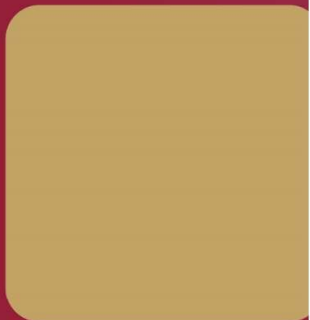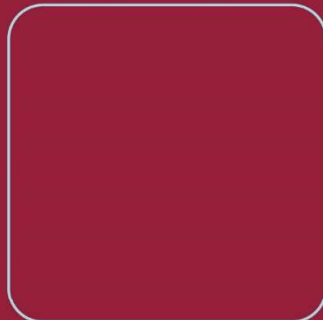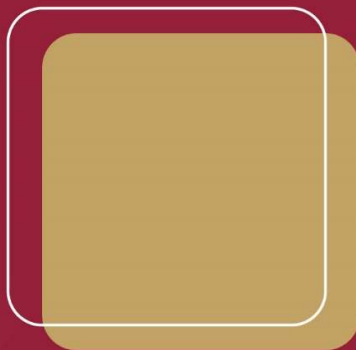# POLICY GUIDELINES ON DIGITIZING TEACHING AND LEARNING IN AFRICA

This document provides guidelines for policy makers, teachers and education administrators on digitizing education systems as a response to COVID-19 and post COVID-19.

Contents

1. Introduction

COVID-19 is fundamentally a public-health crisis, but its social and economic impact on African Union member states are inestimable, particularly on the Education sector. UNESCO monitoring as of 1st May 2020, report that approximately 1,268,164,088 learners have been affected due to school closures in response to the pandemic, 177 countries have implemented nationwide closures and 5 have implemented local closures, impacting about 72.4% of the world's student population (UNESCO, 2020). In Africa, schools are closed in at least 52 member states (UNICEF, 2020), teaching and learning halted and learners and teachers alike are forced to adapt to a new order of education delivery. Homeschooling and Open Distance and eLearning (ODeL) have been the default response mechanisms to mitigating the effect of the pandemic on National education systems.

These responses however create a brand new and untested paradigm to not just the learners but also to the teachers and policy makers alike. In some member states, teaching and learning are completely halted, assessments are stopped and the fate of the academic session is hanging in the balance. The digital divide that exists also means the response mechanisms being adopted automatically excludes a significant number of teachers and leaners, particularly in the rural and disadvantaged urban settings. The disruptions caused by this pandemic will not just be a short term concern, but are likely to have long term costs on the entire national education development ecosystem.

The Digital Transformation Strategy for Africa (DTS), endorsed by the 2020 Thirty-Sixth Ordinary Session of the Executive Council (EX.CL/Dec. 1074(XXXVI), identified Digital Education as a priority which will be discussed at the 2nd AU Mid-year coordination Summit in in 2020. Digitalization of education entails all the facets of quality, from organizational issues, technological infrastructure to pedagogical approaches (Bates, 2015; Selwyn, 2016). It also promotes internationalization via online and flexible educational programs (Conole, 2014; O'Connor, 2014). In addition, it aids administrative solutions, plagiarism, systems to detect cheating, systems for data security, storage of research data, library services and diverse learning resources, including prospects for better collaboration across campuses (Khalid et al., 2018). More so, digitalization also entails adequate competencies for those involved (Rienties et al., 2013)

Presentation of the Problem

The digital divide, lack of stable electricity and other infrastructure needed to actualize digitization and ODeL, a nonexistent culture of eLearning in most African education systems are a major stumbling block to implementing an inclusive sector response to COVID-19. As the African Union Commission, numerus bilateral virtual meetings have been held with various education technology support outfits geared towards continuous learning and mitigate long term effects of the pandemic on teaching and learning. After clearly assessing the majority of the platforms presented, the question of inclusivity still remains. This paper will attempt to outline a series of guidelines to digitization and adoption of ODeL using the African Union DOTSS[1] approach as a long term cushion to the effects caused by the COVID-19 pandemic. In addition, it will attempt to present processes and procedures to ensuring that the right eLearning and digitization products are adopted.

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[1] DOTSS is an acronym for **D**igital connectivity, **O**nline and offline learning, **T**eachers as facilitators and motivators of learning, **S**afety online and in schools and **S**kills focused learning.

