P4TT **FOGGS** | Foundation for Global Governance and Sustainability

COVIDEA

COVID EDUCATION ALLIANCE (COVIDEA):
Adapting education systems to a fast changing and increasingly digital world through the use of appropriate technologies

A Primer
October 2020

COVID Education Alliance

The COVID Education Alliance (COVIDEA) seeks to make digital tools and related resources more easily available to policy makers, educators and learners worldwide, to help transform education systems and make them fit for a rapidly and increasingly digital, complex and interconnected world. COVIDEA is jointly convened by the Platform for Transformative Technologies (P4TT) and the Foundation for Global Governance and Sustainability (FOGGS), and benefits from the support of the International Science Council (ISC) – for background on these organizations and on the current COVIDEA members see Annexes.

COVIDEA was established in response to the systemic problems associated with the way we teach and learn, laid bare by the COVID-19 pandemic: education systems around the world have not as yet fully transitioned to the digital age, nor are they equipped to respond to external shocks, with vast differences in connectivity and digital opportunities exacerbating the problems for the poorer and more remote segments of society. Going beyond modernizing education systems through the use of appropriate digital tools, COVIDEA also aspires to rethink education as a major enabler of individual well-being and societal sustainability and resilience, and to contribute to achieving the Sustainable Development Goals.

COVID EDUCATION ALLIANCE (COVIDEA)
Adapting education systems to a fast changing and increasingly digital world using relevant technologies and online resources

PRIMER
The COVIDEA universe at a glance
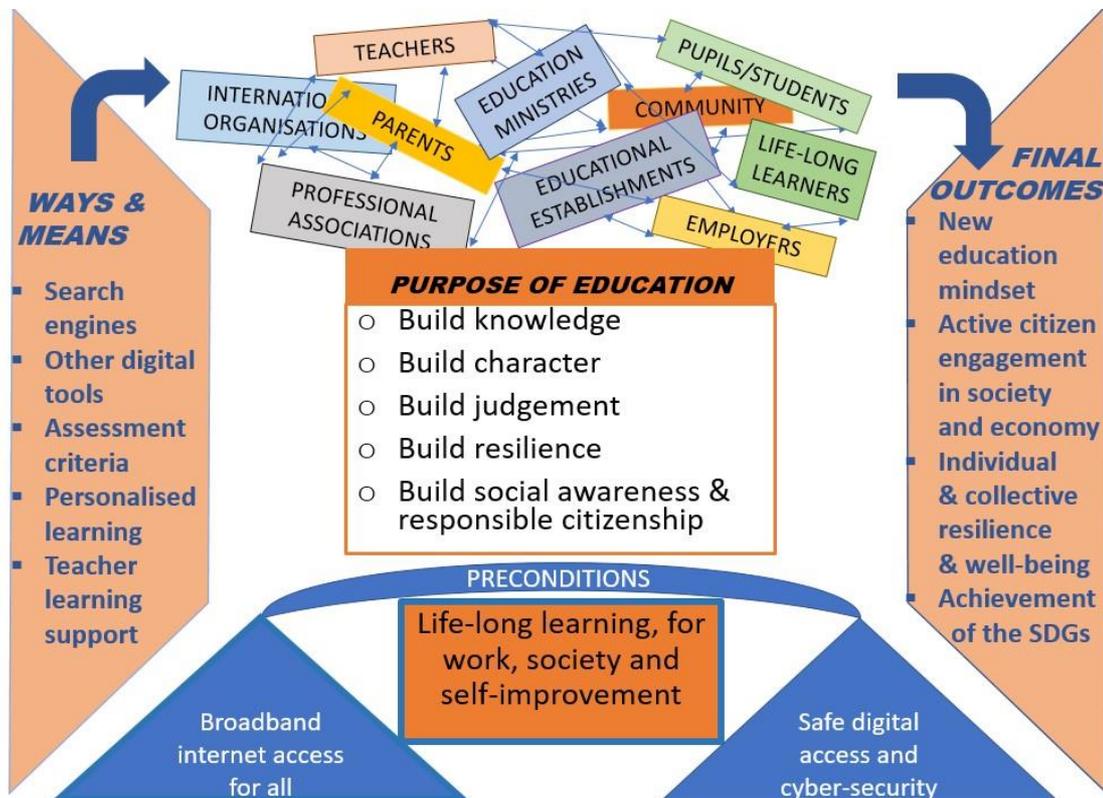
I. Purpose of COVIDEA

