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GLOBAL ONLINE LEARNING ALLIANCE

UNESCO GLOBAL EDUCATION MONITORING REPORT CONSULTATION MEETING: 9 FEBRUARY 2022

EDUCATION TECHNOLOGY: GOVERNANCE AND REGULATION FOR QUALITY LEARNING

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Global Education Monitoring Report

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FORMAT AND PARTICIPANTS

SECTION 1. Format and participants

1.1 Introduction

The purpose of this private video meeting government officials and educators, organised in partnership with the UNESCO GEM Report team and HP, is part of the ongoing consultation for 2023 Global Education Monitoring Report that will be on the theme of technology and education. This third consultation is on the subject of implementing good governance and regulatory frameworks to ensure that the use of educational technology contributes to quality learning. Participants were encouraged to discuss the actions and policies of their governments and institutions, and to make recommendations where appropriate.

This special online meeting of officials from 24 Middle East and African countries to discuss how technology can benefit or even harm learning outcomes, was designed as an interactive video meeting whereby all participants took part in moderated small break-out groups. This allowed everyone to converse in private, have suitable time to express their own thoughts and to discuss recommendations in education that contribute to policies and actions.

The purpose of this UNESCO GEM Report consultation meeting of officials is to recommend evidence-based:

- practical examples on the effects of implementing education technology interventions
- practical examples on the challenges of implementing education technology interventions
- education technology policies based on national experiences of ICT4E projects
- details of both qualitative and quantitative data on education technology
- other information on educational practices supporting the GEM Report's PEER country profiles

In the context of the above consultation objectives, during the private break-out sessions of the meeting, officials were encouraged to address the following issues:

Quality- basic skills: How can technology transform pedagogy to engage students and improve learning, especially in the context of virtual learning environments used more widely over the last two years?

Quality- digital skills: Can education systems provide learners with the new skills that technology and the knowledge economy demand?

System Management: With improving data collection and analysis, how can assessment and other education management data be more relevant and used to support education policy and practice?

Governance: Given a variety of risks associated with content, contact and conduct, how can education systems and schools protect learners from the risks of technology?

Regulation: With the impact of COVID and greater use of EdTech is your country enacting or reviewing privacy, security, and safety legislation in education? Consider new technologies such as facial recognition and the ethical applications of artificial intelligence.

At the heart of the issue is *how can education protect learners from the risks of technology while being properly integrated to deliver quality education?* In this context it is also necessary to address how pedagogy can transform basic skills and how education systems provide new skills demanded by the information society. Furthermore, technology can improve data collection to support policy decisions and improve processes through education management information systems. But is this rich source of information being used effectively to better school and education systems?

To answer these questions the educational technologies and online learning systems require good governance and oversight with appropriate legislative standards that mitigate risks to young people related to content, contact and conduct.

The concept note of the 2023 GEM Report identifies

three system-wide conditions that need to be met for any technology in education to reach its full potential:

Ensure that all learners have **access to technology** resources.

Protect learners from the risks of technology through appropriate **governance and regulation**.

Support all **teachers** to teach, use and deal with technology effectively.

Legislation and policies are currently being developed around the world, yet it is early days with the added complication of Covid healthcare and social regulations impacting schools. This meeting allowed officials working on the front-line of education delivery to give their own thoughts and recommendations appropriate to the subject of governance and regulation for quality learning.

1.2 Executive Summary

With 147 participants, all sharing their experiences in this meeting through statements and small break-out groups, a great deal of valuable knowledge and information was imparted over the 2 hours of the meeting. We thank everyone for their input and contributions.

Officials and educators, now with two years of Covid impacted experience, have really strengthened their own ideas and approaches to implementing edtech and appreciating its symbiotic relationship with the global knowledge economy. Here we summarise the key questions people spoke of and the issues around the governance of technology in education, while demanding quality.

<u>Questions</u>
How to deliver and use technology to ensure equality in education?
How can technology help in education and what are the minimum conditions for that support?
How do we improve access to reach all learners, across all demographics?
How can the vast potential to bring knowledge be done in an attractive and cost efficient format?
How do education systems address the skills challenge to equip learners for the modern world?
What role can education systems play in national technological development?
How can we best utilise education management data to improve policy decisions?
How will a particular learning platform bring added value to the teaching and learning process?
How effectively are learners using their devices and online resources?

<u>Considerations</u>
Evaluation techniques should measure actual learning rather than the ability to memorise and recall.
Forecast future costs associated with the continuous need to maintain and update edtech.
Improve school and system information and data management.
The demand for quality needs to be met with demanding quality assurance and inspection.
Improvement of learner skills needs to keep pace with the rapid rate of change in labour markets.
Technology is an enabler that can make a positive difference but also has potential negative impacts.

Education technology will not be properly utilised if teachers are not supported.
Governance of the education system must account for any potential risks from ICT integration.
The risks associated with technology require robust child protection and data privacy.
The impact of Covid has seen a dip in quality assurance and school inspections.

Policy & Governance
The introduction of education technology needs the foundational support of robust and holistic legislation. Any digital learning policy must aim to provide quality educational content that is curated, evaluated, and approved. The policy ecosystem that drives governance of edtech is necessary before ICT integration starts and deciding which technology to purchase. Make training teachers in digital competencies and use of e-learning platforms an absolute policy priority. Teacher capacity building along with infrastructure investment are essential before implementing ICT for education. Zero-rating of educational content is frequently suggested, especially in regard to the cost of data. Zero-rating needs to be considerate of copyrights, intellectual property and the intensive efforts of those involved in instructional design. Analyse the system: what are the technical capabilities of staff, the status of infrastructure, what is the legal framework, and what data architecture do you want? Regulators should be empowered to enforce any threats of cyberbullying, harassment or online hate.

Skills & Information
Technology in education will become symbiotic when equipping learners with knowledge economy skills. Student selection and information literacy thus needs to be a competency such that their skills at distinguishing quality feeds content back into the knowledge society. A well-defined digital skills curriculum should introduce productivity, creativity, programming, communication, collaborative tools and some artificial intelligence. Self-learning improves the overall quality of learning. Teachers are now assuming a more participatory approach in building the knowledge of students, shifting from more traditional models. Emerging economies feel it is now essential not to get left behind in the global knowledge economy and their learners need to apply new competencies when leaving school. As traditional views of school systems are disrupted, then digital awareness and outreach programs are needed for better community understanding.

Technology in Education
Educational software is often met with scepticism amongst the teaching profession. In recent times we have seen teachers getting far more used to edtech, which has helped accelerate their own digital development. One size does not fit all, and implementation of technology should not be blanket. Judge and assess the relevance of any edtech. Management systems are proven at pupil data management, financial control, parental communications and timetabling. But more needs to be done on the digital design of curriculum content. The basic infrastructure needs to be in place, made up of the tripartite digital core: devices, software and internet. Where implemented it has been noted that edtech collaborative tools are under-utilised. Devices need to be better designed and priced for the education sector. Integration is a challenge when met with a huge variety of vendors and applications. Which are good, which are not so good? A learning management system provides the data to inform policy making. Kids like technology, they are not resistant to it – they just need proper guidance.

Managing Risk for Quality
Students must understand their digital footprint and its associated risks, with teachers who can provide guidance to online safety. Risks of facial recognition need to be understood and the dangers of cyberbullying must be safeguarded against. Such risks can be mitigated with strong e-safety policies in schools. Teach children about being safe online and have an ongoing conversation about the benefits and dangers of the internet. Embed key messages throughout the curriculum. Government safe environment policies must serve as a framework to support the design of learning management systems. Beware of the inherent biases in artificial intelligence (AI) when used in the education setting. E-learning solutions should have quality assurance tests and best practices. Platforms collect a significant amount of personal data and policy makers must address what it is used for and who has access to it. A robust IT system is an absolute minimum requirement in mitigating the risks over data privacy, protection and leakage.

Teachers
Coming out of Covid, teachers are generally positive about edtech. Collaboration and

community groups of teachers helping each other with technology has been notable. Education systems must ensure that teachers are given practical guidelines on digital and online safety. Teachers can give learners confidence by supporting young people when they encounter problems online. Student engagement is critical, and the teacher-learner interaction can never be replaced by technology; teachers need to see students on campus, particularly when it comes to assessment time. Although the last couple of years has seen teachers adapting quickly and acquiring more digital skills, student engagement online still remains a challenge. The right training programs must address the capacity of teachers to guide learners in information and digital literacy. A teacher support system is essential, with ICT champions, local coordinators and collaboration through peer groups. Teachers can provide feedback to the edtech providers to improve the quality of software and how it delivers educational materials.

1.3 Format of Video Conference and this Report

In section 1.4 we list the one hundred and forty seven (147) participants of this video meeting. The experience over the last 22 months of organising online video meetings is to ensure that every participant has a voice. Small groups are essential. So, after opening statements the event was broken into small break-outs each with a moderator to take notes and support the conversation.

Prior to the break-out rooms there were four opening statements from: HE Ahmed Daher, Deputy Minister of Education for Information Technology and Digital Learning, Egypt; HE Abiola Seriki-Ayeni, Director General Education Quality Assurance, Lagos State, Nigeria; HE Hamed Alhammami, Permanent Delegate of the Sultanate of Oman to UNESCO; and Manos Antoninis, Director, UNESCO GEM Report. The closing statement was made by Christine Nasserghodsi, Managing Partner, Mirai Partners. Although all discussions were recorded and transcribed for the purpose of this report, none of the quotes or what was said during the private break-out rooms is made attributable to any one person.

The following was the video conference format:

Part A: Opening statements from: HE Ahmed Daher, Deputy Minister of Education for Information Technology and Digital Learning, Egypt; HE Abiola Seriki-Ayeni, Director General Education Quality Assurance, Lagos State, Nigeria; HE Hamed Alhammami, Permanent Delegate of the Sultanate of Oman to UNESCO; and Manos Antoninis, Director, UNESCO GEM Report.

Part B: Eighteen break-out groups were formed, each with a moderator to record discussions and take note of the key points raised.

Part C: All participants returned from their break-out groups. The closing statement was provided by Christine Nasserghodsi, Managing Partner, Mirai Partners

The total time of the video meeting was 110 minutes.

After introducing the participants in 1.4, the format of this report is structured around the policy issues and non-attributable quotations. The participants hold senior positions in government from multiple countries and expressed what they are experiencing as well as their own recommendations.

In this report we have done our best to identify the main subjects taken from what participants said to provide a dissemination of recommendations and experiences suitable for the consultation of the 2023 UNESCO GEM Report on the theme of technology and education. The main issues are reported as follows:

Approaches to Policy

Skills and the Knowledge Economy

Edtech and the ICT Infrastructure

Risks, Data Privacy and E-Safety

Interaction, Teachers and Pedagogy

1.4 Participants

We would like to thank all those for participating and providing such outstanding contributions. The opportunity for them to openly converse in small break-out groups provides us with a discerning judgement on the key issues and immediate policy recommendations. It is an honour for the organisers to host such a distinguished gathering of educators and policy makers. Everyone committing their time during this ongoing period of uncertainty is a true testament to their desire to ensure strong decision making around the future of education. Participants are listed by country, alphabetically:

BAHRAIN: HE Nawal Al Khater, Undersecretary for Policies, Strategies and Performance, Ministry of Education

BAHRAIN: Latifa Albunoodha, Assistant Undersecretary for General & Technical Education, Ministry of Education

BAHRAIN: Huda Almerbati, Head of Educational Planning, Ministry of Basic Education

BAHRAIN: Dr Gurmullah Alghamdi, Rector, Arab Open University

BOTSWANA: Ravi Srinivasan, Pro Vice Chancellor, Botho University

EGYPT: HE Ahmed Daher, Deputy Minister of Education for Information Technology and Digital Learning, Ministry of Education and Technical Education. *Opening Speaker*

EGYPT: Ahmed El-Ashmawi, Member of the Advisory Committee for the Reform of Technical Education, Ministry of Education and Technical Education

EGYPT: Dr Hanem Ahmed, Ministers Advisor for International Cooperation, Ministry of Education and Technical Education

EGYPT: Dr Abeer Elshater, Advisor to the Deputy Minister of Higher Education, Ministry of Higher Education and Scientific Research

EGYPT: Amaal Mohamed, National Programme Officer for Education, UNESCO Cairo

EGYPT: Doaa Abonaem, Project Officer, UNESCO Cairo

EGYPT: Mary Anne Therese Manuson, Education Programme Specialist, UNESCO Cairo

ETHIOPIA: Dr Theodros Shewarget, Director General for Curriculum Development, Ministry of Education

ETHIOPIA: Dr Zelalem Assefa, Director General, Ministry of Science and Higher Education

ETHIOPIA: Dr Eba Mijena, Director General for Higher Education Academic Affairs, Ministry of Science and Higher Education

ETHIOPIA: Dr Solomon Benor, Director General for Science and Research Affairs, Ministry of Science and Higher Education

ETHIOPIA: Dr Diriba Eticha, Directorate Director, Transformation and Good Governance, Adama Science and Technology University

FRANCE: Sulaiman Al Mabsali, Deputy Permanent Delegate of the Sultanate of Oman to UNESCO

FRANCE: Manos Antoninis, Director, UNESCO Global Education Monitoring Report. *Opening Speaker*

FRANCE: Dmitri Davydov, Partnerships and Operations Lead, UNESCO Global Education Monitoring Report

FRANCE: Anna Cristina D'Addio, Senior Policy Analyst, UNESCO Global Education Monitoring Report. *Moderator*

FRANCE: Laura Stipanovic, Researcher, UNESCO Global Education Monitoring Report. *Moderator*

FRANCE: Yuki Murakami, Researcher, UNESCO Global Education Monitoring Report. *Moderator*

FRANCE: Camilla Lima de Moraes, Researcher, UNESCO Global Education Monitoring Report. *Moderator*

FRANCE: Daniel April, Researcher, UNESCO Global Education Monitoring Report. *Moderator*

FRANCE: Francesca Endrizzi, Researcher, UNESCO Global Education Monitoring Report. *Moderator*

FRANCE: Divya Sharma, Researcher, UNESCO Global Education Monitoring Report.

GHANA: Catherine Appiah-Pinkrah, Director, General Administration, Ministry of Education

GHANA: Kojo Andrew Adu, ICT for Education Coordinator, Ministry of Education

GHANA: Solomon Yamoah, General Manager, Ghana National Education Campaign Coalition

GHANA: Ama Serwah Nerquaye-Tetteh, Secretary General, National Commission for UNESCO

GHANA: Eric Balangtaa, National Associate Project Officer ICT in Education, UNESCO Ghana

GHANA: Michael Tagoe, Provost, University of Ghana, College of Education

GHANA: Dr Hope Pius Nudzor, Senior Research Fellow & Critical Education Policy Analyst, University of Cape Coast, Institute for Educational Planning and Administration

IRAQ: Dr Alaa Abdulhasan Atiyah Alzwghaibi, Counsellor to the Minister, Ministry of Higher Education & Scientific Research

IRAQ: Prof Hussain S Hasan, Director General Research & Development, Ministry of Higher Education & Scientific Research

IRAQ: Dr Yousif Al-Dunainawi, Head of Entrepreneurial Projects Research and Development, Ministry of Higher Education & Scientific Research

IRAQ: Dr Dhiffaf Al-Shwillay, Assistant to Director General & Faculty Member at University of Baghdad, Ministry of Higher Education & Scientific Research

IRAQ: Omar Saad Saleh, Computer Department & Faculty Member at University of Baghdad, Ministry of Higher Education & Scientific Research

IRAQ: Enas Zaki, Lecturer, Ministry of Higher Education & Scientific Research

IRAQ: Hind Hassan, Head of Curriculum, Ministry of Education

IRAQ KRG: Shilan Khalil Junaid, Director General of Educational Planning, Ministry of Education

IRAQ KRG: Bashdar Sarbaz Mawlood, Director of Planning, Ministry of Education

IRAQ KRG: Dr Govand Sherwani, Director General, Ministry of Higher Education

IRAQ KRG: Dr Yaseen Salih Hama, Director General of Scholarships and Cultural Relations, Ministry of Higher Education

IRAQ KRG: Maqsood Mohammed, Director of International Relations, Ministry of Higher Education

JORDAN: Dr Yousef Abu Shaar, Director of Planning Educational Development. Department of Planning and Educational Research, Ministry of Education

JORDAN: Wafa Makhamreh, Head of Professional Development Policies, Ministry of Education

JORDAN: Prof Ahmad Y Majdoubeh, Chairman of the National Committee for Embedding Online Learning into Jordanian Higher Education System, Ministry of Higher Education and Scientific Research

JORDAN: Dr Omar Abu Ghalyoun, Deputy Executive Director, National Centre for Curriculum Development

JORDAN: Malak Al-Massad, Language Coordinator, National Centre for Curriculum Development

JORDAN: Rola Said, Director of Programs, Queen Rania Teacher Academy, Jordan

JORDAN: Rana Abdul-Latif, Education Project Officer, UNESCO Jordan

KENYA: Prof Eric Ogur, TVET Advisor to the Cabinet Secretary, Ministry of Education

KENYA: Francis Karanja, Chief Education Officer ICT for Education, Ministry of Education

KENYA: Dominic Omboto, Assistant Director for Research, TVET Authority, Ministry of Education

KENYA: Kawira Gikambi, Assistant Director of Education - Directorate of Policy, Partnerships and East African Community Affairs, Ministry of Education

KENYA: John Kimotho, Director Educational Media, Kenya Institute of Curriculum Development

KENYA: Dr Lydia Mucheru, Senior Principal Curriculum Development Officer: Educational Media, Kenya Institute of Curriculum Development

KUWAIT: Prof Omar Al-Jarrah, Vice President for Planning and Development, Arab Open University HQ

KUWAIT: Prof Mohammad Tawalbeh, Dean, Faculty of Education and General Studies, Arab Open University HQ

KUWAIT: Prof Fayiz Aldhafeeri, Professor of Learning Technologies, Training and Development, Director of Educational Training Centre, Kuwait University