2. Discussions of the Issues

i. Teaching and Learning Pre-COVID-19

Teaching and learning before COVID-19 pandemic have largely been conducted through face to face traditional interaction with some institutions, particularly in the higher education sector using one level of technology or the other. However, the pandemic has further exposed the lack of shock absorbers in most teaching and learning ecosystems in Africa. As observed by UNESCO Institute for Statistics, that East, Western, Central Africa countries have the highest rates of education exclusion. Over one-fifth of children between the ages of about 6 and 11 are out of school, followed by one-third of youth between the ages of about 12 and 14. In addition, almost 60% of youth between the ages of about 15 and 17 are not in school (UIS, 2020).

The COVID-19 pandemic did not however, create all of the challenges currently being faced by African education systems. It is reported that in Africa 83% of children and adolescent are not achieving the minimum proficiency in reading and mathematics, only 50% of children with disabilities in developing countries go to school, the continent already faced a teacher to student ratio crises, girls in Africa are married in childhood (World Bank, 2017) each year, with little chance of completing their education, 15% of pupils in primary are out of school, 33% in lower secondary and 54% in upper secondary. In addition, the gap between what children are learning and what communities and economies need, is growing (UNICEF, 2020).

ii. Outcomes of the Specialized Technical Committee on Education, Science and Technology

The ministers of Education, Science and Technology met on the 30th of April 2020 to deliberate on the impact of COVID-19 on African education systems and collectively proffer responses that will help mitigate these challenges. All ministers endorsed the DOTSS as the foundation for which interventions by all member states, the African Union Commission, development partners and all stakeholders is built. The ministers call for a coordinated action among African countries with three main pillars and two the implementation methodologies to implementing the pillars.

Table 1

Pillar 1	Pillar 2	Pillar 3
To ensure continuous schooling and learning online and offline particularly for vulnerable children, girls and the disabled in deprived communities without access to electricity and internet;	An African plan for re-opening schools with appropriate strategies to catch-up on the lost period of learning and implement back to school campaigns and implement measures to curb further infections in schools and educational institutions and;	To document the impact of school closures on girls and vulnerable children, and other vulnerable groups, as well as good practices, and monitor learning engagement with support from partners, and with the view to facilitate inter-country learning and up scaling of good practices.
Implementation Methodology		
Prioritise investments in Internet infrastructure and facilitate broadband connectivity coverage to all education institutions, schools, universities and colleges, particularly those in rural areas, and remote learning and teaching platforms and tools through digital technologies and traditional media such as radio and television, and advocate for access to free data for a period and education content available through Telecom companies and other digital service providers such as search engines	Collaborate closely with all partners including the UNICEF, UNESCO and other multisector partnerships such as the Global Education Coalition to provide appropriate support to AU Member States to implement the education Response to COVID-19	

iii. Digitization for COVID-19 and Beyond using DOTSS

Table 2: The DOTSS Table

D	O	T	S	S
Digital Connectivity	This is a call to member states to strengthen the infrastructure needed to realize digital connectivity. From available and affordable internet access, to waiving or subsidizing costs of data use for accessing teaching and learning materials.			
Online Learning	This is a call to adopt online learning as a strategy to bridge the access gap caused by COVID. Investing in quality eLearning solutions will ensure continuous learning at all levels, including TVET.			
Teachers as Facilitators	Teachers should be upskilled to live the new reality of virtual and distance teaching. They should be skilled in usage of these eLearning platforms, scheduling, virtual and distant students' engagement and assessments. This is in a bid to ensure that positive learning outcomes are achieved.			
Safety Online	This is to ensure that while digitized learning is a way to mitigate the effects of COVID-19 on education systems, strategies related to online bullying and sexual harassments of teachers and learners should be developed.			
Skilled Focused Learning	Skills that are foundational and job oriented which ensures that our young people are equipped with the relevant skills needed to function in any industry or discipline.			

For African education systems to withstand and mitigate challenges such as the one posed by the COVID-19 pandemic, education design and delivery must be rethought using DOTSS approach. Elements of virtual learning, distance learning, digitized learning and a novel approach to administration must be present in the entire ecosystem. In addition, a bespoke approach to digitization, that works for each level of education must be developed and subsequently included in national education policy guide. However, as noted by (Paavola, 2020), introducing digitalization into schools can be difficult when starting from scratch. It is therefore imperative to adopt a phased and strongly monitored approach to measure acceptance and success at every level.

As observed by (Mukuni, 2019), digitization of teaching and learning will rely heavily on the existence of ICT infrastructure. In sub-Saharan Africa for example, advancements in Information and Communications technology over 20 years ago raised much hope as tech-level was noted as encouraging and a cost-effective method of solving the challenges of access to education. The challenges posed by nonfunctional ICT infrastructure has slowed that process.