The purpose of this primer is to raise awareness of the urgent need to transform education systems, worldwide, to make them fit for a quickly changing and increasingly digital world, and to change the learning experience so that students develop digital literacy and skills to engage actively and effectively in society which is increasingly relying on these technologies. The primer shows that this transformation can be done now, in an efficient, effective and inclusive manner, because the necessary know-how and technologies are already there. It notably strives to build partnerships to leverage shared expertise across the world on how to teach with and use digital tools and resources to ensure inclusive and equitable quality education, build digital skills and promote lifelong learning opportunities for all. The primer is directed at policy and decision makers in education systems from the global to the local levels, and relates to all levels of education, from primary to tertiary and lifelong learning, formal and informal education, vocational and professional training.

In the longer run, COVIDEA also seeks to help transform education systems to make them fit for a rapidly changing, increasingly digital and complex world – a need that has become painfully evident during the COVID-19 pandemic. A first steppingstone is making digital education and learning tools and other resources, including materials and methodologies, more easily accessible to policy makers, educators and learners, with the longer-term goal to support the rethinking of the whole education system so as to allow it to become a major enabler of individual and collective well-being. At the core of the COVIDEA approach is the recognition of the transformational potential of education in helping people build knowledge, character, judgment, resilience, social awareness and responsible and active citizenship. Revamped education systems are needed to make societies and economies more resilient, sustainable, and equitable.

- **Supporting implementation of SDG 4:** *Ensure inclusive and equitable quality education, build digital skills and promote lifelong learning opportunities for all.*

- **Need to bridge the digital divide and enable secure internet access to all people.**

1. Relevance of COVIDEA

This initiative is particularly relevant in view of the devastating effect that the pandemic-related lockdowns have had on education whereby 90 per cent of all students were kept physically away from school. These difficulties are compounded by the facts that remote learning remains out of reach for at least 500 million students worldwide, including because of a lack of connectivity, 74 countries are facing an acute shortage of teachers[1] and cybersecurity issues are on the rise. All this is further hindering the achievement of *SDG 4: Ensure inclusive and equitable quality education, build digital skills, and promote lifelong learning opportunities for all. COVIDEA aims at contributing to the achievement of SDG4.*

Digital technologies and online education are central to this primer. They can enable innovation and increase awareness, communication and collaboration. They are essential tools to reach the ultimate COVIDEA ambition: contributing to transforming the education systems so they are fit for a rapidly changing and increasingly digital future – fit for purpose.

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1 See https://www.teachersforefa.unesco.org/v2/index.php/fr/news-2/item/490-global-teacher-shortage-threatens-education-2030.

2. Why education systems need to change

Education is a driving force that powers economies and societies, while promoting a more environmentally sustainable world - in Nelson Mandela's words, "the most powerful weapon which you can use to change the world." Individuals apply the knowledge and skills they learned in school and beyond to make their contribution to the world, particularly as citizens, community members and part of the global workforce.

Calls for changes in education systems are not new. In previous decades students had to be prepared for entering a market-based economy with a major focus on life-long specialization, efficiency and corporate profit-making. In a rapidly changing world, education systems must now be geared to developing competencies beyond those that were required during the industrial age. They need to leverage the existing digital technologies to better prepare the learners of all ages and walks of life for the jobs of the future. Learners should develop the skills, competencies and knowledge not only to be part of the workforce but also to be able to lead happy and productive lives in a sustainable environment. The learning experiences during the COVID-19 pandemic, combined with physical distancing and working from home, have reinforced this message and made the need for significant change even more urgent.