LEBANON: Rana Taher, Five Year Plan Team Leader, Ministry of Education and Higher Education

LEBANON: Lynn Faitrouni, Project Coordinator, Ministry of Education and Higher Education

LEBANON: Dr Fawzi Baroud, Assistant Vice President for Information Technology, UNESCO Chair on Open Educational Resources for Access and Success, Notre Dame University

LEBANON: Prof Maha Aboul Ela, Dean of Academic Development and Quality, Beirut Arab University

LEBANON: Hana Yoshimoto, Chief of Education, UNESCO Beirut

LEBANON: Dakmara Georgescu, Programme Specialist: Learning/Curriculum and Teaching, UNESCO Beirut

LIBYA: Dr Mokhtar Jwaili, Chief Advisor on TVET & Entrepreneurship, Ministry of Education

LIBYA: Mufid Musrati, Director of the Bureau for Innovation Support and Excellence, Ministry of Education

LIBYA: Talal Amara, Academic Consultant, Ministry of Education

LIBYA: Dr Osama Hassin, Director of the Entrepreneurship and Innovation Centre, Libyan Academy for Postgraduate Studies

LIBYA: Prof Ali Sayeh Elbekai, Secretary General, Arab Federation for Technical Education (AFTE)

MOROCCO: Dr Mounir El Araki Tantaoui, Rector, Université International de Casablanca

MOROCCO: Abderrazzak Morjani, Educator & Project Coordinator, Moroccan Centre for Civic Education

MOROCCO: Fawzi Talout, Africa Education Lead, HP. *Moderator*

MOROCCO: Khalid El Hassan, Business Development Manager North & West Africa and Islands, HP. *Moderator*

MOROCCO: Adil Kribach, Strategic Account Manager, HP. *Moderator*

NIGERIA: Obafela Bank-Olemoh, Senior Special Assistant to the President on Education Interventions, Office of the President

NIGERIA: George Ipadeola, Assistant, Office of the President

NIGERIA: Dr Folake Olatunji-David, Director of Basic Education, Federal Ministry of Education

NIGERIA: Mohammed Mahmud, Technical Assistant to Minister, Federal Ministry of Education

NIGERIA: Onyeka Anyanku, Director of the Colleges of Education, Federal Ministry of Education

NIGERIA: Elizabeth Oyelola Omolara, Assistant Director for eLearning and ICT Staff Development, Federal Ministry of Education

NIGERIA: Olanrewaju Phillips, Enterprise Account Manager, Education – Central Africa, HP. *Moderator*

NIGERIA, LAGOS STATE: HE Abiola Seriki-Ayeni, Director General Education Quality Assurance, Office of Education. *Opening Speaker*

NIGERIA, OGUN STATE: Martin Odebowale, ICT Expert, Office of the Special Adviser on Education, Governor's Office

NIGERIA, OGUN STATE: Segun Sogeke, PA to the Special Adviser on Education, Governor's Office

OMAN: HE Hamed Alhammami, Permanent Delegate of the Sultanate of Oman to UNESCO. *Opening Speaker*

OMAN: Dr Yahya Al Harthi, Director General of the Directorate General of Curriculum Development, Ministry of Education

OMAN: Dr Magda Talib Al Hinai, Director General for the Specialised Institute for Professional Training of Teachers, Ministry of Education

OMAN: Dr Intisar Ambusaidi, Deputy Director General, The Specialised Institute for Professional Training of Teachers, Ministry of Education

OMAN: Khalid Al Mawali, Head of Higher Education Sector, Oman Natcom, Ministry of Education

PALESTINE: Mar'e Abed Hafez Sous, Director of Training, Ministry of Education

PALESTINE: Dr Mohammad Matar, Head of Evaluation & Research, Ministry of Education

PALESTINE: Majdi Moamar, Head of Teacher Training, Ministry of Education

PALESTINE: Mustafa Mutair, Head of Educational Devices Section, Ministry of Education

QATAR: Dr Khalid Al-Ali, Assistant Undersecretary for Higher Education, Ministry of Education and Higher Education

QATAR: Khoulood Al-Malki, Head of E-Learning and Electronic Projects Coordinator, Ministry of Education and Higher Education

QATAR: Dr Abdalla Hazaimeh, Higher Education Consultant to the Assistant Undersecretary, Ministry of Education and Higher Education

QATAR: Noha Alomari, ICT Education Specialist, Ministry of Education and Higher Education

QATAR: Dr Samah Abdulhafid Gamar, Director - Teacher, Learning and Assessment, Doha Institute for Graduate Studies

QATAR: Dr Siham Al-Amoush, Senior Faculty Development Specialist, Qatar University

QATAR: Farida Aboudan, Programme Specialist – Education, UNESCO Qatar

QATAR: Ahmed Osman, Assistant Programme Specialist – Education, UNESCO Qatar

RUSSIA: Ekaterina Aleshina, Communications Manager, Eastern Europe, Middle East & Turkey, Africa. HP

RWANDA: Eng Pascal Gatabazi, Chief Technical Advisor to the Minister, Ministry of Education

SAUDI ARABIA: Fahad Ali Daghriri, CIO General Department of Information Technology, Technical and Vocational Training Corporation TVTC

SAUDI ARABIA: Abdulla Aljably, General Director eLearning & Training Centre, Technical and Vocational Training Corporation TVTC

SAUDI ARABIA: Eng Ali Al-Shehri, Development Supervisor in eLearning & Training Centre, Technical and Vocational Training Corporation TVTC

SAUDI ARABIA: Abdo Azibi, Head of the Equivalency, Assessment and Curricula Certification, Technical and Vocational Training Corporation TVTC

SAUDI ARABIA: Bandar Alomran, Bachelor Programs Degree Coordinator, General Directorate of Curriculum Technical and Vocational Training Corporation TVTC

SAUDI ARABIA: Dr Ali Al-Rubian, Consultant in the General Administration for Research & Innovation - Specialist in eLearning, Education & Training Evaluation Commission

SAUDI ARABIA: Majdi Naser Al Naser, Territory Sales Manager, HP. *Moderator*

SEYCHELLES: Jean Alcindor, Chief Education Officer TVET, Ministry of Education

SEYCHELLES: Xavier Estico, Director General, Division of Science, Technology and Innovation, Ministry of Investment, Entrepreneurship and Industry

SOUTH AFRICA: Enoch Rabotapi, Chief Director for Education and Human Resource Development, Ministry of Basic Education

SOUTH AFRICA: Dr Morgan Pillay, Chief Director: Teacher Development, Ministry of Basic Education

SOUTH AFRICA: Dr Mark Chetty, Director – National Assessment, Ministry of Basic Education

SOUTH AFRICA: Dr Neo Mothobi, Chief Education Specialist, Ministry of Basic Education

SOUTH AFRICA: Dr Aaron Nkosi, Director for Curriculum Research, Ministry of Basic Education

SOUTH AFRICA: Crysty Swift, Technology Lead for E3 Initiative, Ministry of Basic Education

SOUTH AFRICA, GAUTENG PROVINCE: Thulani Mthembu, Deputy Chief Educational Specialist, Department of Education

SOUTH AFRICA, GAUTENG PROVINCE: Rajesh Singh, Deputy Chief Educational Specialist, Department of Education

SOUTH AFRICA, MPUMALANGA PROVINCE: Dr Pat Moodley, Chief Education Specialist, Department of Education

SOUTH AFRICA, MPUMALANGA PROVINCE: Joyce Strydom, Deputy Chief Education Specialist: Business Studies, Department of Education

SOUTH AFRICA, NORTH WEST PROVINCE: Justice Tyobeka, Senior Education Specialist: Teacher Development, Department of Education

TUNISIA: Ahlem Ben Ali, Responsible for Implementation of eTwinning Program, NCTE, Ministry of Education

UNITED ARAB EMIRATES: Verone Kennedy, Division Director for K12 Monitoring, Evaluation, and Improvement, Abu Dhabi Education and Knowledge (ADEK)

UNITED ARAB EMIRATES: Philippa Wraithmell, Digital Learning Manager, Abu Dhabi Education and Knowledge (ADEK)

UNITED ARAB EMIRATES: Prof Akin Fadahunsi, Acting Dean of College of Business Administration, Ajman University

UNITED ARAB EMIRATES: Dr Christopher Hill, Professor Faculty of Education, Centre for Research for Digital Education, The British University in Dubai

UNITED ARAB EMIRATES: Hugh Martin, Registrar and Chief Administrative Officer, The British University in Dubai

UNITED ARAB EMIRATES: Christine Nasserghodsi, Managing Partner, Mirai Partners. *Closing speaker*

UNITED ARAB EMIRATES: Mayank Dhingra, Senior Education Business Leader, MEA, HP. *Moderator*

UNITED ARAB EMIRATES: Vikas Miglani, Corporate & Public Sector Manager, Middle East, HP. *Moderator*

UNITED ARAB EMIRATES: Enkenyelesh Getachew, Corporate, Enterprise and Public Account Manager, HP. *Moderator*

UNITED ARAB EMIRATES: Nadim Bouzeid, Account Manager EGL - Lebanon, Jordan, Kuwait, HP. *Moderator*

UNITED ARAB EMIRATES: Ahmed Ezzat Taher, Account Manager EGL – Egypt, HP. *Moderator*

UNITED ARAB EMIRATES: Nyla Tariq, Co-founder, Mirai Partners. *Moderator*

UNITED ARAB EMIRATES: Lena Borno, Project & Operations Manager, Mirai Partners. *Moderator*

UNITED KINGDOM: John Glassey, CEO, Brains Global. Host

UNITED KINGDOM: Claire Urie, Head of Government & International Relations, Brains Global

UNITED KINGDOM: Victoria Tate, Head of Education Partnerships, Brains Global

ZAMBIA: Chillingtone Nyangu, ICT for Education Officer, Ministry of General Education

ZAMBIA: Pamela Chirwa-Banda, Senior University Education Officer, Ministry of Higher Education

ZAMBIA: Delice Chishinga, ICT Officer, SMART Zambia, Office of the President

ZAMBIA: Chunga Manzi, Service Support Officer, SMART Zambia, Office of the President

DISCUSSIONS

SECTION 2. Discussion

2.1 Opening Statements

The opening statements were provided by HE Ahmed Daher, Deputy Minister of Education for Information Technology and Digital Learning, Egypt; HE Abiola Seriki-Ayeni, Director General Education Quality Assurance, Lagos State, Nigeria; HE Hamed Alhammami, Permanent Delegate of the Sultanate of Oman to UNESCO; and Manos Antoninis, Director, UNESCO GEM Report.

HE Ahmed Daher

Deputy Minister Daher introduced the Egyptian experience of Education 2.0, how they have used technology in different aspects of the education system and how the ministry faced the challenge of the Covid pandemic. 2016 saw the start of establishing a new educational system based on international best practices, with the aim of equipping students with the basic and digital skills essential for current and future job opportunities. The first implementation step was to launch the Egyptian Knowledge Bank (EKB), a flagship project providing a vast online resource of content free of charge to then entire Egyptian population. The EKB offers highly curated learning resources, materials, videos, articles and publications from worldwide providers

In order to meaningfully incorporate technology in a sustainable manner meant introducing whole education system reform that started in 2017. The aim of this new system is to provide students with a comprehensive learning experience based on integrated curricula across subject areas. This approach builds the ability of students to transfer their learning to other settings and use their knowledge to deal with real life situations. New subjects areas have also been introduced to reinforce student understanding of the world around them and establish a strong background in ICTs. Learning ICT was always the cornerstone of the delivery in terms of the content curriculum itself, addressing the learning outcomes and the how to deliver and use technology to ensure equality in education.

Students enrolled in the first years have now been exposed to innovative ways of teaching and evaluation. Within this new system, evaluation techniques focus on measuring the actual learning of students rather than the ability to remember or to memorise. In another reform the ministry of education introduced an innovative way of evaluation and assessment. This was a critical step in changing the perspective of applications from memorising to analysing, understanding and problem solving. Also tablets were introduced in 2018 and distributed to 1.8 million learners for free, allowing students to access and utilise the EKB, and to be prepared for online assessment.

In order to ensure access to content for all students, the tablets were equipped with SIM cards. It is worth mentioning that Egypt proved an ability to adapt the educational system under the backdrop of Covid. The Egyptian education technology infrastructure allowed for a robust response that accelerated the implementation of innovative ideas and different platforms. This included introducing the social learning platform that accommodated 11 million students across the schools, providing access to teachers also.

The ministry applied a research-based evaluation system during the pandemic and launched a student teacher communication platform and educational TV broadcasting platform. This met the needs of those who do not have access to the internet and fulfilled the responsibility of meeting the challenges concerning implementation, the digital divide, security and privacy issues, and accessibility. It is very important to consider ways to protect students from the dangers of cybercrimes, online bullying and securing the devices they use to access educational content. In this context, it is imperative to forecast future costs associated with the continuous need to maintain and update educational technologies to correspond to the unprecedented technology revolution.

HE Abiola Seriki-Ayeni

This opening statement is in conjunction with the presentation in Appendix A

It is tempting to think about the past two years as accelerating the onset of digital age, in teaching, learning, monitoring and evaluation, which is at the heart of quality assurance in Lagos state. Of course, digitisation was a consideration in educational planning long before Covid. While many researchers have spoken of the different ways in which technology might shape the future of learning, it also might widen the gap for many children and became yet another advantage of those already privileged especially in the context of Lagos.

In Nigeria there has been some scepticism around how educational software subscriptions work and that the efficacy studies of the software are often carried out by the selling company themselves. With Lagos being diverse and densely populated, they recognised that technology could be a means to improve governance, and with concern for quality education for all, schools need help to think strategically about how best to use technology within their context.

The first aim is to improve quality assurance through automation, something which Lagos State is at the tail end of completing and implementing. So the first step was to ensure that there would be equitable education and to improve public and private schools. Lagos State has far more private schools. With only about 1,700 Public Schools, whereas about 6,000 approved private schools are within the State. Next is to make improvements to the school information and data management, while streamlining evaluation and registration, and then using the right people, programs and platforms to ensure that the automation will be long-standing.

This quality assurance (QA) program through automation was progressing well until Covid shut down schools, meaning an urgent need to enable learning across a diverse cross section of public and private registered and unregistered schools while continuing to advance the mandate. Implementing parallel tracks, one track to ensure continuance of the automation the QA process and that schools were equipped to meet federal and local QA requirements. The second track focused on being an enabling partner to help schools and education officers collect and disseminate actionable data to help design and deliver professional learning sessions to build stakeholder capabilities.

The federal quality assurance framework was instituted in 2016 and although very robust, in Lagos State there was a need to supplement the framework to meet the current needs of education, not just during Covid, but beyond. This led to developing a State-wide, easy-to-digest supplement to the National Quality Assurance Framework (NQAF). The handbook translated requirements into actionable interventions across price points and learning goals. The State also worked with HP to add remote monitoring and evaluation to the automation platform, ensuring that schools could complete their self-evaluations and submit evidence online to support their grades. This also allows education officers to review evidence submitted and communicate with stakeholders well in advance of an external evaluation.

In response to the pandemic, Lagos State developed clear and agile reopening requirements that were cascaded across stakeholders via a digital course, with about 60,000 teachers that registered and took the one-hour course, including private school teachers. The regulator felt compelled to help schools digitise quickly and navigate their new normal by launching "*learn together*". This is a QA initiative, providing learning content, resources and strategies to public and private schools, initially developed during lockdown to provide continuity of learning to all Lagos students along with high quality print packs to learners across the state. About 50,000 learning packs were also printed for students that had no access to technology, in remote areas of the state. In response to concerns about digital literacy, the department also launched "Read Aloud Lagos" an initiative intended to foster a love of literacy among students in Lagos State.

Also implemented was a new pilot to use artificial intelligence (AI) to assess and improve the quality of literacy in a representative sample of private schools across the state utilising the HP literacy attainment coach. Based on these results, the performance data on participating schools showed them delivering data driven literacy instruction, intending to address any unfinished learning associated with the disruption caused by Covid. Public schools will be next. Knowing that digital learning is here to stay, the partnership with HP also develops the innovation and digital education skills of practitioners at public and private schools.

Ultimately, to engage in digitally supported quality assurance or to teach and to lead in a digital age, all stakeholders need new capabilities. To support this, Lagos State launched professional development under the directorship of QA, with online quality assurance content, training manuals, downloadable online. This is intended for long-term sustained use to support the professional skills of QA team

members, inspection and grading processes, including monitoring, reopening requirements, improvement of teaching, learning leadership across the schools and supporting digital teaching, learning and leadership.

Hamed Alhammami

As Permanent Delegate of the Sultanate of Oman to UNESCO it is important to comment on the role of such meetings in providing meaningful discussion to enhance the preparations of the Global Education Monitoring (GEM) Report. The role of technology in education, the theme of the 2023 report, is timely as we see the 4th industrial revolution shape the world around us and demand that future skills meet the developments in technology, such as artificial intelligence (AI). The Covid pandemic has forced us all to seriously consider accelerating our work in this regard, with schools resorting to distance education to ensure the continuity of education process. Of course, this includes ensuring that the 2030 declaration and education framework that calls upon systems to respond to the rapidly changing technical and technological advances.

In the Sultanate of Oman, the Ministry of Education and other concerned ministries have made great efforts to develop and embed information technology into curricula, such that the improvement of learner skills keeps pace with the rapid progress of the world. Hence, the government has taken several steps to promote student motivation towards learning and employing various media, methodologies and technical resources to develop skills, including an ICT curriculum based on national standards. These standards serve as a general framework that determine the level of knowledge, skills and values that the Omani learners should achieve during their studies.

The Ministry of Education adopted global information technology pedagogies for the early grades of primary schools in cooperation with international institutes specialising in this field. It has also deployed online educational resources allowing effective interaction and participation, content sharing and communication between all parties within the education process. Digital learning materials and content has been developed and supplemented with various audio materials, educational videos, a guide for teachers and other digital services. The Oman Ministry of Education has also established a dedicated education channel on YouTube to provide educational lessons to students. Lessons are prepared by skilled teachers under the supervision of ministry specialists enabling students to review and revisit the content whenever needed. This respects the individual differences between students and takes a more learner-centred approach to education in Oman.

