realise these competencies in different ways, so the Framework is designed to be flexible within different educational contexts and cultures.

Integration into existing subject teaching is key

The Framework has been developed to help teachers and educational policymakers improve their understanding of essential life skills. But the other aspect that education systems need to address is the integration of these skills within the wider curriculum. The position that Cambridge holds is that the most effective way to build life skills into the educational programme is to make them part of the approach to teaching existing curriculum subjects, rather than creating separate life-skills courses. For example, we have been working on the integration of life competencies from the Framework into our English language programmes e.g. designing project-based activities that require students to use and develop collaboration skills, or setting reading tasks that combine language skills with critical thinking.

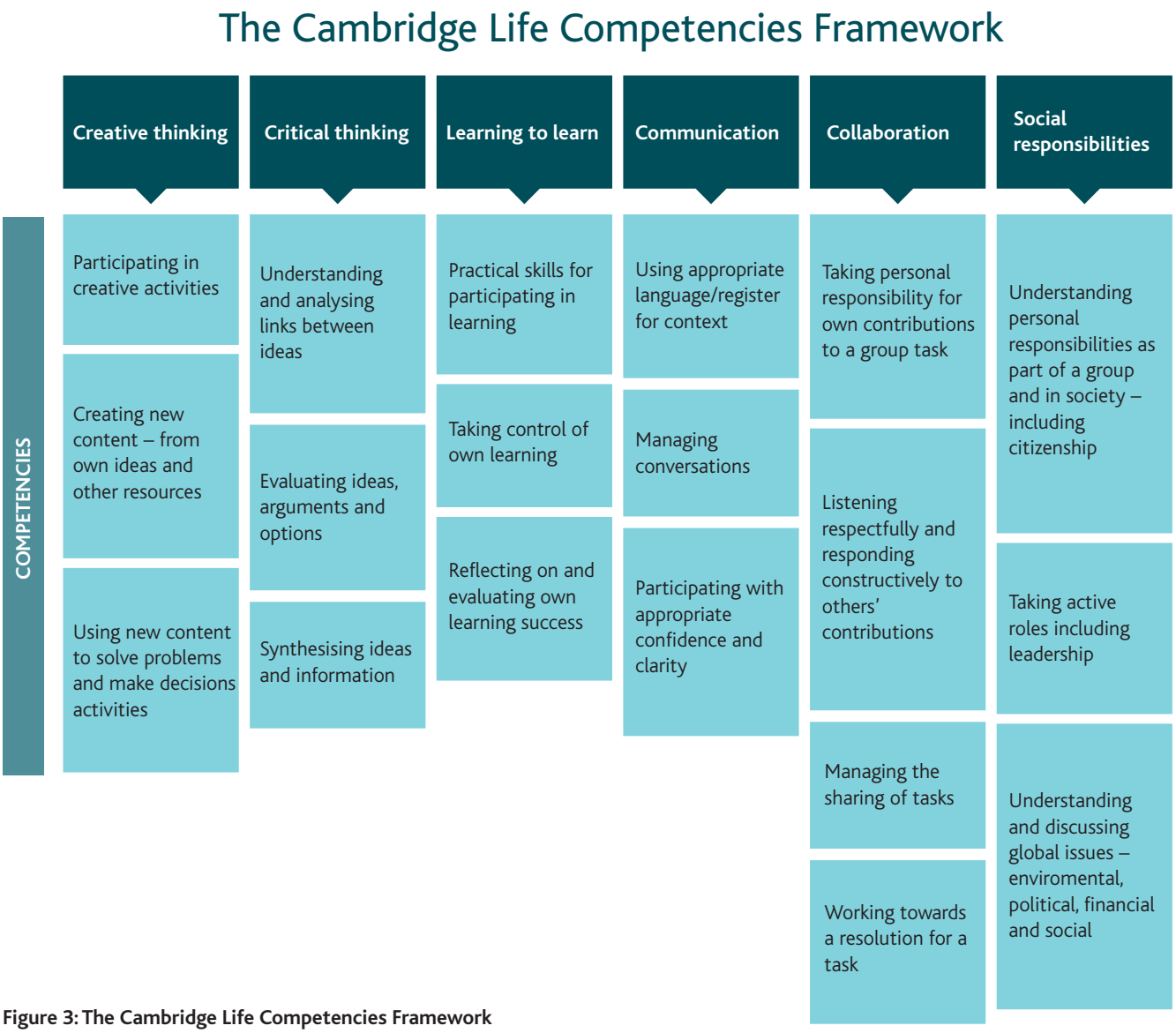

Figure 3: The Cambridge Life Competencies Framework

Source: Cambridge University Press. Cambridge Life Competencies Framework: Introduction. https://languageresearch.cambridge.org/clc

[19] See www.cambridge.org/clcf for more information on the Framework.