A new vision of education systems, adjusted to the fast-changing world and evolving digital age should build on the opportunities new technologies offer, as well as on the latest advances in education and related sciences, with a view to contributing to the achievement of the Sustainable Development Goals (SDGs), in particular the education SDG. It should ensure that learners become resilient to shocks caused by global risks and flexible to adjust to changing circumstances through critical thinking, adaptability, self-awareness, reflective learning and collaboration.
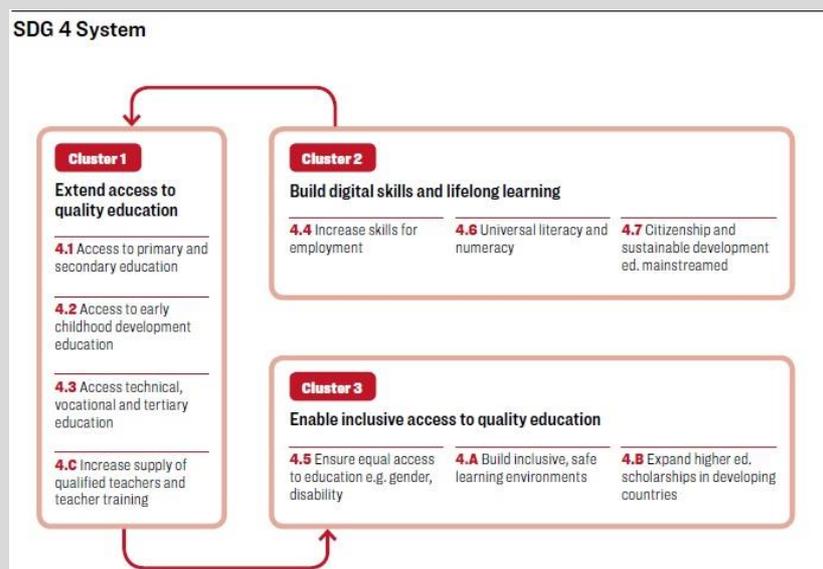
Diagram on SDG4 from the GESI/Deloitte publication: Digital with Purpose: Delivering a SMARTer2030 - see digitalwithpurpose.gesi.org, p261, SDG4 system, SDG4 deep dive

Sidebar:

▪ A new vision of the education systems, adjusted to the fast-changing world and evolving digital age should build on the opportunities new technologies offer, as well as on the latest advances in education and related sciences.

▪ Learners should develop the skills, competencies and knowledge not only to be part of the workforce but also to be able to lead happy and productive lives in a sustainable environment.

COVIDEA

3. Digital technologies in support of "fit for purpose" education systems

Uses of digital technologies—ranging from smartphones and social media, to AI and other emerging technologies—are now a key facet of contemporary society. These technologies can facilitate wider access to online educational content and can lead to richer educational experiences, online and in schools. For this to happen, there is an urgent need to guide decision makers, based on sound research and evidence, on which pedagogical approaches, technologies and online content could be used, and in which instances. A lack of evidence-based education technology interventions in the recent past has led to unsuccessful outcomes,[2] so support for evidence-based decision making is needed to improve learning outcomes.

To benefit from, integrate, and adapt to these technologies effectively, innovative approaches are required to equip learners, young and older, around the world, with the knowledge, competencies, and skills essential for democratic and thriving societies and economies. Today's learners have to be prepared to develop, adapt and adopt, and critically evaluate emerging and disruptive technologies and understand the risks, opportunities and ethical questions involved in their use.

Examples of innovative approaches in education systems include:
- Virtual reality and mixed reality simulation, gamification, artificial intelligence, flipped learning – all of these should be considered in each specific context and embraced as required to meet new challenges.
- Multiple modes of expression facilitated by the multimodal, multimedia nature of digital technologies, as essential components of knowing, communicating and acting that can be adapted to the individual needs and capabilities of each learner in personal, civic and professional life.
- Emphasis on systems-based approaches and working in diverse teams.
- Focus on capabilities where machines and algorithms are found lacking; those of empathy and sensemaking, problem solving, and analytical understanding.
- Complement simulation and machine learning with virtual and augmented reality.

▪ Digital technologies can facilitate wider access to online educational content and can lead to richer educational experiences

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[2] See https://www.jou.ufl.edu/insights/19100/

II. Five key goals for a new, holistic, education system

COVIDEA has developed a list of key knowledge, competencies, and skills that could be recommended to be part of each curriculum, from primary and secondary to tertiary and life-long education. The goal of this open and flexible list is to offer a framework that decision-makers can rely on to develop new education systems adapted to their own cultural contexts and socio-economic conditions.