The Omani Government has produced a regulatory framework for applying blended e-learning and distance education. This framework introduced all organisational aspects needed for e-learning across stakeholders. Furthermore, since teachers are the main component of the education process, the Ministry of Education has trained more than 56,000 teachers in specialised courses to help them employ modern technology in education, including raising awareness of the importance of distance learning. That said, there remain challenges facing policy and decision makers, such as the lack of specialised training programs for technology-based teaching methods in the virtual learning environment.

To overcome existing obstacles, the Sultanate of Oman has developed a series of actions to be implemented to achieve its future vision for education technology, by adopting new legislation for introducing technology into the school system. This requires building an integrated system to manage learning and education process by enabling all parties to access resources, such as the learning management system (LMS). This empowers students and connects them to the teaching and administrative bodies in their schools.

It is important to find the best practices on how to utilise technology to support the educational process and sustainable development of humanity while we commit and upscale our efforts to provide the necessary infrastructure of electricity, internet and equipment. Therefore, the international community should ensure that there is equitable access to technology, both within and between countries, to achieve the sustainable development goals four (SDG 4, education). It is also worth mentioning that learners must be protected from the risks associated with the technology and we develop policies and legislation to safeguard young people.

Permanent Delegate Alhammami concluded by giving special recognition to teachers around the world who have met the toughest of challenges posed by the pandemic to ensure the continuity of education and the engagement of students. Meetings and consultations between multiple stakeholders and countries convened by organisations like UNESCO and the Global Online Learning Alliance (GOLA) are invaluable in allowing stakeholders to share their experiences, visions and recommendations that ultimately can inform evidence-based policy making.

Manos Antoninis

This opening statement is in conjunction with the presentation in Appendix B.

The Global Education Monitoring Report has been with us since 2002, as an editorially independent team that is hosted and published by UNESCO. The GEM Report has a mandate to monitor progress in education, notably in the context of the sustainable development agenda, with each edition having a monitoring section going through all the SDG 4 targets. Secondly, the mandate is to report on the implementation of national and international strategies to achieve SDG 4, to help hold all partners to account for the commitments they made in 2015. This is why every report, published about every 15 months, has a theme. The last report launched in December 2021 was on the role of non-state actors in education, and before summer 2023, there will be the launch of this report on the theme of technology.

The theme for the 2024 report has already been committed to cover leadership in education. We have all heard about the important role of technology in achieving education goals and how the Covid pandemic has accelerated pre-existing technological trend. Equally, we have heard of different schools of thought between the role of technology as an enabler, a disrupter that can make a positive difference, but also potentially have negative impacts. Given the speed with which technology changes, the variety of experiments that are being tested on the ground, the delay with which these results appear, and of course, the effort of those who develop technology to make the results look promising makes preparing a cogent evidence-based report quite complicated. Once we address the question, how can technology help, and discover positive relationships; then the second part of the report looks at the minimum conditions that need to be met for technology to support education.

The big education questions are firstly, access, equity, and inclusion – how do we improve access to reach learners, across all demographics? As we know, technology offers vast potential to bring knowledge and resources to the fingertips of students. So, how can we do that in an attractive and cost efficient format? The second big challenge is quality, and how do we improve the quality of education? Regarding this we need to split quality into two discussion areas: basic skills – to ensure that technology is being properly used to transform pedagogy and improve their learning outcomes; digital skills – how do education systems address this challenge of ensuring that learners are equipped with the skills related to collaboration, content creation, problem-solving, and critical thinking?

The third big question is partly related to ICT. What role can education systems play in supporting technological development in countries, both in absorbing and innovating? The role of education has evolved over the years in the way it features in national strategies. Then the fourth question is, how can we make assessment and other education management data more relevant and widely used, and to improve the policy decisions taken? The purpose of these questions is to inform policy makers how technology can help and what are the minimum conditions that need to be met.

So the 2023 GEM Report will have three chapters: access to technology, including how governments make procurement decisions; governance and regulation, particularly how ministries of education collaborate with other government departments to ensure that all investments are coordinated and that learners are protected from the potential risks of technology. Finally, the third minimum condition is teacher preparation. Educational technology will not be properly utilised if teachers are not supported, at the school level and in terms of their professional development and training.

The UNESCO GEM Report team also has ongoing online consultations where officials can submit comments and recommendations on what these reports should cover, offering specific examples from on-the-ground experience. The concept

note of the GEM Report and further information on the issues to be addressed is available at: https://2023gemreportconsultation.wordpress.com/ and a summary of consultation events can be found at: https://en.unesco.org/gem-report/2023consultation-events

2.2 Policy and System Governance

In terms of developing a digital ecosystem and the reasons for deploying technology in education it is essential to consider the huge variance across and within countries such that one size does not fit all in education. So, any edtech policy should start with low implementation capacity and appreciation that teacher skills will mostly not match the types of technology available on the market. Intervention strategies are then based around the schools, and resources available such that those with lower budgets or less access do not have to rely heavily on external parties to integrate technology into their classrooms. Although there was a strong response to the disruption caused by Covid, the knowledge and understanding of how to develop that into a long-term coherent strategy needs strengthening at the policy level. This includes asking questions about the technology in education: why are we using a particular application or platform? What value does it bring to the teaching and learning process? How will it improve instruction and how will the technology better engage learners? Policy makers must address the value they are getting from edtech and determine the metrics that define such value.

Any digital learning policy must ultimately aim to provide quality educational content that improves the outcomes, skills and competencies of students. In the virtual environment there becomes a wider scope of content development. As well as the national curricula, there are open educational resources (OERs) online, there is a natural increase in teacher developed content and also the opportunity for more local indigenous content. All of this needs to be curated, evaluated and approved before being integrated as digital content, which requires interdisciplinary teams. Only once the instructional design for true e-learning has been developed and curated can it then be uploaded to an education cloud for all school users.

Kenya, as an innovator in digital learning policy, has seen how the investment and commitment to educational technology initially led to teachers being concerned and even scared of using the new edtech. The last couple of years, forced by Covid, has accelerated teacher digital development and demonstrated the capacity of teachers going online. Teachers are being trained online and from that learning new competencies to teach using e-learning. This has actually enhanced the role of technology in transforming pedagogical practices. The lessons learnt are that we all know technology is here to stay so education systems need to constantly re-evaluate, adapt and be ready for change.

Probably the most frequent policy recommendation in the meeting was the zero-rating of educational content. More specifically if an e-learning platform is mandated by government, then it must not be at further expense to schools, especially if it involves increased data charges. This does not necessarily apply to the huge choice of content available on all edtech platforms, especially considering issues such as publishing rights and intellectual property, but if zero-rating can take the cost of data out of the equation then it will certainly help learners in emerging economies.

The Lebanese response to the impact of technology on pedagogical practices has been to divide their analysis into four main categories. Firstly, the technical capabilities of staff within the ministry of education and in schools. Then measuring the status of infrastructure, such as how much technology is already integrated into schools and what number of devices. The third pillar has been to assess the legal framework where several policies and regulations are missing to address the rapid increase in the use of technology in schools. The final part has been to assess the approach to data management including the data architecture and how to transform data into relatable information that can inform evidence-based policy making in the ministry. The output of this analysis has put the main challenges into sharp focus, not least the lack of digital skills amongst staff, the need to clean data to make it useful and how much educational content is not fully digitised.

The pandemic has meant policy makers in the Seychelles revising their original policy for ICT in education and training. Such policy needs to adequately address the urgent need to train teachers in the use of e-learning platforms and properly leverage technology to improve the quality of teaching. To sustain quality then it is important to ask how effective learners are using laptops and the resources they access? Educational technology is already transforming pedagogies, so the regulatory framework needs to put the teacher at centre whereby they have the continuous professional development to keep pace with change such that their students are not left behind in the knowledge economy.

In short-time we have seen a rapid rise in the number of tools, thousands of educational applications and

platforms, causing a problem when trying to address how and what technology to integrate into the educational process. The broad choice of subjects and their unique content adds to the difficulty in deciding which application to choose, as well as a large variety of open educational resources (OERs). This points to the need for a complete ecosystem that drives the governance at institutional and national levels to meet learning objectives.

The approach to governance and regulation of ICT for education in Kenya has been done under four pillars. First is the formulation of policy by defining what needs to be in place before ICT integration starts. Then there is the policy commitment to investing in the ICT infrastructure to ensure all schools are connected and that devices are included in the overall digital literacy strategy. Then there is content. The appropriateness, vetting and evaluation of content is essential along with ensuring that there is a coherent approach to instructional design of that content in the digital environment. The fourth pillar is capacity building – where considerable challenges have to be dealt with. Teachers especially need to have the capacity which requires training and upskilling in the proper pedagogical use of digital technologies.

The Abu Dhabi Department for Education and Knowledge has opened charter schools and is working closely with industry to see where they can employ innovative practices and close any gaps in the system relating to student achievement. To ensure the continuity of learning they have sought to put in place robust technological platforms and tools allowing teachers to communicate with both students and families, while addressing the question of how students are learning. Alongside such a model where there is greater school autonomy there still needs to be accountability and this is where good governance comes into play through inspection, monitoring, conducting classroom evaluation and making sure nothing is left to chance.

From the start of the Covid pandemic, South Africa developed guidelines for remote teaching. One important focus of the guidance is how to best prepare for virtual teaching. How does a teacher reshape the lesson, share resources, manage learning and yet still maintain a classroom culture? How do we take care of slower online learners, how do we adapt assessment and use technology to give feedback to students? These are some of the important issues that good regulation of edtech needs to address and in South Africa they are beginning to see the fruits of such monitoring.

Kenya has started the implementation of ICT in education in the TVET institutions. Several of these institutions have already applied for accreditation for online programs and hence need guidance on the implementing of e-learning, as well as training. Kenya has an ICT authority that has already developed standards across sectors including education, that define a minimum level of quality and performance in education management information systems. Satisfying accreditation means ensuring that the necessary information infrastructure is in place in colleges.

Often for cultural reasons there remain challenges with the online engagement of students compared to face-to-face learning. These may relate to issues like behaviour, discipline and people not wanting to have their cameras on for perhaps religious or cultural reasons. This is a real minefield for teachers. So we should be aware that there are students technologically ahead of the teachers. In the classroom a teacher can use their experience to pick up on the nonverbal cues. This is very hard online, especially in a culture where they may not be turning the camera on. These can be regarded as governance issues that a regulator should be empowered to tackle and enforce.

2.3 Skills and the Knowledge Economy

The growth of the knowledge economy or information society means we know live in a world with a lot “noise”. Education systems cannot avoid this, especially when wanting to produce young people who are ready for jobs of the future. So how can educators help students distinguish the quality content from a plethora of promotion and opinion? Student selection of content needs to be a competency which means teachers needing to teach the art of “search and selection.” The role of technology in education then becomes symbiotic with the needs of making sure learners are equipped for the knowledge economy.

Digital skills come naturally to the kids now in school, but information literacy is something that needs to be taught and introduced into learning for technology to harmonise with the objectives of quality. Policy and ongoing governance should thus address how to introduce such information literacy that empowers students to evaluate themselves and understand what they are accessing. Such policy needs more research and analysis relative to grade, age and levels of attainment and ministries of education would do well to determine where the gaps are in teaching digital and information literacy.

The evident demand for jobs in the future and the trajectory of modern economies requires

competencies in artificial intelligence, blockchain technology, big data and extended realities. The kids are already familiar with virtual and augmented reality gaming so it is up to the schooling system to ask how it can assist with these competencies that will affect future employment opportunities. Countries have introduced new subjects such as coding and robotics into the curriculum and will have to regularly assess how wider digital skills may be embedded into coursework and how these digital skills can feedback into education by producing more content and knowledge.

For students to acquire the necessary digital skills there should be a well-defined curriculum that introduces productivity, creativity, programming, some artificial intelligence, communication and collaborative tools, how to search and select online, as well as an understanding of digital safety. This is the approach taken in Qatar and studied from the earliest grades up until grade 12. The students are now very familiar with the technology, and it belongs to their generation so from a governance point of view it is about providing guidance and, of course, ensuring the infrastructure is in place.

It is suggested that the desire to improve the quality of learning and develop the necessary skills makes self-learning a top priority. Education systems are over-reliant on existing structures where students rely on their teachers, textbooks and physical campus. How do we make learners more reliant on themselves? Here technology can play a role by encouraging students to do things themselves, but the technology needs to be embedded into an instructional system such as blended learning and evolving timetables that allow for more self-learning through technology.

The new generation of teachers and students are more adept and more technically skilled in digital learning. So teachers can change how the students are engaging by giving them more ownership and participation in the learning process, by guiding on how to be better make use of digital tools. This no longer that traditional way of presenting and vocalising, thus forcing the teachers to assume a more participatory approach in building on the knowledge of students and giving them a role in the education process. It is not just about quality, but also how you present online information. From an educator perspective, we cannot always expect students to behave in the virtual world as they would in class, nonetheless they still need to be taught the necessary digital skills. Hence, it could be said in terms of the education system, the key is to provide learners with the new skills and technology that the economy demands. The whole future is about the provision of skills.

Egypt, which has a strong agenda for digital transformation across societal sectors and within the education systems, is also concerned with lifelong learning and how technology can complement adult education and vocational skills. The challenges of digitising curricula and capacity building of educators are of scale and the final output is to establish a learning platform that targets learners and teachers in adult education in the Egyptian context. So practitioners in developing digital content and instructional design need quality guidelines which can be drawn from multiple sources such as civil society actors like the UNESCO Institute of Lifelong Learning, the Global Education Coalition and the Global Alliance for Literacy.

Technical and vocational education is very specific, and the practical nature of the coursework does not engender it to being completely transformed into digital learning. But there is scope for improvement. For example, language is a major employability skill that can be enhanced through digital content. Thus one cannot really substitute the technical curriculum that takes place in workshops or on job placements, but it can be complemented with high quality digital content programs.

A common African perspective is a keen awareness of how the world is moving from the industrial economy to the knowledge economy and education systems must be relevant in teaching the skills and competencies needed. The rationale of the labour market absolutely requires that young people have the digital skills and information literacy and not responding now means getting left behind. Yes, the ICT infrastructure challenges remain considerable, but progress does not stop and from a governance point of view, African institutions, as we see in countries like Kenya, should be making reforms to curricula that are outdated. This new jobs market demands the skills of creativity, problem-solving and innovation, therefore Kenya introduced the competency-based curriculum (CBC) with digital literacy at its heart. The country wishes to advance the progress of its students as globally competitive citizens with a good standard of living, as well as being creative and innovative. Skills are needed, teachers need to be re-tooled, learners must acquire new competencies and know how to apply them in the real world. The Kenyan Ministry of Education has also responded to the issues around privacy, security, and safety, including the adoption of the Data Protection Act and the necessary practices it now requires in the education system.

Oman is another country that has long-established ICT in education both as a subject in its own right and having technological skills integrated across the curriculum. What has been new since the onset of the pandemic has been how to use e-learning platforms more effectively, how to access content and use the collaborative tools built within the platforms – all to encourage more student-centred learning. It is this shift to self-learning and teaching students how to manage their own learning that is one of the biggest shifts we are seeing in education, complemented by good edtech and online access.

In Ogun State, Nigeria they have used technology to develop new pedagogies by employing educational simulations with instructional elements that allow the learner to explore and obtain more information. The process of virtual learning consists of quality control and procedures for correction with content that satisfies the subject curriculum. An important aspect of such simulations is that it creates more interactivity and student engagement which in turn motivates pupils to self-learn. Such an approach should set up activities that result in more critical thinking and information literacy skills needed for the 21st century knowledge economy.

The work of UNESCO in Cairo in partnership with the Ministry of Education and Technical Education in Egypt has meant the country becoming one of the early adopters of the pan-African initiative on the digital transformation of skills development. This ambitious initiative seeks to create an ecosystem to accelerate digital transformation in technical and vocational education and training (TVET) in Africa over the next decade. The main objectives cover policy development, advocacy, research, capacity building and to create a critical mass of teachers, instructors and practitioners trained in mainstreaming ICT necessary for the labour market.

In Jordan, where there are access inequalities in parts of the country, in their activities to engage students in the use of technology, they have emphasised the importance of parental and family support. Some families may have three or four kids who need to learn at the same time, so they support on how to deal with the e-learning platform and activities. Instructions range from guidance on screen time to focusing on 21st century skills and harnessing the ability to think critically of the information that learners access.

The experience in Kuwait, as educators shift towards digital education strategies, is a lack of awareness of the conceptual shift in the nature of education that technology is bringing. Hence, digital awareness and outreach programs should support the need for a greater understanding that traditional views of the school system are changing. That may include adapting the rigid timetable format where technology has the capability of bringing learning to students at any time. With increased awareness, comes acceptance of new opportunities such as flexibility in learning. The next component is institutional readiness from schools to government followed by national orchestration of a common digital education policy.

South Africa has been grappling with the learning loss experienced in the last two years and is now asking whether educational technology can play its part in the recovery. They are interested in finding good ways of using technology help deal with learning loss, that ties in with their learning recovery. One of the key pillars in the South African recovery plan is to move away from a heavy loaded curriculum, and to focus on core fundamentals, and then see how technological solutions can meet those core fundamentals. One means is to look at how technology can empower teachers to deal with more diagnostic assessments to profile learners, to get more useful information about where learners are and then how the teacher can help remediate, while preparing their students for 21st century skill.

The experience of UNESCO in supporting ministries of education in their interventions and

implementation of digital learning policy has been to make sure that the decision makers are addressing value and outcomes. So, institutional frameworks that focus on ICT in education must include capacity building activities, especially for teachers in marginalised areas; define digital skills; and build the capacity of quality assurance within government and teacher professional development institutes.