The development of life skills can be seen to improve motivation and results among school students in under-resourced environments. A great example of this is School 21,[20] located in one of the poorer parts of East London. School 21 has prioritised the development of communication skills, through the principles of 'oracy', and has transformed the level of achievement and confidence among their students.

As we work on further rounds of research and validation on the Framework, and explore ways of integrating life competencies within curriculum subjects, we are keen to work with ministries or educational institutions that want to apply our research-based approach to their particular context. For more information, visit: www.cambridge.org/clcf

[20] https://www.school21.org.uk

Shifting paradigms to develop future skills

Yong Zhao

Foundation Distinguished Professor, School of Education, University of Kansas

Current education systems are inadequate in the face of increasing global uncertainty. Wide-scale and systemic change is required to produce co-owned models that prepare every individual for what they will need in the future.

The role that formal education systems play in preparing today's learners with the skills needed for them to thrive in the future cannot be overstated. As the primary institution that societies have entrusted and invested in for such purpose, the experiences of learners in schools – the content they study, the relationships they form with adults and peers, the exams they take, and the activities they partake in – vitally affect the extent to which they are equipped to succeed in the future. For example, the content they study or are allowed to study affects their areas of knowledge and expertise. The relationships they form with adults and peers affect their social emotional competencies.

Not all schools are equally effective in this endeavour, because different arrangements create different learning experiences for children. At worst, some education can disable and hurt students' opportunities to develop the skills they need: by providing students with learning that is irrelevant to the future; by limiting students' authentic participation in the world; or by rewarding and punishing students unfairly through exams.

Rising uncertainty

The future faced by our children is full of unpredictability and challenge. The fourth industrial revolution, artificial intelligence, increasing global interdependence and conflicts, worsening environmental challenges, and widening inequality create future possibilities for prosperity, disaster, and risk. In the face of this uncertainty, future citizens need to develop those skills labeled with names such as 'creativity', 'entrepreneurial thinking', and 'global competency' – in other words, the capacity to deal with unpredicted and unpredictable problems, to appreciate human connectedness on a global scale, and to create value for others.

Unfortunately, the educational paradigms that dominate education systems around the world today are not fully capable of cultivating these skills. Typified by one-size-fits-all, narrow and homogenous curricula, deficit-driven philosophy, isolated pedagogy, and exam-driven selection mechanisms, they work against the development of diverse, creative, entrepreneurial, and globally competent individuals.[21]

Moving towards a more responsive paradigm

To prepare today's learners to succeed in the future, we need to shift to paradigms that celebrate difference, respect individuality, foster creativity, and emphasise empathy. This new paradigm of education is personalisable.[22] The curriculum is co-developed with students to support their interests and passion. The school is co-owned with students so that they can exercise their autonomy and learn to be responsible and entrepreneurial. The new paradigm does not attempt to fix student deficits defined by standardized tests. Instead, it focuses on developing the unique strengths of each individual.[23] Furthermore, the new paradigm of education provides authentic learning experiences for students to refine their creativity and cultivate their entrepreneurial mindset.[24]

[21] Zhao, Y. (2012). *World Class Learners: Educating Creative and Entrepreneurial Students.* Thousand Oaks, CA: Corwin.

[22] Zhao, Y. (2018). *Reach for Greatness: Personalizable Education for All Children.* Thousand Oaks, CA: Corwin.

[23] Zhao, Y. (2016). 'From deficiency to strength: shifting the mindset about education inequality'. *Journal of Social Issues*, 72(4), 716–735.

[24] Zhao, Y. (2015). 'A world at risk: an imperative for a paradigm shift to cultivate 21st century learners'. *Society*, 52(2), 129–135.

Mental strength, agility and health for all

Chivonne Preston

CEO at Mindfulness in Schools Project, a UK charity aiming to bring mindfulness to young people and those who care for them.

Mindfulness can equip learners from a wide range of contexts and backgrounds to thrive happily within a challenging and ever-evolving work landscape.

"We do not know what specific knowledge our children are going to need ten or twenty or even five years from now because the world and their work, when they come to it, will be so different from ours.

What we do know is that they will need to know how to pay attention, how to focus and concentrate, how to listen, how to learn, and how to be in a wise relationship with themselves – including their thoughts and emotions – and with others."

Jon Kabat-Zinn, Mindfulness in Education, 2013.