▪ **Build knowledge**	▪ ***Build technical knowledge (e.g. new technologies, computational thinking, models, algorithms)*** In an increasingly digitized and complex world, learners have waves of technological innovations coming ever faster and faster at them and impacting every aspect of their life and work. Traditional teaching however seldom addresses these waves of technological innovations, let alone their impacts, and students continue to absorb large quantities of traditional data in the established sciences, literature, history, mathematics, and physics, etc. Once learners have acquired the basic numerical and literacy skills, they must become familiar with innovative technologies that are changing our daily lives. Learners should be able not only to use digital and other innovative technologies, but also understand the data, logic, algorithms, security and privacy issues that sit at their core. They need solid computational and digital skills, complemented by anthropological, geographical and economic knowledge to make sense of the changing world and their place in it. Furthermore, employing technology resources efficiently and effectively can create learning environments that help students to think creatively and engage productively with their teachers and fellow learners in face-to-face or in a virtual or hybrid setting, as COVID-19 forced us to discover.
▪ **Build character**	▪ ***Build character (e.g. define own goals and preferences for individual balance and well-being, build solid value system)*** Building self-awareness is about helping the learner develop their sense of self, discovering their strengths and weaknesses and defining their own goals for a fulfilling life. An intrinsic part of this is the set of core values that one needs to possess to be able to orientate oneself in life, in one's own mind, and vis-à-vis others. For example, in today's world, ethical behaviour may mean following government guidelines to stop the spread of COVID-19 including abiding by the lockdown, observing social distancing, and wearing masks. Building relational and character-based skills has proven harder to cultivate remotely due to COVID-induced remote learning. This global crisis has put more pressure on educators and leaders to create environments and spaces for learners to connect to their own identities, the experiences of others, and to engage in a meaningful learning community.

Build judgement

- *Build judgment (e.g. recognizing and countering deception, developing critical thinking for sound decision-making)*

In the current multi-media environment, where a cacophony of voices is heard on a daily basis, it is indispensable to develop essential competencies like critical thinking, logical reasoning and scientific methods in order to be able to distinguish facts from "fake news." Current science and technology trends and their societal implications need to be understood and skills taught how to ideate forward-looking solutions for future living.

It is vital to provide learners with the necessary skills to undertake the research and due diligence that is necessary to comb through the host of information sources and find the ones that are reliable and that could serve as a basis for sound analysis and decision-making. As became evident from the COVID-19 experience, in situations of crisis the dissemination of inaccuracies or *misinformation* increases significantly, notably on social media, as does *disinformation* or the propagation of incorrect information with the intention to deceive others. Whether it is about protecting oneself at a time of a pandemic or in numerous other precarious situations one must be equipped with the competencies to be able to make the best judgement.

Build resilience

- *Build resilience (e.g. to global challenges and their impacts, natural and human-made disruptions and shocks)*

The COVID-19 pandemic has forced us to become resourceful and adaptable in ways that we could not even imagine a few months ago. Building resilience against natural and human-made disasters, climate change, and environmental calamities should be at the core of any educational endeavour. Lack of resilience would not only put at risk the individual or group concerned but could also deepen disparities, negatively impact on mental health, and increase the likelihood of reversing progress on the achievement of the Sustainable Development Goals (SDGs).

Take the case of the Northeast Resiliency Consortium (NRC) that was formed in 2013 to address the need for resilience in face of natural and human-made disasters in seven colleges and communities in the North Eastern region of the United States. The NRC developed a Resiliency Competency Model to advance the right skills and habits of mind that can turn a tragedy or trauma into triumphs. The NRC defines resiliency as "an individual's persistent development and application of knowledge, skills and resources that effectively help one to adapt to change and overcome adversity." The competencies within the NRC's model include critical thinking, adaptability, self-awareness, reflective learning and collaboration.

■ **Build social awareness and responsible citizenship**

▪ ***Build social awareness and responsible citizenship (e.g. of contexts and environments, cultures, needs, and circumstances)***

Given today's global challenges it is important that individuals engage actively in citizenship activities and support moves towards more sustainable futures. Education, including through digital and technological means, should increase learners' awareness of cultural and social differences, contexts, environments and needs to overcome implicit bias and increase tolerance, cooperation and understanding among peoples and nations. Through the use of evidence-based pedagogies and operative games, socially responsible decision-making, participatory learning and action empowerment, skills and experiences can be cultivated so that the learner develops the cognitive and procedural tools for active and fulfilling social engagement.