2.4 Edtech and the ICT Infrastructure

Any approach to the practical implementation of educational technology and online learning should not be a blanket one. Major determining factors of the usefulness and application of edtech are age, grade level, the subject type, the difference between theoretical and laboratory based disciplines and technical education. These factors are the major inputs for educators when judging the relevance of the edtech and when making such judgements it is important to avoid any over-reliance on specific technology.

Coming out of the experiences of the Covid pandemic, generally teachers have been positive about the impact of technology especially for sharing resources between each other and collaborating as groups. Tracking the progress of students and planning lessons are other tasks where the technology has had a positive impact. Similarly school principals have utilised technology-based management systems that have saved time, such as pupil data management, financial control, timetabling and communicating with parents. But more needs to be done on the actual digital design of curriculum content and using e-learning platforms to deliver lessons. Furthermore, educational technology has not made such an impression in special needs education nor in conducting both formative and summative assessment.

Officials spoke of not avoiding the observation that we cannot implement the most optimistic plans about e-learning or new educational strategies leveraging digital technologies without the basic equipment and infrastructure in place. When implementing any ICT for education policy it must be clearly understood that technology is tripartite. The digital core comprising of: devices (desktop computers, laptops, tablets, and smartphones); software (educational applications and programs, online educational resources, e-learning, and education management information systems); the internet, due to the proliferation of cloud-based services and online learning content, internet access is essential for the devices and software to be fully utilised. And at the heart of this tripartite is the essential requirement training teachers in the proper integration of technology into pedagogy and the classrooms.

Several participants noted how, where edtech and e-learning platforms have been deployed, much of the features are under-utilised, particularly collaborative tools. Collaboration is clearly a benefit to the quality of learning so more needs to be done to engage students in using these tools if the technology is to truly be effective and reach its potential. The process of learning is often missing in use of the learning management systems. Empowering and encouraging the students to use collaborative tools will see more transformation of pedagogies. Evidently training teachers in how to engage students using such platforms is a priority.

Bahrain has a robust ICT infrastructure and with the onset of the Covid pandemic they made sure that all schools had broadband connectivity and students' devices. For those kids who could not afford laptops, 10,000 devices were donated, and 17,000 teachers were trained in digital skills. For students who can, they are encouraged to bring their own devices. The facilities in schools and the ability of students to demonstrate their ICT competencies has been a success of the upscaling. The ICT centre, in the country, to provide training and empower teachers has been approved by UNESCO. Almost 20 years ago, the Ministry of Education initiated the King Hamad "Schools of the Future" program, which played a significant role in developing the digital infrastructure in schools. In 2015, an extension to that project was initiated aiming at the digital empowerment in education. With this digital strategy, the ministry moved from the infrastructure phase to focusing on the teacher and the student. Today, every school has computer labs and students are encouraged to bring and use their own devices on the government's secure education network.

Regarding devices, it was commented how generally those on the market are not designed (or priced) for the education sector. Specific devices with pre-installed software educational applications that align with the needs of learning, are age appropriate, and fill a gap in the market. Another comment relates to zero-rated education websites. Educators have found that it may be the landing page that is zero-rated but when it comes to streaming or downloading content there is often a paywall.

Many participants spoke of how education requires a comprehensive form of digital solution that does not depend on so many disparate integrations from such huge variety of vendors. Such a comprehensive approach requires that there is an offline solution for those learners who do not have access to network

connectivity. Out of the box digital designs can be made very affordable and easily integrated into devices with stored content. Updates and provision of new content can be done when accessing online through community hubs.

In all the countries represented in the meeting there has been a substantial growth in the development and implementation of learning management systems (LMS). A robust LMS can administer, manage, track and deliver learning effectively but it is important to recognise that one size doe not fit all. Not all systems are alike and can vary in their capabilities of meeting the learning needs, levels of engagement and desired educational outcomes. Hence, the information and data from a robust LMS can help inform policy making, but at the same time there needs to be policy guidelines on what the LMS should do. So it is advisable for ministries to have an LMS policy that outlines the educational purpose, applicability and what activities it covers, the content inclusion and exclusion, content creation and ownership, permissions and user access.

In terms of pedagogical policy, then sustainability is an important aspect that needs to be considered. Countries with large numbers of students and teachers may obtain initial funding for large-scale teacher training and device ICT procurement but those devices will need replacing in a few years' time. Training may be on specific products, for example *Microsoft* certification, which thus relates to their products, whereas it is critical that policy reflects the need to have pedagogical training in digital technologies irrespective of the industry solution provider.

One comment regarding the edtech industry and vendor companies was that they could do more to contribute to the training of teachers in the new technologies. This should be their corporate social responsibility, if profiting from the huge growth in edtech procurement then what are they doing to give back to support the teaching community? The edtech operators could also provide additional learning and training support to teacher communities. This harks back to the most preferred sources of recommendations of what technology to choose. Teachers trust other teachers and schools trust other schools. Companies will do well to consider that their support of teaching communities and peer groups will reflect well on their product and services – and probably prove far more valuable than any other marketing strategy.

Nigeria has developed online learning materials for all grade levels, launched last year and supported by partners and resources deployed to digitise teaching and learning. An important ingredient has been how to provide access for assessment and by working with providers they have managed to reduce costs and reach more learners. The e-learning platform has the tools to check the numbers of students being assessed and pedagogically able to check how they have been absorbing and understanding the lesson materials.

The user experience of implementing ICTs in education and e-learning systems in Saudi Arabia has been generally met with a positive response. The kids like the technology, they are not resistant to it and simply need the proper guidance on the best ways to source and select information and materials that support their learning. The platforms are specifically designed to match the curricula, materials and learning objectives and compatible with any device. Equally, the education platform is not allowed to access information or data from any other tools and applications on devices. Another important feature is ensuring parental permissions to help mitigate against potential risks.

In terms of the uptake of technology by students and the use of learning management systems it is clear that more needs to be done to teach and encourage them. In Qatar, when they started looking at their LMS data, they found some students only accessing the system once every couple of weeks or at best for a few days in a row and then going quiet. This informed the Ministry of Education and triggered the necessary interventions across the school system. This included improving the dashboard whereby teachers get notifications of students unable to access and can then intervene with different

methods to reach the learner.
Some useful functions of artificial intelligence applied to e-learning platforms includes monitoring student progress, technical support using applications like chatbots, and monitoring students in examinations. In e-learning, AI can be used to deliver customized lessons to learners, changing the content itself to be more appealing. Tools to detect plagiarism don't usually need AI, but other forms of cheating detection do. For instance, AI can check a sample of a student's writing to detect idiosyncrasies and can then extrapolate from that dataset to determine whether an assignment was completed by that student or someone else. AI is changing online platforms, as we see in MOOCs using it to suggest new courses to students.
There is still a call to push the designers and makers of the education technologies to enhance the experience that supports educational processes. Gaming, for example, is not only for fun but there is an educational value. Some games may not be educational in the traditional sense but can still have educational benefits such as those built around puzzles and problem-solving. Gamification of education allows learners to take active roles in learning and develop technological skills that are needed for their professional careers. Recent studies have shown that some video games can help children in the development of intellectual and emotional skills that support their academic achievement. We should have in mind that companies invest millions of dollars in technologies and educators can partner to enhance the technologies with the regulations and standards of their country. Governments could write down all the governance issue and share with instructional designers and technology companies.

2.5 Risks, Data Privacy and E-Safety

In meeting the concerns over potential risk then the education system needs to engage with all teachers by giving practical guidance and workshops on online safety, which will then help them educate their students to have a better appreciation of their digital footprint and the associated risks. For teachers there remain many questions unanswered, for example what guidelines apply around applications that use facial recognition technology when concerned with child privacy and safeguarding. Then there is the issue of cyberbullying. Bullying happens in schools and now online anonymity and hiding behind a screen can make the cyberbully feel more confident. A key part of answering these questions is ensuring that the IT system employed in an educational setting is administered in one place where identities can be tracked, and corrective measures put in place quickly.

Everyone recognises the risks associated with technology, devices and the internet. The risks are not going away but can be mitigated against with strong e-safety policies in schools. E-safety should form a fundamental part of schools' safeguarding and child protection measures.
As well as following national legislation, school principals need to recognise how technology and the online environment are constantly changing. E-safety policies and procedures should be regularly reviewed. Alongside ensuring that e-safety arrangements are robust, it is important to teach children about staying safe online. Teachers should have ongoing conversations with children about the benefits and dangers of the internet, with the teaching of online safety being not just restricted to ICT and computing lessons. Embedding key messages about staying safe online throughout the curriculum will contribute to making e-safety the norm for learners.
Another important recommendation is for governments to develop a proper "safe environment" policy for both online learning and e-learning platforms. The guidelines of such a safe environment then need to be communicated to the teaching community to educate their kids from simple aspects, like how to choose the right password to more complicated issues of dealing with cyberbullying and harassment. The safe environment policy then serves as a framework to support the choice and design of learning management systems. This approach teaches pupils the skillsets of being a responsible digital citizen, aware of their digital footprint and the impact their online communications can have.

The questions and concerns of risks associated with new technologies in schooling are societal issues. It raises the interesting and problematic question about the control of learning in the physical space at school versus off-campus in the online space. This is where good governance and sound policy making is essential along with clear communication and transparency to ensure parental support, necessary with any cultural shift in the approach to learning. As we have seen with reforms in countries like Egypt and Kenya where they have implemented progressive digital education policies, there can still legislative and judicial resistance. A wider whole government approach to promoting and supporting digital citizenship and digital literacy will have a positive knock-on effect in bringing wider acceptance to edtech implementation in schools.

Regarding potential risk, one reference was made to the dangers of inherent biases in artificial intelligence (AI) when used in the education setting. Some research has already shown that AI leads to some biases amongst those of varying cultural backgrounds or dual-language learners. Bias can creep into algorithms in several ways. AI systems learn to make decisions based on training data, which can include biased human decisions or reflect historical or social inequities, even if sensitive

variables such as gender, race, or sexual orientation are removed. Famously, Amazon stopped using a hiring algorithm after finding it favoured applicants based on words like “executed” or “captured” that were more commonly found on the CVs of men. Another source of bias is flawed data sampling, in which groups are over or under-represented in the training data. MIT has found that facial analysis technologies have higher error rates for minorities and particularly minority women, potentially due to unrepresentative training data. So as academics, scientists and citizens, have a responsibility to educate teacher training institutions to recognise the ethical challenges when deploying AI-based learning technologies.

In Ghana, the national communications authority established the National Cyber Security Authority to monitor the online presence of young people. This requires alignment with the Ministry of Education as the facilitator of the ICT for education policy. The existing safe school policy with zero tolerance of violence, bullying and sexual harassment in Ghana, is thus extended into cyberspace and the virtual learning environment. Previously in 2019, the Ministry of Gender, Children and Social Protection introduced a position paper that addressed the online safety concerns in Ghana and the policy gaps, which states: “Empower children through outreach programmes by encouraging them to embrace the positive use of the various ICT Tools they have at their disposal. Teachers can help to respond to the negatives by supporting young people if they encounter problems online, and by giving them the resilience, confidence and skills that young people need to navigate the internet safely …”

Quality assurance, as discussed by opening speaker, Abiola Seriki-Ayeni, has also been emphasised in Qatar. The sudden need to implement emergency remote learning during the period of school closures saw a dip in the quality of education, not just in Qatar but worldwide. Loss of learning is evident, and countries talk of it needing the next three years just to recover those learning losses. E-learning solutions should have quality assurance tests with recommendations from ministries of education that give schools the guidance to test for functionality, adaptability, navigation and engagement. So, apart from the pedagogical requirements, quality assurance best practices should be to ensure that e-learning solutions create an intuitive experience, that course material can be easily found and updated, that the software aids collaboration and properly helps students engage with the learning process.

The increased development and application of blended learning approaches has started to impact the nature of inspection and quality assurance. The shutdown of schools and the gradual return to timetables caused by the pandemic has resulted in regular school inspections being stopped in many countries. Without inspection there is a lack of standardised information on how pupils are learning, how they are currently being educated and how schools are teaching with e-learning platforms. So in this meeting it was asked whether we need to rethink the purpose of inspection after the pandemic and how can education inspectorates be relevant when schools are partially reopening and employing blended learning models.

In the UAE, they have introduced new regulations to monitor the privacy and security standards of new technologies coming into the education system. The concerns over a child’s data privacy is reflected in most countries, with ministries of education now working to address the challenge. Generally, Edtech platforms collect a significant amount of data when a student sets up their profile on an e-learning website, including name, contact details, passwords, age, identification, gender, qualifications. They may also collect details about the student’s parent or guardian. There may also be some EdTech platforms who monetize such data through data analytics and data transfers. This data could also be used for targeted marketing, especially on social media. In this digital age, where so much personal information is tracked by devices, it is essential for all stakeholders in the education system to realise the importance of data, how it is collected, what is it collected for and what it

is used for, especially a child's personal data.

The proper use of data is strongly encouraged. As management systems have been upscaled recently we are seeing more data come into education departments as in South Africa where the provinces can now access school data and dive deeper into subject specifics. The information on how learners are performing provides an insight into which policy areas need addressing such as teacher training or types of assessment. The reporting is now starting to inform strategies with the ultimate aim of quality education.

Teachers have a role to play in ensuring that learners understand the ethics of using online materials. As well as making sure the material is appropriate and aligned with the curriculum it is also important to be cognisant of the concerns of parents who should also be empowered in helping their kids understand ethics and values. There is a wealth of resources available online, some of it good, some not so good, so a policy recommendation is to classify open educational resources (OERs) and then matching that with national online child protection policy.

School and university campuses are familiar with the cybersecurity risks and the potential harm caused without strong privacy and data protection. A robust IT system is an absolute minimum requirement for educational technology. In Oman the ministry of education uses special dedicated servers for schools so that no outsider can have access to the platforms, including teacher and student information. They have now returned to the full school timetable and although all learning for the younger kids is face-to-face they have found that older students are still inclined to use the hybrid system. Several participants in the meeting mentioned that every country should have its own secure network or cloud for education whereby no data is stored outside of the country.

To meet concerns over the potential risks and harm caused by misuse and poor governance of technology in education, the Nigeria Federal Ministry of Education has launched a two-step program to safeguard learners online and ensure data privacy. It is called "Inspire" for students and "Ignite" for teachers which involves the monitoring of identities, usage of the systems as well as locking harmful content. Trust and identity are two key ingredients in the digital landscape. South Africa has also been addressing cybersecurity issues around online learning which includes educating teachers on the dangers of integrating poorly curated digital content.

2.6 Interaction, Teachers and Pedagogy

The teacher-learner interaction can never be equalled or replaced by technology, yet as we have seen with the impact of the Covid pandemic there is a need to ensure resilience is built into education systems. Technology can play its role in this regard, particularly so with blended learning where educators can balance the teacher-learner interaction with the learner-technology interaction. This is where the digital divide can come into play as they have learnt in Kenya where the capacity of the infrastructure has been a major priority and with connectivity in place, making sure that the devices are amenable for education at all grade levels.

Student interaction and engagement is critical to successful online learning methods, so facilities need to enrich the learning environment that does more than just rely on the recollection or memory of information. Students need to be taught what is a trusted and reliable source of materials and what is aligned with their curriculum and learning levels. The attention and concentration required for quality learning may not be possible to achieve just with online learning and teachers need to see students on campus, particularly when it comes to assessment time. Basic skills can be transformed into emerging technological skills, but the educators need to be sure that the students are digesting the learning materials such that they can elaborate and reflect on the assessment.

For e-learning there are measures and standards that need to be put in place at the student and teacher level in terms of content, technical infrastructure, quality of learning and the adaptability of certain tools. A lot of rich software and tools have emerged in the last couple of years that do have the potential to make the whole learning process very dynamic. However, the face-to-face personal interaction can never be compensated through digital learning. So there is a downside. Hence, it is important to emphasise that the roles of teacher and student change in the virtual learning environment.

Oman has focussed on the professional development of teachers to ensure they have the necessary digital skills and can use the interactive learning platforms. Feedback received during the pandemic was that, although the teachers had acquired far more digital skills, they still found student engagement a challenge with a need for more interactive learning solutions when using educational technologies. The Ministry of Education chose to have more learning options that suit the different needs and characteristics of the students. They also focused on training teachers in how to analyse data from student responses and use it to improve the overall learning experience.

Many people insist that technology cannot lead pedagogy. The primacy of pedagogy is critical, yet

the technological direction of travel is clear, so it is important to have high-performing digital education ecosystem. An ecosystem in the sense that it is both inclusive and the responsibility of the whole society delivered by a collaborative public sector that is unified in ensuring quality education and pedagogy comes first while recognising the impact of technology.

The problems of teaching remotely include not being able to engage all students in the discussion when faced with a large group, similar to a traditional class size, and then the proctoring of exams. Technology has several solutions for dealing with the latter such as tools for detecting plagiarism and educators can change the nature assessment with questions based more on critical thinking. Effective engagement remains more problematic especially as there will often be groups of students more digitally savvy than the lone online teacher. It was also commented, that although it is difficult to engage students online, in classrooms we are not necessarily engaging students fully in a face-to-face classroom.

In South Africa, like many countries there has been plenty of criticism of the emphasis on technology and not on the teachers and learners. Given that technology is not a replacement of teachers we need to be careful of the messaging, particularly making sure that attention is paid to teacher skills, competencies and the support mechanism for the teaching community. With a big difference in access levels and availability of devices amongst people, the role of government in ensuring a level playing field needs to be underscored. As defined in the sustainable development goals (SDGs) a key object of SDG 4 is to address inequality and accordingly avoid the dangers of a digital divide.

The methodology or the capacity of teachers to direct and guide students are very important and here we see a need to ensure the right form of training programs are developed. Instead of just focussing on centralised programs directed by ministries of education, the students need to be studying technology and applying it to learning by themselves. This means teachers have to adapt their methodology in using platforms from the traditional methods of imparting knowledge and information to learners.