At its most simple, mindfulness is the ability to be aware of experiences as they are happening, with an attitude of curiosity and kindness. Training the mind, and recognising its helpful and unhelpful habits, is a skill that can equip learners to thrive within an ever-evolving world and labour market.

Research suggests that mindfulness can improve our ability to focus, maintain, and shift attention when we choose to. These capacities represent critical components of our 'executive function', which underlies capacities such as reasoning, problem solving, and planning. Mindfulness therefore provides young people with fundamental skills that will be valuable throughout their lifetimes, and applicable in any setting.

Cost-effective and equitable

Furthermore, our charity has seen mindfulness successfully taught to children regardless of their academic ability, gender, prior knowledge, or socio-economic background. Implementation begins with an individual teacher who learns mindfulness, embeds mindfulness in their own teaching practice and then trains to teach mindfulness to children. Teachers can be from any educational context: we have trained teachers from pupil referral units, special schools, areas of high deprivation, as well as academically high-performing grammar and independent schools. Almost anyone can train their mind if they want to. It is low cost[25], but takes time. As such, mindfulness provides an affordable, equitable, and accessible toolkit that can be introduced to a wide variety of settings, giving all learners the opportunity to flourish. It is no wonder mindfulness is a growing global trend in education, transferable across an extremely broad range of situations.

A foundation for effective learning and high performance

As well as learning how to 'pay attention', evidence suggests that mindfulness can also support individuals to increase focus, improve working memory, develop more cognitive flexibility, reduce stress, and self-regulate better.[26] This facilitates more creativity, healthier relationships, improved concentration, and allows the individual more choice in how to respond in given situations.

Mindfulness therefore has value whether a learner's tasks are relationship focused, task focused, process driven, technology related, or require blue-sky thinking and new ideas.

Educating our young people in mindfulness will prepare them to be agile, resilient, and flexible in this new work environment. But more than that, it will prepare them as citizens of the future: as workers but also as neighbours, parents, and community members contributing positively towards our developing society.

In the context of mental and physical health, applications of mindfulness demonstrate its value in moderating conditions that inhibit learning and personal development: in stress and pain reduction,[27] in immune function and the body's

[25] MiSP (2019) 'Teacher Survey 2019: Summary of Responses'. www.mindfulnessinschools.org – this recent survey showed that on average a trained teacher teachers 126 children mindfulness. At MiSP it costs on average £695 to train a teacher from scratch, therefore averaging £5.52 per child.

[26] Davis, D., & Hayes, J. A. (2012). 'What are the benefits of mindfulness?' *American Psychological Association: Monitor on Psychology*, July/August 2012, 198–208.

[27] Kabat-Zinn, J. (1990). *Full Catastrophe Living*. UK: Piaktus.

ability to fight infection,[28] and in the treatment of recurrent depression and anxiety.[29]

Mindfulness training, when done well, enables learners to observe and work with the mind's habits, and identify the impact of mindfulness on the mind and body. Using physical sensations within the body as an anchor point, it is possible to train the 'muscle' of attention, recognising how the mind wanders and learning to gently guide it back to the anchor point. Each time this is done, the neural pathways that enable the learner to sustain and maintain an attentional focus are strengthened. Mindfulness therefore has a significant role to play in educational contexts – and it should be no surprise that it is a growing phenomenon among elite performers in business, sports disciplines, and the arts.

In 2015, the Mindfulness All Party Parliamentary Group published its Mindful Nation UK report, which recommended that mindfulness teaching in schools should be pioneered and funded, and best practice disseminated. A detailed recent review of research evidence on classroom-based mindfulness programmes concluded:[30]

"Mindfulness is [...] likely to have beneficial effects on the emotional well-being, mental health, ability to learn, and the physical health of school students [...] Such interventions are relatively cheap to introduce, have an impact fairly quickly, can fit into a wide range of contexts, and are enjoyable and civilising, for pupils and staff."

This is why our charity is campaigning to bring mindfulness to more schools. Over the next five years, we aim to reach one million children.

You can find out more about the life-changing benefits of our school mindfulness curricula via our website: https://mindfulnessinschools.org/

[28] Davidson, R. J. et al, (2003). 'Alterations in brain and immune function produced by mindfulness meditation'. *Psychosomatic Medicine*, 65 (4) 564–570.

[29] Segal, Z. V., Williams, J. M. G., & Teasdale, J. D. (2002). *Mindfulness-based Cognitive Therapy for Depression: A New Approach to Preventing Relapse*. New York: Guilford Press.

[30] Weare, K., (2018).'The evidence for mindfulness in schools for children and young people.'https://mindfulnessinschools.org/wp-content/uploads/2018/10/Weare-Evidence-Review-Final.pdf

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