Implicit bias may play a role in justifying inequitable policies and practices. Developing greater self-awareness about the political, cultural, social, religious, racial and gender or other stereotypes a person may have could help that person overcome them to become more empathetic, inclusive, and fair. The need for this has become plainly clear in light of the recent social and civil unrest related to racism which has sparked intense debate in the USA and worldwide about the implicit biases and prejudices that impede people from viewing another's perspective.

Educational tools need to be adjusted to different needs. If we look at New Zealand, it is a bi-cultural country, where any discussion about education in terms of what is valued, what is taught and how it occurs needs to be developed in partnership with and respect and uphold the aspirations of indigenous Māori people. Trying to identify the 'best' teaching materials therefore depends on context; what works in some does not work in other contexts.

III. Four readily available or emerging digital tools for fit-for-purpose education systems

COVIDEA aspires to develop a comprehensive service for education decision-makers that brings together the pedagogies, knowledge and digital tools necessary to achieve the long-overdue innovation in education systems. COVIDEA can assist policy and decision makers at all levels to search the web using intelligent algorithms for best available material on (a) content, (b) digital tools and (c) teacher professional development for the five education goals mentioned earlier. Knowledge and methods exist to establish the criteria according to which the material on (a) to (c) above can be assessed, gaps and opportunities identified, progress monitored, evaluated and further innovation improved. Several initiatives by UN entities like UNESCO and the ILO, public-private partnerships like GESI, civil society organizations and commercial providers are available to provide the elements of the puzzle in terms of overall approaches, criteria and standards, necessary infrastructure and software tools.

The issue is not that revamping the education systems in line with the requirements of a rapidly changing world and the digital age is not possible. Rather the issue is repurposing education and promoting a change in mindset in education practice at large, recognising that in order to prepare learners for the future major changes are needed in what we learn, how we learn, and how we teach.

▪ **Use of intelligent search engines and algorithms to find best content, technologies, and providers.**	**1. *Intelligent search engines and algorithms to find best available content, digital technologies, and their providers*** Once the overall frameworks of criteria to assess available material, tools, approaches and technologies are established (see below), learners, decision makers and teachers alike, do not need, to, painstakingly, search through the masses of available online information and providers of digital learning resources, tools and technologies in order to identify the material best suited for their particular circumstances. Intelligent search engines can be used, developed or amended to help in the search, allowing to source for local use the best available material at national and international level, contract the public or commercial provider best suited for the local environment, and build on the experience of those that have already used digital technologies to improve the education systems. Separating the wheat from the chaff and hence investing in the best possible technological solutions is an absolute requirement to ensure efficient use of resources and for steering the needed changes in the education systems in a sustainable direction.
▪ **Define criteria to select content and tools adequate for each particular context**	**2. *Criteria to assess available materials and tools*** There is a lot of digital resource material available that can be used to support the necessary adjustments of education systems along the lines COVIDEA has identified. These include building knowledge, character, judgement, resilience and social awareness and responsible citizenship. To enable the selection of pedagogies, content and tools most adequate for each context there is need for a set of criteria. Comprehensive, yet flexible, generally recognised sets of selection criteria do not as yet exist though several initiatives to develop them are ongoing. COVIDEA aims at developing such assessment criteria to help teachers, learners, policy and decisionmakers sifting through the choices and find appropriate digital material to support the 5 key goals of the new, holistic, fit for purpose education system of the future. COVIDEA in its further work will be informed by work on criteria already undertaken by several organisations, including by the Global Enabling Sustainability Initiative (GESI) and its Digital with a Purpose Movement, a public-private partnership that is a leading source of best private sector practices for achieving integrated social and environmental sustainability through digital technologies. The relevant work of the Global Reporting Initiative (GRI) and others will also be reviewed to support the development of examples of sets of assessment and selection criteria local authorities, decision makers, schools and learners can use to make

their selection of resources and tools to buy and use. Additionally, the suitability of the content will be continuously assessed through feedback obtained from users of digital resources, e.g. through a digital café. The lessons learned from the implementation of the COVIDEA resource guide in five pilot countries will also be used to hone the content selection criteria.