The digital enhancement of teacher training can be achieved with an online model of professional development with synchronous and asynchronous training that helps teachers develop online content for their students. It is important that such professional development targets the school principals to give leadership in driving the proper use of educational technologies and also being aware of the necessary psychosocial support with new demands put upon the teaching profession. Any such online training model presents win-win in the digital transformation of teaching and learning.

Kenya has recognised and experienced the essential need of a teacher support system while implementing their digital literacy program. A support system needs to offer assistance to teachers when they need it. The Kenyan solution has been to have an “ICT Champion” in every school district zone who has been given the necessary high-level ICT for education training and are able to support other teachers. This experience has resulted in the country now developing a “national educators” portal to bring all teachers together and share their best practices in how they can utilise technology to enhance education.

In terms of teacher support in ICTs, Qatar’s approach has been to have a project coordinator in each school who trains teachers on how to implement technology in the classroom and in the use of the national learning management systems (LMS). The training of the coordinators starts with the Ministry of Education and then the project leader is in a position to provide further support to parents and students as well as the teachers.

In Ghana, the Covid pandemic exposed some critical challenges and accordingly the Ministry of Education has been delivering its regulatory response to ensure that technology and online learning is properly used to support teachers and students. Focussing the minds of policy makers has already improved accessibility, especially in rural areas and a new project has started to train 10,000 teachers in the use of ICTs; working with partners such as *HP* and *Huawei* to help determine and provide online teaching techniques and strategies to Ghanaian teachers. The HP program does not just target teachers but also ministry officials and policy makers such that they can appreciate what teachers are going through and support them with greater understanding and familiarity. UNESCO is also an important collaborator for developing open educational resources as well as teacher development, particularly in the instruction of STEM subjects.

With Kenya’s now well-developed digital literacy program (DLP) they have realised the different requirements of teachers in basic education when training in ICTs: pre-service and in-service teachers. So the Kenyan education cloud, freely accessible to all teachers, includes a course on ICT for education that allows for self-paced training and practical exercise that address what the teachers will face in the digital classroom. This has led to encouraging much more peer collaboration amongst teachers which has led to a wide community of teachers helping each other in their digital upskilling and

integrating technology into lessons.

Palestine has put considerable emphasis on training teachers in the use of technology and e-learning, as this has not been covered in pre-service training. The digital capacity building of teachers has involved intensive online training via online courses and new methodologies in instructional design. With a standardised, uniform curriculum the ministry of education has condensed some of the content into shorter packages. Like elsewhere in the world, how to tackle assessment online remains a conundrum, given concerns over proctoring and plagiarism.

It is important to acknowledge the question of trust in the education technology. What are the sources of edtech recommendations to teachers? Indications are that it is a lot less from the technology vendors and edtech demonstrators but rather professional peers – fellow teaching staff and school leadership staff are the ones whose advice on technology that teachers are most likely to follow. Recommendations are significantly more likely to be used when from teaching staff and unions or when hearing of success stories in local schools that have been early adopters of edtech. Teachers also feel that the quality of their continuous professional development will improve if there are accredited training courses in the use of technology and more information on what good educational technology actually looks like.

Adaptive individualised instruction can be enhanced through technology by leveraging the power of platforms and machine learning. In the same way that entertainment platforms, such as Netflix, recognise user preferences, then e-learning platforms can assess where the student has gaps in their learning and need extra instruction. The right approach and good governance can then result in having the best teachers online with the best content that reaches a wider audience of students – anywhere, anytime.

The major barriers and lessons learnt from the Covid pandemic are that the cost of investing resources in new technology can often be prohibitive, and the quality of the edtech in improving learning and teaching varies substantially. This is why teachers often take guidance from each other. The best reference for an education application is a respected teacher saying it works, engages and gets results. Yet teachers skills and confidence in the use of technology still represents a significant barrier and is often associated with poor experience of using the technology amongst peers. Of course, connectivity and access to digital services, especially off campus, remain the biggest barrier of all – an issue dealt with in the UNESCO GEM Report consultation of 17 November 2021.

The barriers to engagement are more subtle. When using e-learning to engage students, are the barriers technological or pedagogical? Clearly, just understanding the tech is not enough to inform education systems management. Rather it is how the technology is used by people in the classroom and having a greater understanding of the agency of what is happening. There are many thousands of choices of edtech applications but in the context of sustainable pedagogy it is still in its infancy and more feedback from the teaching community needs to be absorbed by the vendors and developers such that technology designs are better suited to learning outcomes.

Another question that arose is how much technology may impact on structural changes in education systems? The school has always been the centre of learning, the place that was more advanced than society with the most up-to-date resources and information on knowledge. This has changed and the students have access to knowledge in the palm of their hands. Therefore, it is essential to think seriously about adapting pedagogies and the methods applied inside the classroom. If teachers do not understand this then there is a danger that pupils may lose interest in learning. So what do we want the future of learning to look like and how can we blend the technology and the information that is happening in the wider world into the education system?

Several countries have adopted the “flipped classroom” model, a form of blended learning, as is the case in Qatar, where in Doha 80% of students are international. The flipped classroom is where students are introduced to content at home and practice learning and working through the content at school. Hence, the opposite of the traditional model of introducing subject content in the classroom and then assigning homework and projects. In Qatar the technology has relied on students accessing pre-recorded videos in their own time, utilising the

Moodle learning management system, and preparing their work before coming into class. The teachers have had to provide access to lesson content and learning resources through the management system and email. The teacher preparation has involved making lesson videos and developing pedagogies appropriate for the system.

Assessment has been the biggest challenge of the Covid pandemic. Around the world, some exams have gone ahead but most countries have either cancelled or postponed or revised the method of assessment. Reforming the assessment means reforming the curriculum and vice versa. Some form of assessing has been done in countries using their e-learning platforms, in which students can assess themselves with machine assisted scoring, though this does not contribute to the proper examinations and grading. In tertiary education online assessment has been much more successful but problems arise at the primary and secondary levels where students do not finish the learning or attendances slip. If technology assisted assessment can be adapted, then the first area could be the STEM subjects. In Bahrain they have had to change the assessment methodology in line with the constraints of the e-learning platform as well as possible concerns over cheating.

With the CBC in Kenya they have observed the need to have more formative assessment and less summative examinations. It is critical to daily life that the testing of learners gives an authentic assessment of their abilities, motivations, competencies, and proficiencies to perform future tasks. From a governance point of view this needs to be reflected in the leadership of institutions where responsibilities overlap, such as in Kenya which has the Institute for Curriculum Development for curricula, the National Examinations Council for assessment and the Teachers Service Commission for teacher management.

2.7 Closing Statement

Christine Nasserghodsi

This closing statement in conjunction with the presentation in Appendix C.

In addressing some of the new frontiers in governance for quality learning at first sight it may seem that regulation and innovation are odd companions. Yet, we found ourselves in a time whereby innovation and technology have brought unique challenges as well as unique opportunities to regulators. So regulators and governments need to redefine and sometimes broaden the scope of what they are doing. With that comes the need to engage in some new uncharted activities and to engage in some familiar activities, but in new ways. Here we discuss four of these activities, in which the reward will lead to increased opportunities.

Fresh activities include action on the research on the efficacy of education technology and setting quality standards for the use of technology in education. Familiar activities such as curriculum reform and evaluation are those that may be transformed by technology. Firstly on the idea of research, as the UNESCO GEM Report concept note for 2023 states, both the tech sceptic and the tech enthusiastic have sound logic. We know that technology has tremendous potential, but we also know that without it being in the hands of people who are equipped and empowered then it is not likely to have the desired impact. There is also so much that we do not know even when research studies conducted on the efficacy of edtech tend to have been conducted prior to the Covid pandemic. Even pre-Covid was a very different landscape. Students already have far greater access to technology, even if it is far from equitable, and teachers have far more experience now working with edtech. So schools and school systems alongside regulators really need to engage in something of a strategic rationalisation with edtech.

Firstly we need to review and re-imagine the mission and vision, and believe the purpose answers the question of what does it mean to educate today? This requires taking stock of existing practices, digital tools and digital resources, the number of which have grown exponentially. For many educators and for many governments providing education, they need to assess the strategic alignment of practices, tools and resources. From there, policy makers can begin to identify and diagnose gaps – where there might be edtech that is extremely purposeful or edtech that still needs to be developed. With that, they are then well positioned to enable and to advise their stakeholders going forward.

Governments are in the unique position of being able to see education at scale and to work with stakeholders to create regulatory frameworks, along with forming public private partnerships to support governance and give quality assurance for effective education. This might include new forms of licencing and accreditation, partnerships with local content providers, online educational standards, and working with new forms of teacher training. What might it be like to be a primarily online teacher and what are the capabilities that need to be built to do that?

When we think of the more familiar activities that can be transformed by education technology, there is plenty to be excited about in the potential for technology to really improve and enhance quality assurance and education. There are three main

pillars to quality assurance are: external evaluation, self-evaluation, and continuous improvement. Inspections are critically important to advancing education systems, but external evaluation is only going to be really effective when educational institutions are able to engage in self-evaluation, preparing for accreditation. And finally, the need to continuously improve is based on the outcomes of self-evaluation and external evaluation.

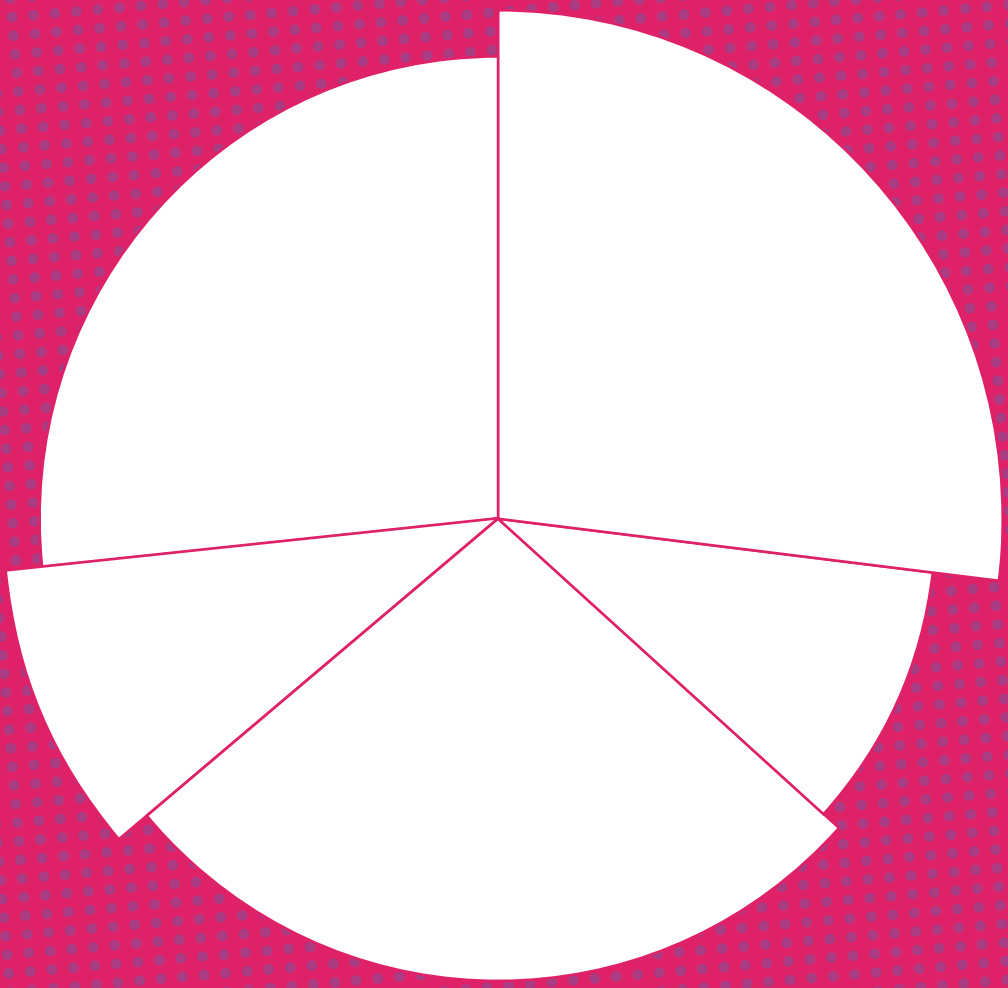
It is important to note that resources required when implementing an ongoing program of monitoring, evaluation and quality assurance. It is expensive and very labour intensive. Yet digital technologies can improve the efficiency and impact of evaluation, then allow regulators to experiment with methods to evaluate their digital education. So we need to re-evaluate quality assurance frameworks to make sure that they are fit for purpose. When we have so much learning happening online, do we need to strengthen the online elements of quality assurance frameworks? Do we need to include quality assurance standards for hybrid learning? How might that look different at K12, TVET and university as well as lifelong learning? But technology can enable us, bringing data and informative evidence that allows schools to use such automated processes to compare their self-evaluation ratings year-on-year, access their external evaluations, and deploy school improvement plans.

Another opportunity when it comes to monitoring and evaluation is getting good real time data. In quality assurance and education improvement, we have seen in several countries effective use of research, artificial intelligence and diagnostic tracking of literacy assessments through literacy attainment coaches. This program has combined high technology with accessibility, with an offline solution. In places such as Lagos State we are able to see instant results on a dashboard, and teachers can receive instructional recommendations to meet the needs of students, whether they have 30 in a class or 80 in a class on the same day as their assessment.

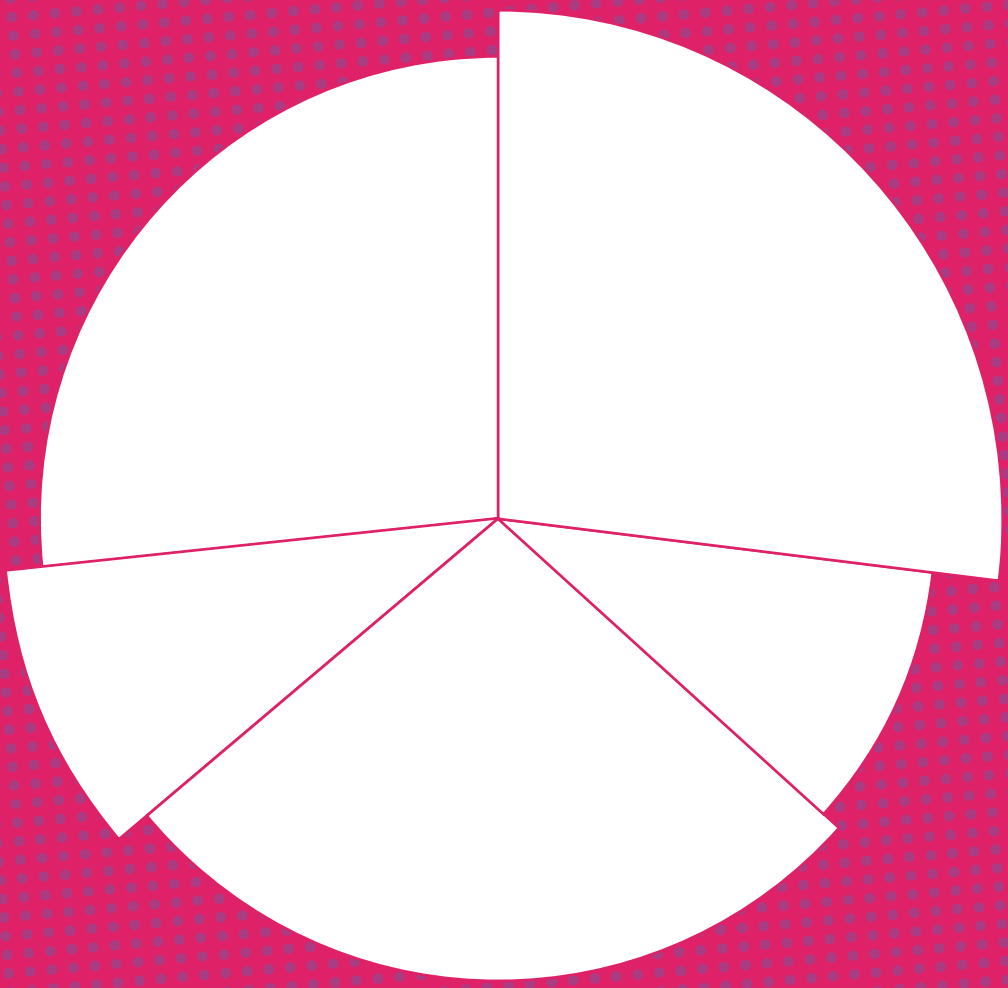
The other important area is thinking strategically about the curriculum. With new ways of learning, backed by robust data, we are now in a place where we can begin to re-imagine and to reform curriculum. The right technology can help us not just engage in more effective monitoring, but we can use the results of student performance data alongside current and future labour market trends. Hence, can rapidly align curriculum content to meet the needs of the hour. An example of this is the *iBox* in Ghana, which enables teachers to deliver to classrooms and have video content in those schools that do not have online connectivity. The insights from this Covid crisis have told us that learning can equip and empower educators to shape the future of learning and to engage in the change that is required for innovation and transformation.

- End -

For further details or copies of this report, please contact john.glassey@brains.global



APPENDICES



APPENDIX A

Governance and Regulation for Quality Learning in an Age of Digital Acceleration

Lagos State Government
Office of Education Quality Assurance

Mrs. Abiola Seriki-Ayeni, Director General

We knew that education technology could transform the landscape of learning

Yet, we suspected that it might take a long time

Or be the super-hero power of the most privileges

There were also good reasons to be skeptical

Many software subscriptions reportedly went un-used or under-used

Software efficacy studies always seemed to be funded by or completed by the company itself

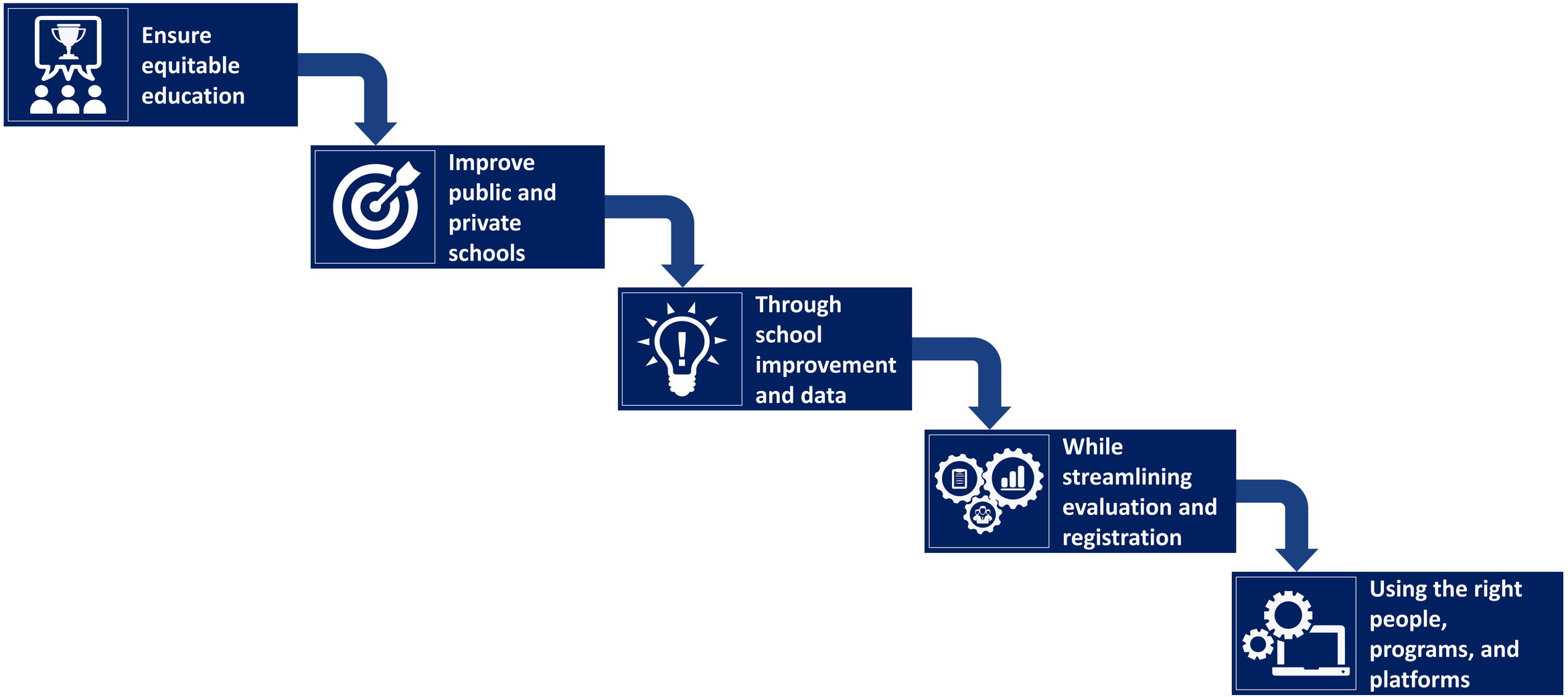
Digital acceleration in the Lagos context

While digitization and automation of quality assurance functions were part of my office's remit, COVID-19 closures presented us with a unique opportunity to consider the role of regulators in continuity of learning and, with that, the role of regulators in promoting quality learning in new spaces using new platforms.

Lagos is a large and diverse state in Nigeria with approximately 20 mn people and approximately 20k schools.

Schools range from premium international schools to unregistered, low cast private schools.

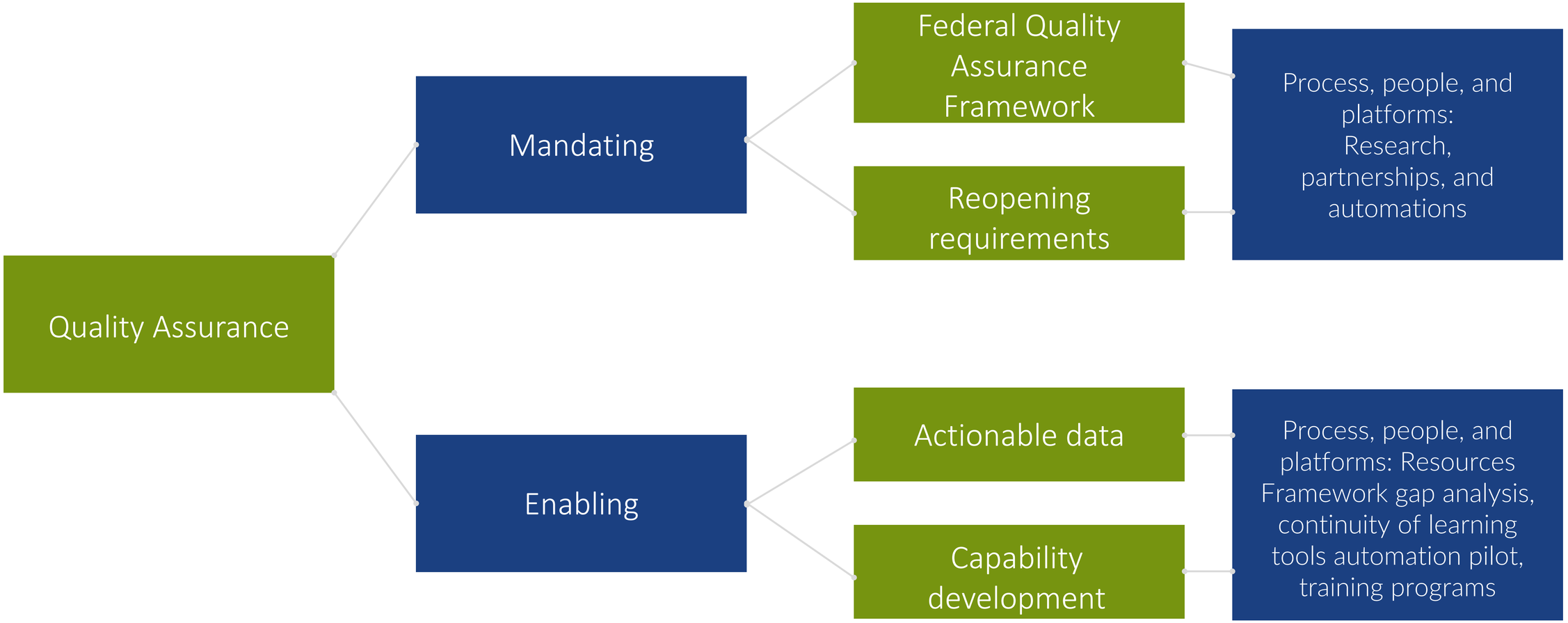
Our strategic aims were clear well before COVID-19.



Once COVID-19 closed schools

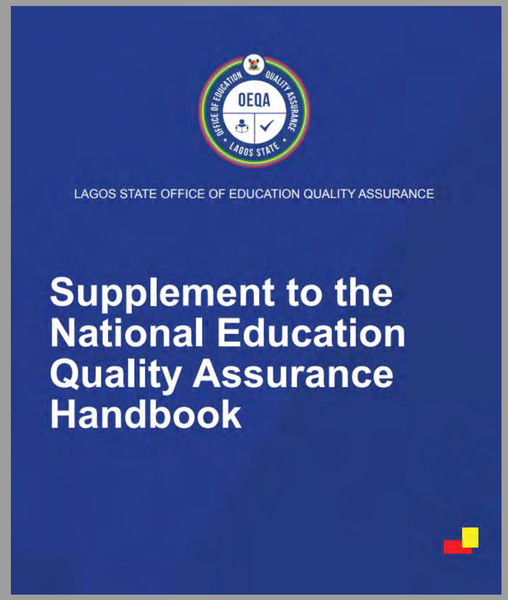
We knew that we needed to enable learning across a diverse cross-section of public, private, registered, and unregistered schools, while continuing to advance our mandate

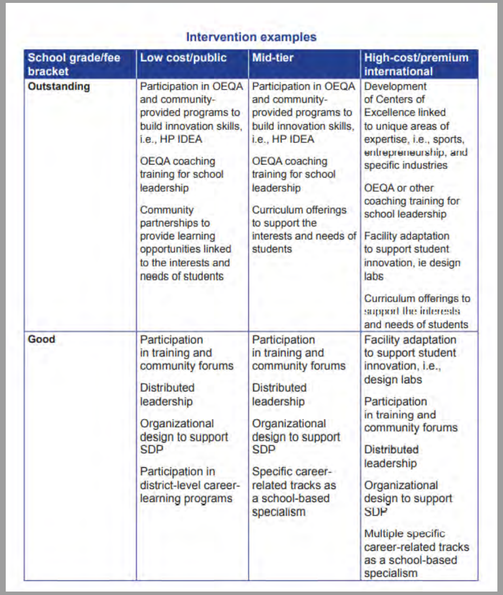
We developed two parallel tracks to meet our mandate and to address the need of the hour



Mandating: Practical Use of Federal Quality Assurance Framework

Handbook developed to translate requirements into actionable interventions across price points and learning mode (synchronous, asynchronous, in-person, on-line, paper-based)





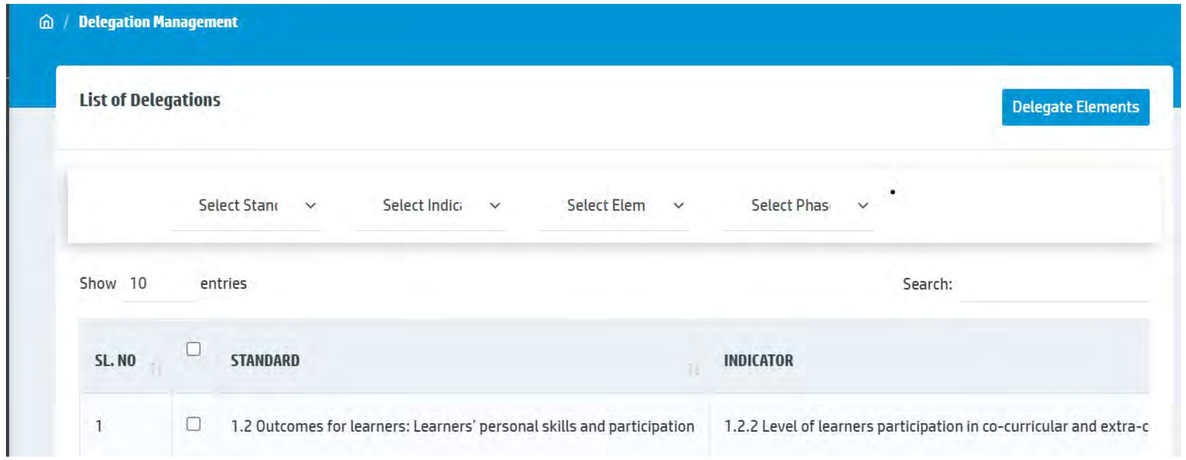
Intervention examples

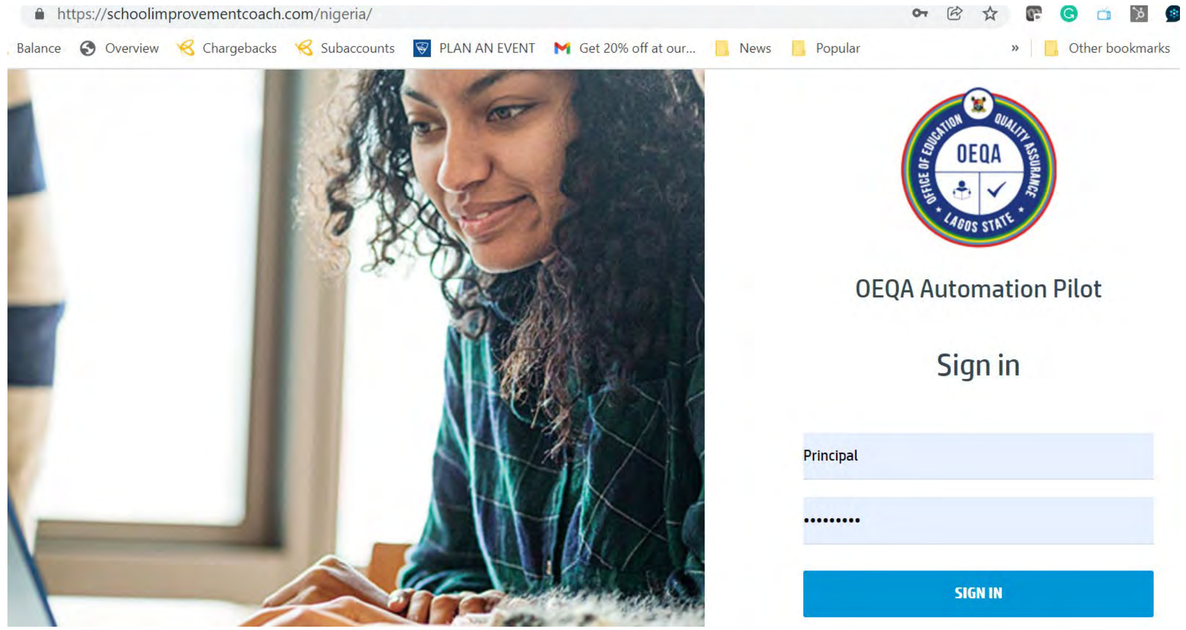
School grade/fee bracket	Low cost/public	Mid-tier	High-cost/premium international
Outstanding	Participation in OEQA and community-provided programs to build innovation skills, i.e., HP IDEA OEQA coaching training for school leadership Community partnerships to provide learning opportunities linked to the interests and needs of students	Participation in OEQA and community-provided programs to build innovation skills, i.e., HP IDEA OEQA coaching training for school leadership Curriculum offerings to support the interests and needs of students	Development of Centers of Excellence linked to unique areas of expertise, i.e., sports, entrepreneurship, and specific industries OEQA or other coaching training for school leadership Facility adaptation to support student innovation, ie design labs Curriculum offerings to support the interests and needs of students
Good	Participation in training and community forums Distributed leadership Organizational design to support SDP Participation in district-level career-learning programs	Participation in training and community forums Distributed leadership Organizational design to support SDP Specific career-related tracks as a school-based specialism	Facility adaptation to support student innovation, i.e., design labs Participation in training and community forums Distributed leadership Organizational design to support SDP Multiple specific career-related tracks as a school-based specialism

Mandating: Self and external evaluation

Automated Quality Assurance process launched for easy school registration and remote monitoring and evaluation

Developed in partnership with HP and Mirai Partners



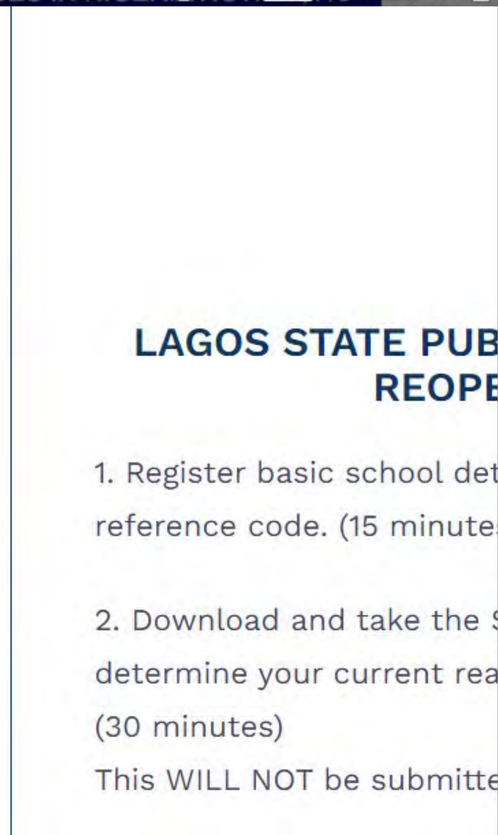


Mandating: Reopening requirements

We knew that to be able to reopen, we needed to be willing to close again.

We developed clear, but agile reopening requirements cascaded to stakeholders via a digital course.