- **Adapt learning to individual learner's needs and capacities**

3. *AI assisted personalized learning to adapt learning to the individual needs and capacities of every student*

The COVID-19 era has led to a renewed appreciation of personalized learning as an effective approach to ensure inclusive and high-quality education and to promote lifelong learning opportunities for all as mandated by SDG-4. Personalized learning helps to tailor the learning process to an individual's needs. Digital technologies can be envisioned to create self-paced approaches that students can master. AI based programs can be designed so that they adapt to learners' abilities and needs with the required content and the context. Learning needs may range from being self-driven to more guided and structured, to collaborative approaches. Appropriate digital resources can be created that can provide various forms of communication including text, audio, video, animation, or static graphics that are adaptable for different students. This requires the development of AI-based education systems that monitor the behaviour of learners and/or process data about them in order to guide their individual or collaborative learning. Of course, the development and use of such technologies should be cognizant of ethical questions about privacy and individual self-determination that should be openly addressed.

- **Learning support for teaching professionals**

4. *Learning support for teaching professionals*

Focused and intentional learning for teaching professionals is essential to facilitate widespread uptake of new initiatives and to encourage the effective implementation of new teaching and learning paradigms. Such learning should "equip teachers individually and collectively to act as shapers, promoters, and well-informed critics of reforms". To this end, the effectiveness of professional learning may be maximized if: (a) the teaching and learning methods are active, collaborative and follow a transformation-based model; (b) teachers are understood as autonomous learners with agency; and, (c) teachers' values and school contexts and cultures are taken into consideration.

IV. Lifelong learning, upskilling and reskilling

It has become obvious in recent years that the ideal of holding one job for life, based on one's initial university degree or technical qualification is a thing of the past. With the endless introduction of technological and managerial innovation, the fluidity of the globalized market and the competition in terms of cutting labour costs to increase corporate profitability around the world the individual worker, entrepreneur or self-employed individual needs to be on their toes and continuously upgrade their knowledge and skills. Add to this the shock of the COVID-19 pandemic and things are even more dramatic, especially for young people who are just starting or preparing for their careers.

▪ **Life-long learning should be central to education system planning in the years to come**

The Global Survey on Youth and COVID-19, conducted by the International Labour Organization, with other partners, explored the impact of the pandemic on youth regarding jobs, education, rights and mental well-being found "the impact of the pandemic on young people to be systematic, deep and disproportionate"[3]. Indeed, COVID-19 left 13 per cent of young people without access to learning, 65 per cent reported having learned less since the pandemic began, and 51 per cent believe their education will be delayed[4]. The pandemic has also had a heavy impact on young workers: 17 per cent stopped working and 42 per cent reported a reduction in their income[5]. Young people in lower-income countries are the most exposed to reduction in educational and employment opportunities and this will have a long-term impact on their lives.

The findings of the ILO Survey clearly indicate that in order to overcome the long term impact that the pandemic related lockdowns are likely to have on decent work opportunities for youth, it is necessary to double down and invest in the education, training, skilling and reskilling of the youth that have been most affected by the learning constraints and economic downturn caused by the pandemic. This is another clear indication that life-long learning should be central to education system planning in the years to come.

Let us also not forget that teachers are the first professional group that would need to undergo a reskilling program to be able to teach the five goals listed in section II of this primer. Without such an investment in teachers' training, there won't be any education reform in practice.

3 Youth and COVID-19 Impacts on Jobs, Education, Rights and Mental Well-Being, Executive Summary, International Labour Organization (2020)
at https://www.ilo.org/wcmsp5/groups/public/@ed_emp/documents/publication/wcms_753026.pdf.

4 Id.

5 Id.

Epilogue

The COVID-19 pandemic is far more than a health crisis - it is affecting societies and economies at their core and will have long-lasting consequences. The pandemic is likely to increase poverty and inequalities at a global scale and hamper the achievement of the Sustainable Development Goals. To prevent this urgent action needs to be taken at many levels. The most reliable and over time self-sustaining action is to provide people with the necessary education, training and learning tools to overcome the challenges posed by this and any future crisis and to ensure their well-being and active participation in the economy.

This is why education systems must harness the power of digital tools and technologies, and the pedagogical affordances they offer, to reach a growing audience and to help develop the necessary education and training that learners need to forge a sustainable future for themselves and their communities despite difficult circumstances. The COVIDEA initiative seeks to help education systems and relevant decision-makers by providing guidance on available resources and tools that they need.