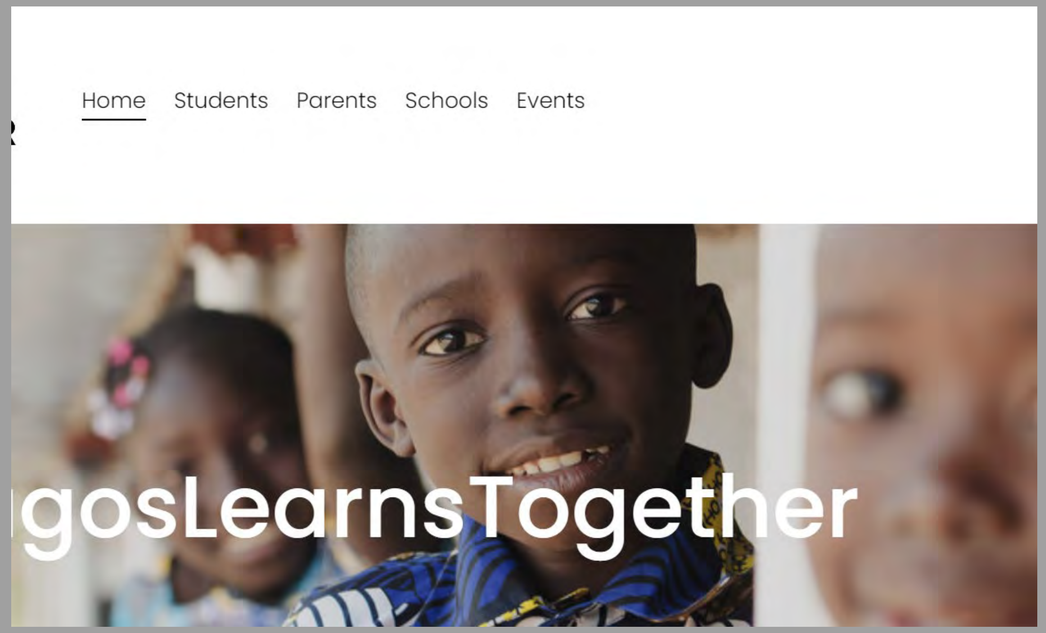
As one of the first locations to reopen, our requirements drew from national COVID-19 guidance, the UNESCO COVID-19 Response Kit, and global benchmarks,

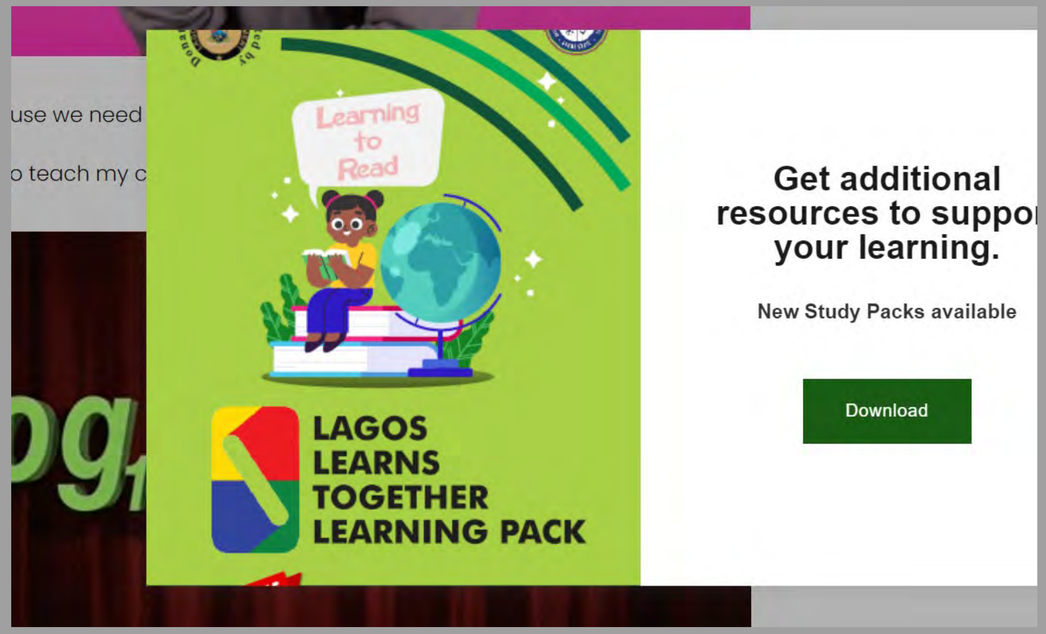


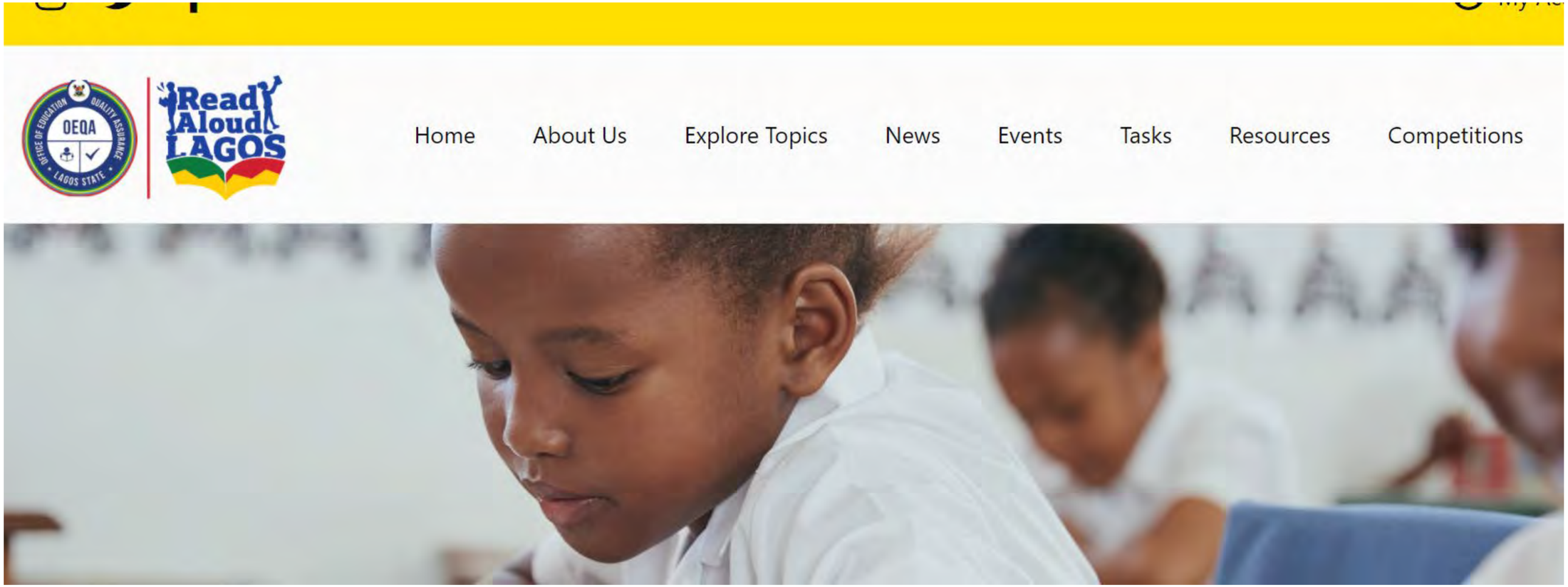
Enabling: Lagos Learns Together

Lagos Learns Together is an OEQA initiative providing learning content, resources, and strategies to public and private schools.

Initially developed during lockdown to provide continuity of learning to all, Lagos Learns Together has provided high quality print packs to thousands of learners across the state as well as guidance on distance and hybrid learning for schools, parents, and students.







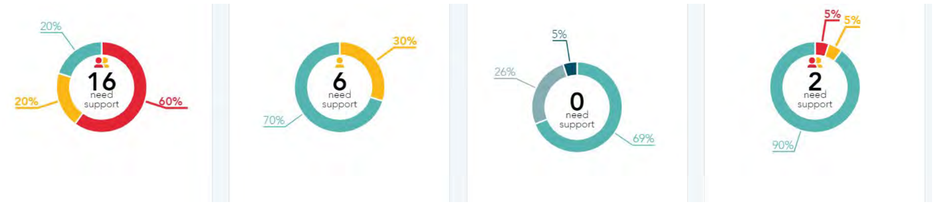
Enabling: Read Aloud Lagos

Read Aloud Lagos is an initiative intended to foster a love of literacy among the students of Lagos State

Launched during lockdown, Read Aloud Lagos included Read Aloud events, recordings, competitions, webinars and the development of a site to support access to reading content and exercises.

Enabling: Ensuring quality through data

We embarked on a pilot to use AI to assesses and improve the quality of literacy at a representative sample of private schools across the state



Enabling: Launch of HP IDEA

Digital learning is here to stay

Partnered with HP to develop the Innovation and Digital Education skills of top practitioners at public and private schools

Weekly training leading to train-the-trainer model

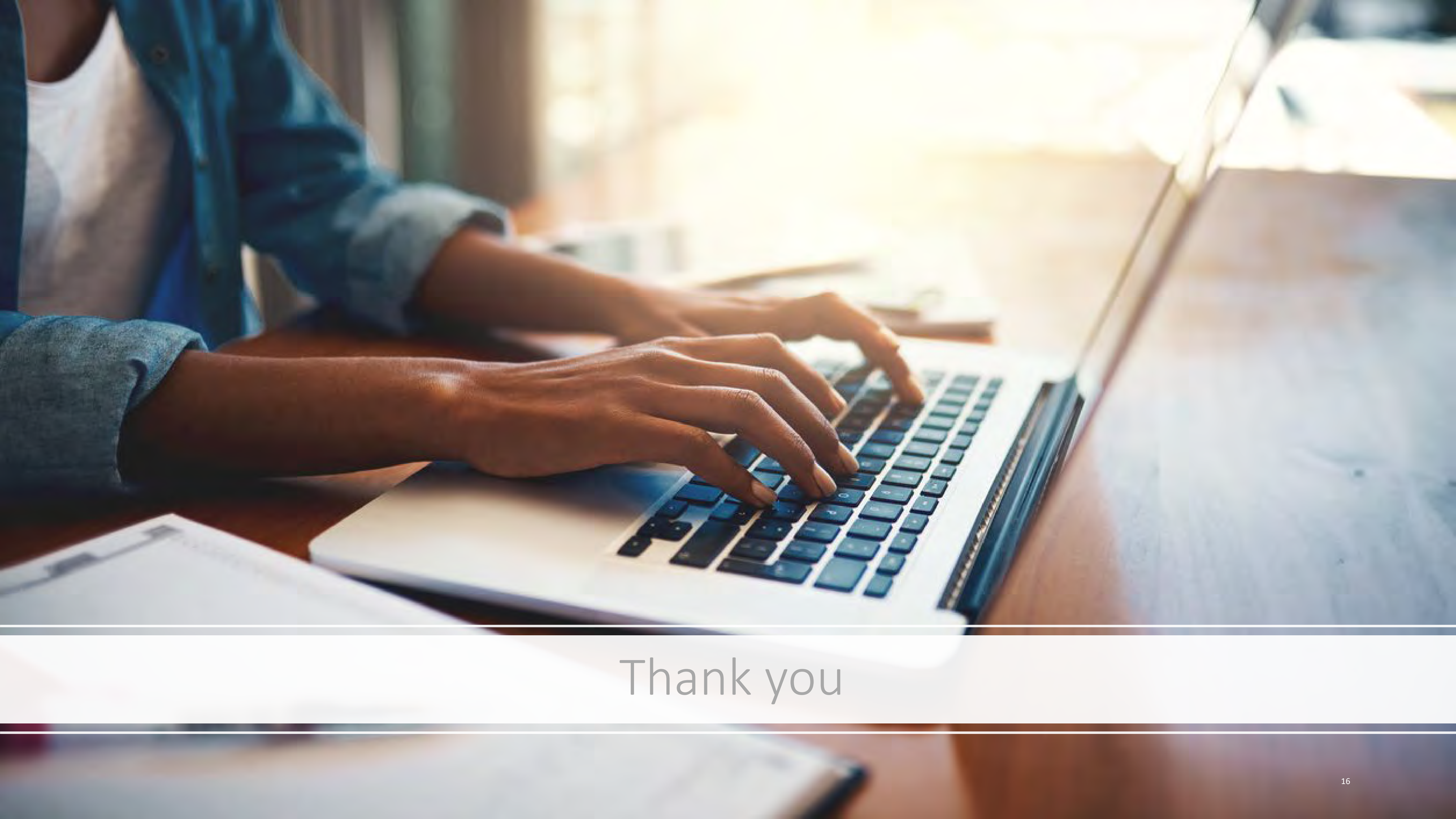
Intended to impact 50k teachers by the end of the year

PD with the DG: Online QA courses

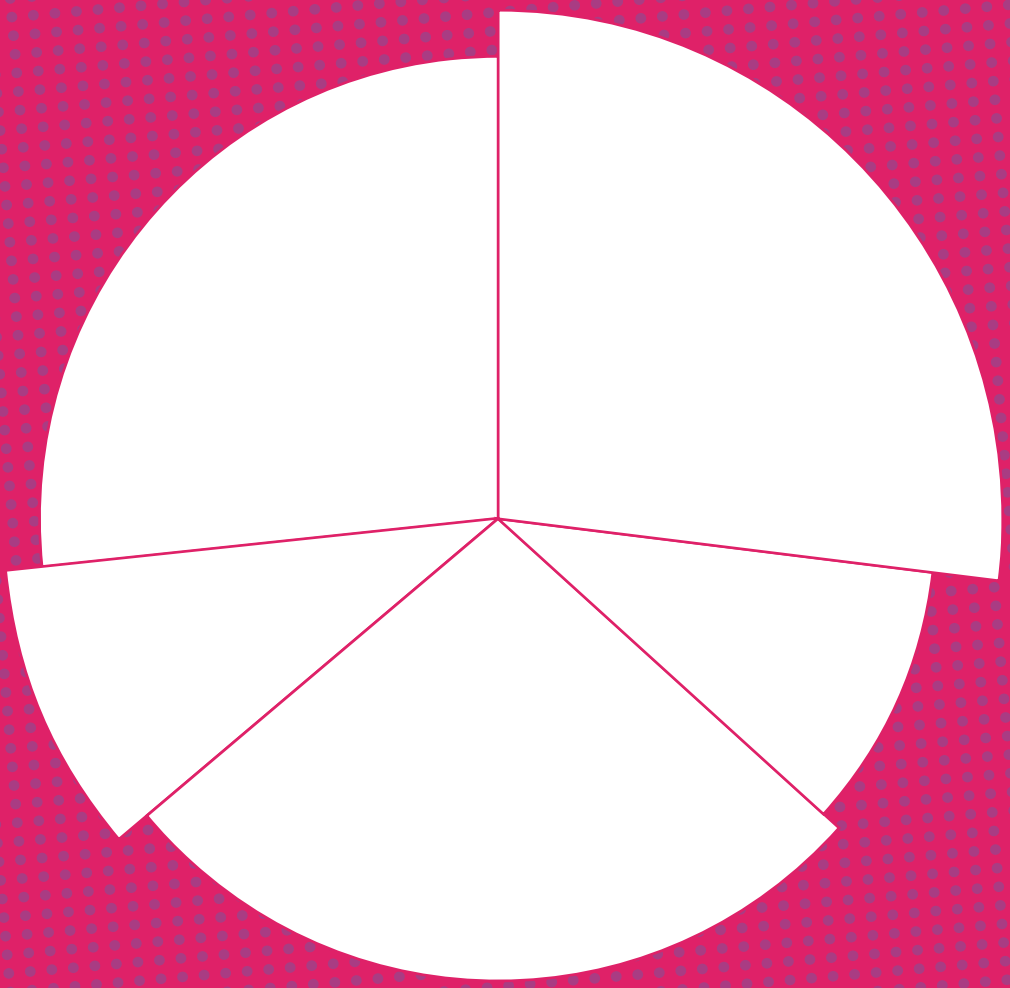
Development of online QA courses, content, and training manuals to develop the skills of officers and school leaders

Intended to long-term sustained use to support

- The professional skills of OEQA team members
- The inspection and grading process, including monitoring reopening requirements
- Improvement of teaching, learning and leadership across the Lagos State schools
- Supporting digital teaching, learning and leadership



Thank you



APPENDIX B

unesco
Global Education Monitoring Report

2023

Concept note
2023 Global Education Monitoring Report
Technology and education

Consultation meeting with GOLA!/Brains Global
Education technology: governance and regulation for quality learning

9 February 2022

Manos Antoninis, Director, Global Education Monitoring Report

GEM Report role in SDG 4 follow up and review

Editorially independent team based at UNESCO since 2002 with extended mandate in the 2015 Incheon Declaration to:

Monitoring part

'be the mechanism for monitoring and reporting on SDG 4 and on education in the other SDGs'

Thematic part

'report on the implementation of national and international strategies to help hold all relevant partners to account for their commitments'

Previous GEM Report themes

2016	**Education and the SDGs**	Sep 2016
2017/8	**Accountability**	Oct 2017
2019	**Migration and displacement**	Nov 2018
2020	**Inclusion**	Jun 2020
2021/2	**Non-state actors**	Dec 2021
2023	**Technology**	**June 2023**
2024	**Leadership**	Jun 2024

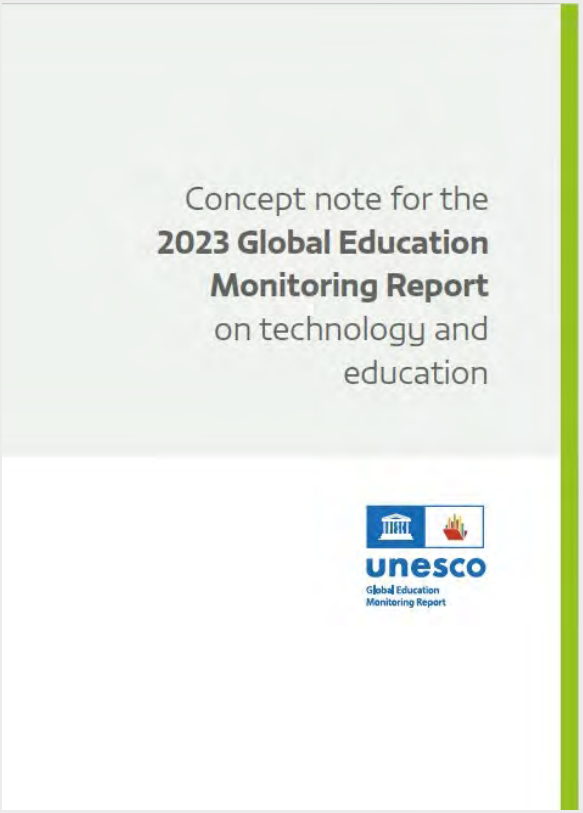
2023 GEM Report approach

Context

- Technology and SDG 4
- Covid-19 and the role of technology
- Technology in education divides

Focus

- Key education challenges and technology
- Minimum conditions for technology to support education
- Other technologies outside ICT



Framework (1): Challenges

What is the education we want? Can technology help?

1. Access, equity and inclusion

Access for disadvantaged groups: Hard-to-reach learners

Access to content: As much in as attractive and cheap formats

2. Quality

Basic skills: Transform pedagogy, engage students, improve learning

Digital skills: Provide new skills that technology demands

3. Technology development

How can education systems support technological development?

4. System management

How to make assessment and other education management data more relevant and widely used?

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Framework (2): Minimum conditions

What conditions to be met for technology to support education?
How can education systems:

1. Access to technology
…ensure that all learners have access to technology resources?

2. Governance and regulation
…protect learners from the risks of technology?

3. Teacher preparation
…support all teachers to teach, use and deal with technology?

Overarching questions (1)

- **Quality- basic skills:** How can technology transform pedagogy to engage students and improve learning, especially in the context of virtual learning environments used more widely over the last two years?

- **Quality- digital skills:** Can education systems provide learners with the new skills that technology and the knowledge economy demand?

- **System Management:** With improving data collection and analysis, how can assessment and other education management data be more relevant and used to support education policy and practice?

Overarching questions (2)

- **Governance:** Given a variety of risks associated with content, contact and conduct, how can education systems and schools protect learners from the risks of technology?

- **Regulation:** With the impact of COVID and greater use of EdTech is your country enacting or reviewing privacy, security, and safety legislation in education? Consider new technologies such as facial recognition and the ethical applications of artificial intelligence.

Next steps

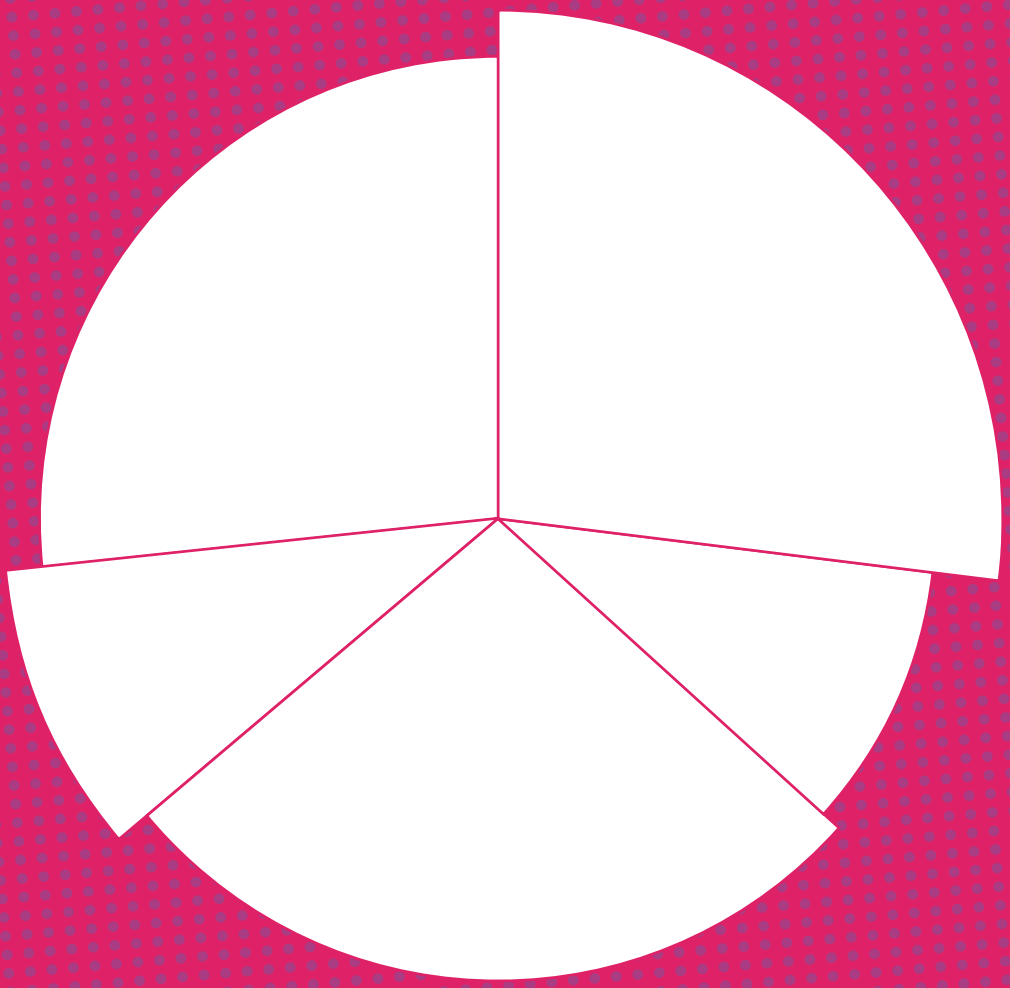
Online consultation
What do you think should this report cover?
Send your comments and recommendations!

New chapter of **PEER** country profiles
www.education-profiles.org

unesco
Global Education Monitoring Report

Download the 2023 GEM Report **concept note**
Join in the online **consultation**

https://en.unesco.org/gem-report/2023/technology



APPENDIX C

New Frontiers in Governance and Regulation for Quality Learning

Christine Kerlin Nasserghodsi

Mirai Partners

Redefining the role and remit of regulation and governance

RESEARCH

Action reseach on the efficacy of education technology

MONITORING AND EVALUATION

Leveraging technology for improved, more supportive, and more transparent processes

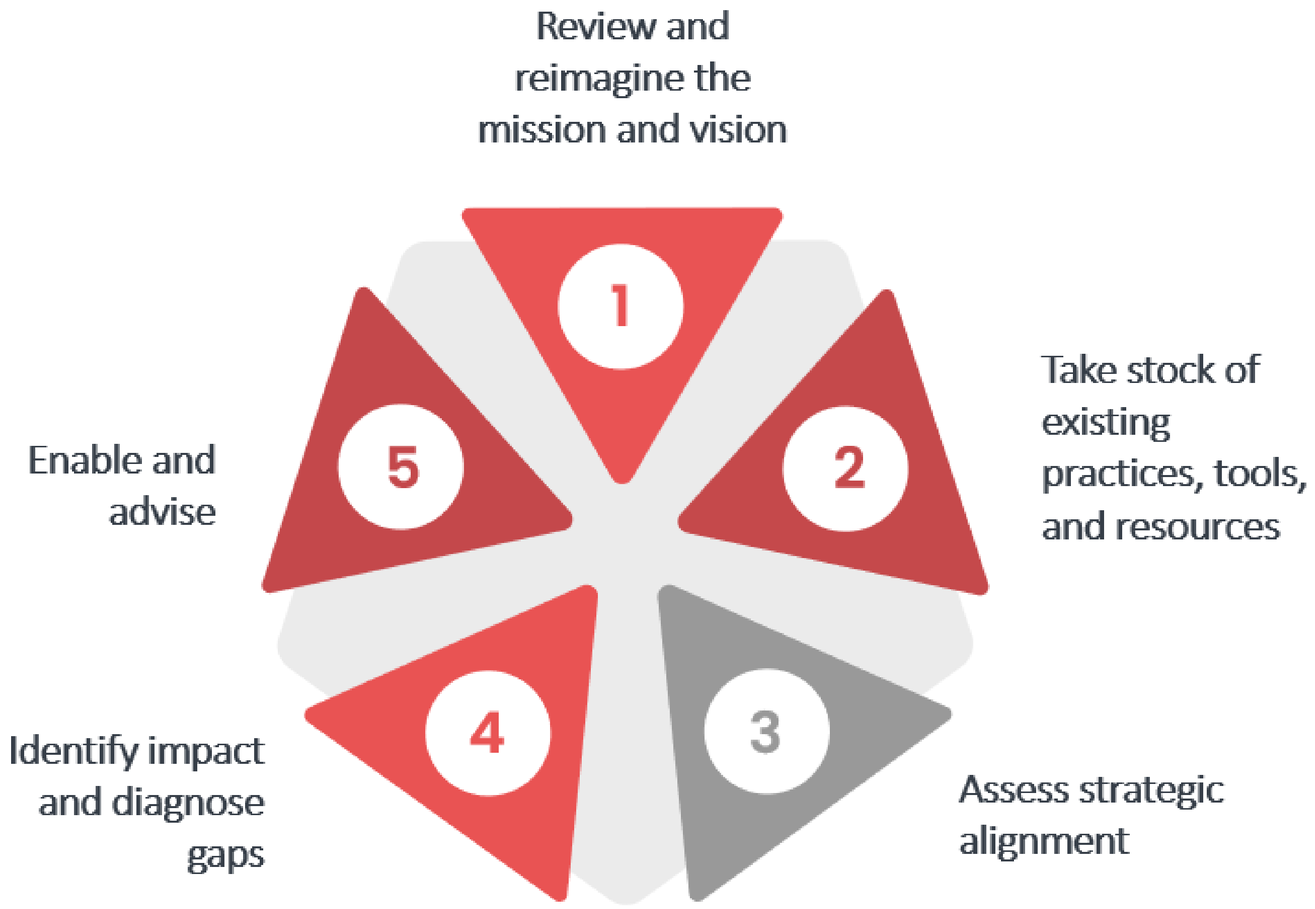
GUIDANCE

Evaluating and setting quality standards for education technology

REIMAGINING & REFORMING

Broaden and shorten curriculum review to implementation cycles

- New programs and policies
- Improved processes
- Greater stakeholder engagement
- Transformed regulatory value-chain



Research, digital rationalization, and advisory

Potential goals for regulatory sandboxes and public-private-partnerships

New forms of licensing and accreditation

Partnership with ed tech for localized software and content development

Online education standards

New forms of teacher training

External evaluation

Self-evaluation

Continuous improvement

The three pillars of education quality assurance

Global challenges and opportunities administering effective quality assurance

S

Baseline requirement for national/local school improvement
Case studies of effective QA – OFSTED (UK), KHDA (UAE)

Strengths

W

Costly – Ofsted annual budget of GBP 150 mn
Labour-intensive
Ofsted – 2 days
UAE – 4-5 days

Weakness

O

Digital technologies to improve efficiency and impact of evaluation; experiment with methods to evaluate digital modes of education

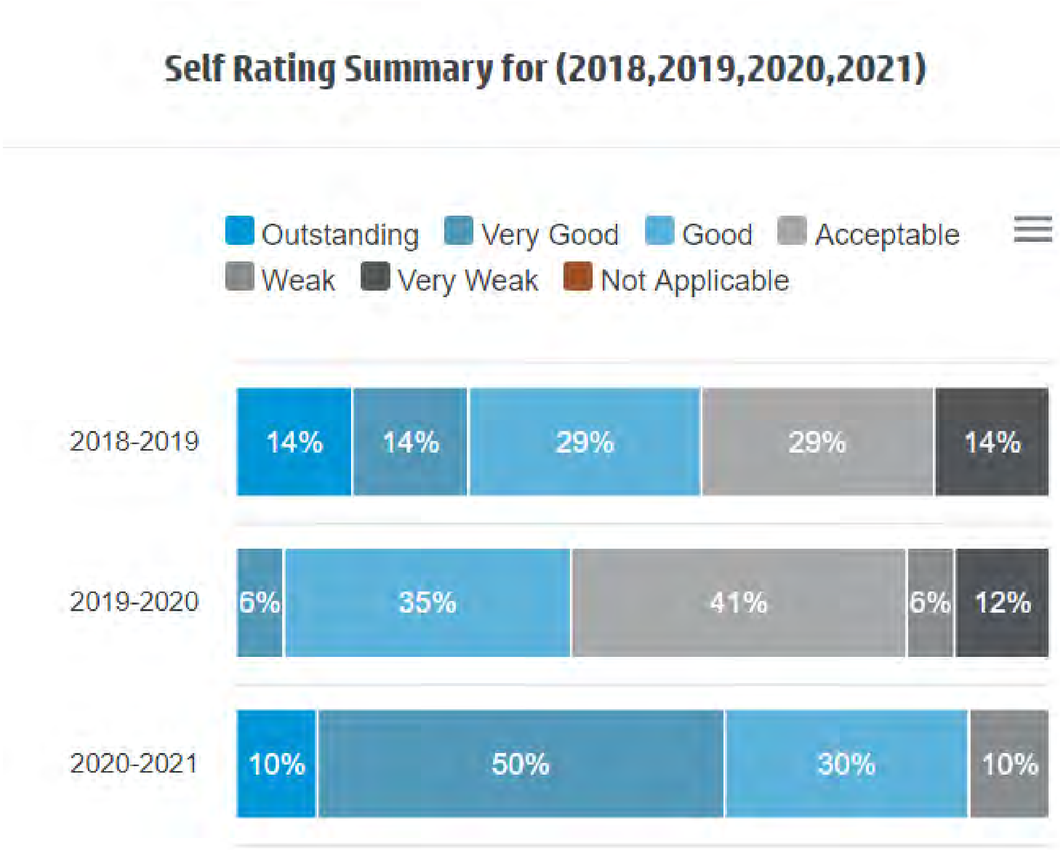
Opportunity

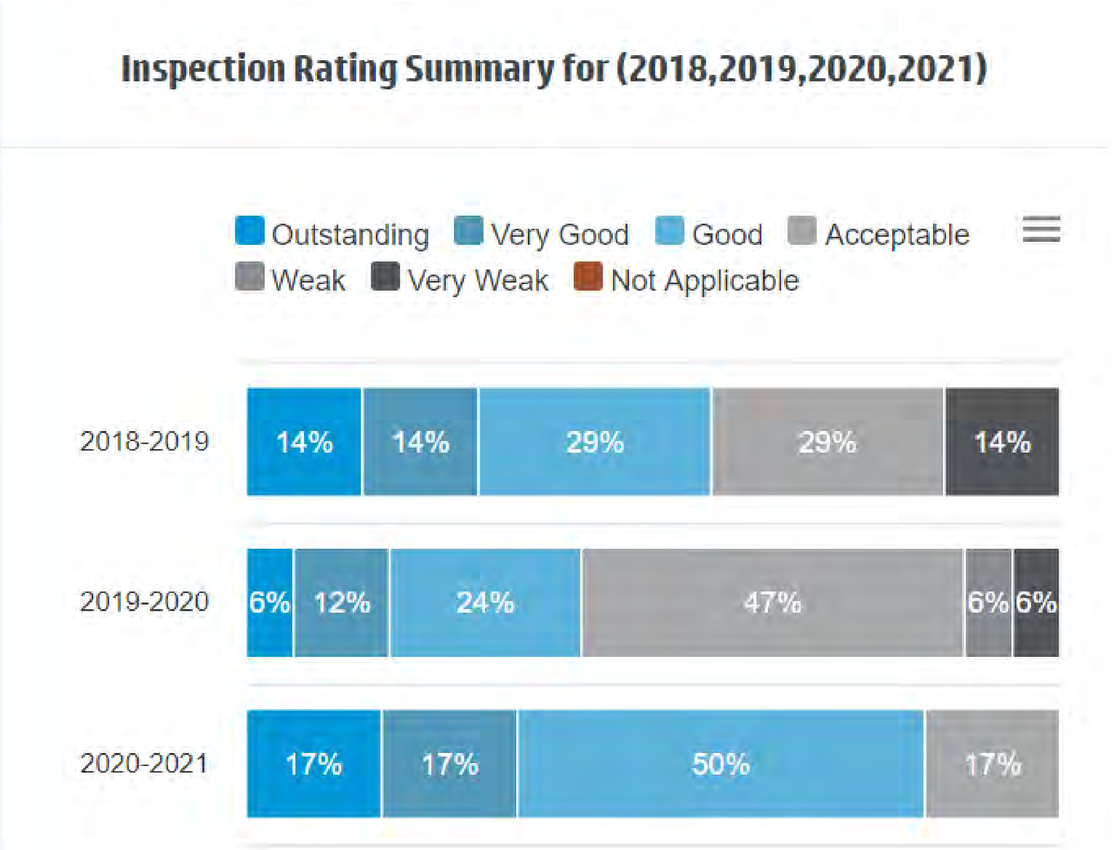
T

COVID-19 disrupted education monitoring and evaluation; QA frameworks need to be adapted to reflect new education models

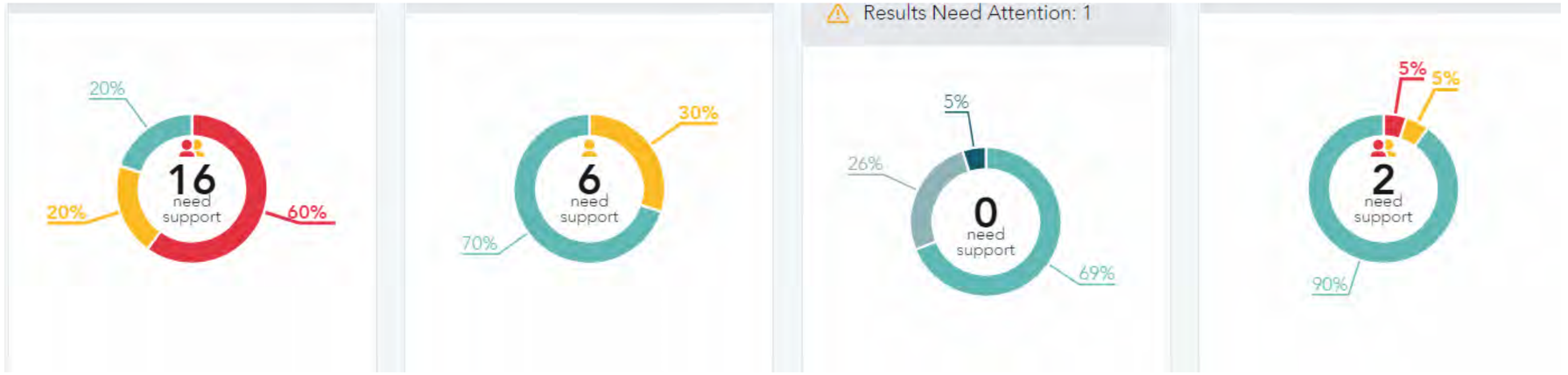
Threats

Real-time data for decision-making





Literacy and AI: Monitoring and evaluation meets actionable data



Organization

Quality Assurance Department for a large regional Ministry of Education

Rationale

Lack of student performance data makes it difficult to assess the quality of instruction at private schools (9:1/private:public schools)

Process

Assessed representative samples of Grade 3 students at private schools; Delivered by Ministry Officers as part of Whole School Evaluation

Additional benefits

Identification of trends across schools; increased professional development and identification of local benchmark schools

Reimaging and reforming

Refreshed and relevant curriculum standards

Data-driven instruction

Curriculum gap analysis

Ease of content distribution

Let’s shape the future.