Resource guides including live lectures and interactive content, toolkits including software that enable experiencing and developing simulation models, good practice harvesting by surveying and mining the web, data collection and use for machine learning, and COVIDEA digital cafés as meeting points between student and tutors, are some of the possibilities that could be further pursued. Developing assessment frameworks and criteria to distil from the available digital learning material the best content for different circumstances, and pilot testing transformation of education systems in a selected number of countries with the goal to achieve universal access to education, life-long learning and digital skills targets of the SDGs are also ways of moving forward.

Which of these avenues will be primarily explored and who will be the stakeholders to be targeted will depend on the specific proposals to be developed on the basis of this Primer by COVIDEA members and outside interested actors. Irrespective of that, the COVIDEA overall aim remains to propel education systems into the future, thus ensuring the resilience and well-being of learners around the world.

ANNEX I
COVIDEA Conveners (P4TT, FOGGS) and key supporter (ISC)

Platform for Transformative Technologies (P4TT)

P4TT strives to provide a global, impartial and science-based platform to identify and evaluate transformative technologies that can substantively contribute to the achievement of the SDGs and hence help set the global community on a more sustainable, equitable and resilient economic development path. It catalyses disruptive industrial production processes and business models leading to new products and new ways of doing business and helps develop pipelines of transformative investments that have the potential to substantially contribute to the achievement of the SDGs.

Foundation for Global Governance and Sustainability (FOGGS)

FOGGS is a Brussels-based, non-profit, public utility foundation that aims to:

- Develop and promote a Grand Narrative of hope, for a people-centered, planet-friendly, inclusive and sustainable globalization in a digital world;
- Help address major global challenges through a revamped global governance system and engaged, responsible and informed global citizens;
- Ensure that the rapid and transformative technological and digital advances contribute to a more equitable and resilient world, with a better life for all people.

Website: https://www.foggs.org/

International Science Council (ISC)

The ISC is a non-governmental organization with a unique global membership that brings together 40 international scientific Unions and Associations and over 140 national and regional scientific organizations including Academies and Research Councils.

It was created in 2018 as the result of a merger between the International Council for Science (ICSU) and the International Social Science Council (ISSC), and is the only international non-governmental organization bringing together the natural and social sciences and the largest global science organization of its type.

Website: https://council.science/

ANNEX II
COVIDEA Members (as of October 2020)

António Camara	Professor, New University of Lisbon - Chairman, YDreams
Arturo Biglia	Junior Policy and Advocacy Officer, FOGGS
Bart Van Looy	Professor, KU Leuven
Donovan Guttieres	Focal Point Youth Science-Policy Interface, UN MGCY
Daniella Tilbury	Commissioner for Sustainable Development and Future Generations, HM Government of Gibraltar
Eyüp Artvinli	Specialist of distance education, Eskisehir Osmangazi University Faculty of Education, Turkey
Georgios Kostakos	Executive Director, FOGGS
Janette M. Hughes	Canadian Research Chair in Technology and Pedagogy, Tier 2, University of Ontario Institute of Technology
Koji Ohnishi	Councillor, University of Toyama, Japan
Lieve Fransen	Founding member, P4TT – Senior Policy Adviser, European Policy Centre
Luis Neves	Managing Director GESI, The Global Enabling Sustainability Initiative
Maggie Hartnett	Senior Lecturer, Institute of Education, Massey University, New Zealand
Marco van der Ree	Chief Development Officer, Global Reporting Initiative
Mathieu Denis	Science Director, International Science Council
Neil Selwyn	Research Professor, Faculty of Education, Monash University, Australia
Nicole De Smyter	Manager, Leuven Inc. Foundation
Nuria Oliver	Chief Data Scientist, Data-Pop Alliance - Chief Scientific Advisor, Vodafone Institute
Padmanabhan Seshaiyer	Professor Mathematical Sciences; Associate Dean for Academic Affairs; Director COMPLETE Center; Director STEM Accelerator Center; George Mason University, Fairfax, VA
Paola Bettelli	Senior Policy Advisor, FOGGS
Risto Linturi	"Societal Transformation 2018-2037" Co-author, Finish Parliament's Committee for the Future
Stephen Downes	Senior Research Officer, Digital Technologies Research Centre, National Research Council, Canada
Veerle Vandeweerd	Former Director Environment and Energy, UNDP - Executive Board Member, FOGGS - Co-Founder, P4TT and G-STIC (2017-2019)
Wei Liu	UN DESA

Adapting education systems to a fast changing and increasingly digital world using digital technologies

For more on this initiative see here