Furthermore, it is now more than ever important for African Union member states to increase investments in developing National Education Digitization strategies that takes into cognizance the infrastructure, the needed human resources and IT platforms that will ensure students and all levels of Education are able to follow courses virtually and remotely. In addition, the strategy should highlight training requirements for teachers, instructors and administrators, and national curriculum reviewed to include the needed skills required to adapt to the implementation of such strategy.
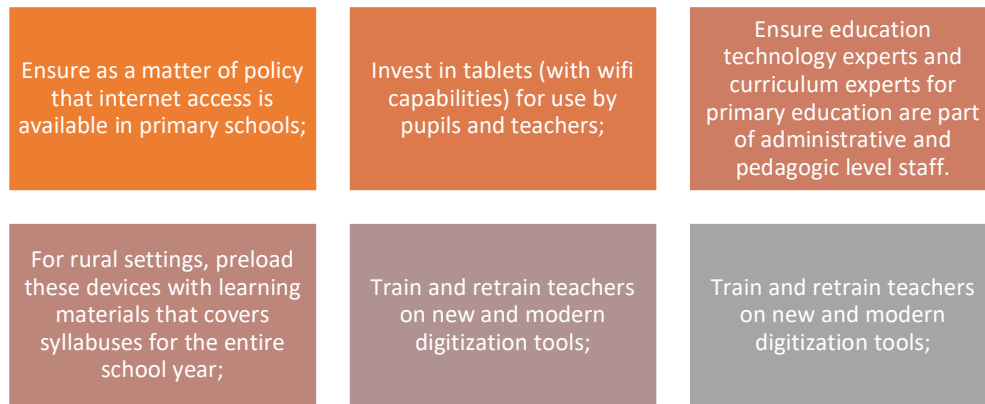
a. Administration

Lee and Borady (2017) posit that traditional school administration as it obtains today are highly segmented and paper based. This approach to education administration requires innovation using new and digital means to guarantee survival of COVID-19 or challenges posed by similar circumstances. School administration should incorporate elements of digitization that should ensure work continues even when schools are forced into necessary closure. Human resource management for teachers should incorporate digitization that makes simple tasks such as leave requests and approvals, absenteeism management and other basic but core administrative processes possible. Accessibility to key documents should also be seamless using technology, including any of mobile

devices, desktop computers or portable handheld devices. Custom built or affordable Enterprise Resource Planning (ERP) with remote access capabilities should be deployed to schools.

b. Primary Level and Secondary Level

With the declining cost of mobile devices in Africa, the possibility of reaching the rural areas and disadvantaged urban centers are now more than ever manifest. There are numerous quality learning resources that exists for primary education in audio, video, images and text formats and are available as open source or on a premium on the internet. What needs to be done to withstand these unpredictable circumstances is to:

Ensure as a matter of policy that internet access is available in primary schools;	Invest in tablets (with wifi capabilities) for use by pupils and teachers;	Ensure education technology experts and curriculum experts for primary education are part of administrative and pedagogic level staff.
For rural settings, preload these devices with learning materials that covers syllabuses for the entire school year;	Train and retrain teachers on new and modern digitization tools;	Train and retrain teachers on new and modern digitization tools;

Translating the secondary level education curriculum into an online ready, distance education ready product will be a huge achievement for Education systems in Africa. The tools and technology level platforms are available to guide learning rather than to dictate. Investments however need to be made on customizing open source systems that focus solely on virtual and distance secondary education delivery or purchasing proprietary off-the-shelf solutions. As much as possible, schools should avoid solutions and platforms that encourages path dependence which as noted by Sydow, Georg & Schreyögg (2008) is characterized majorly by restriction in scope. Path dependence locks in institutions into complete dependence on a particular vendor or product. Thus, future migration to another platform either caused by change in vendor or product policy, pricings or poor technical support will be a cumbersome process.

c. Tertiary Level

It is important that Higher Education institutions put in place a series of digital innovations and initiatives that go beyond online learning. This could include digitized pedagogic process and support for learning and monitoring systems, scalable e-learning with a wide distribution and reach to disadvantaged settings, accreditation and examination that is dynamic, access to data using digital means, digital communications as well as privacy of data ad transparency. Provision of WIFI across the length and breadth of the institution, charging stations for workstations and laptops.

Furthermore, as part of the digitization adoption strategy, all stakeholders including students, academic and relevant non-academic staff should be involved in consultation to ensure buy-in and also to assess readiness. This will enhance investment choice of tools, systems and platforms for the digitization process.

d. TVET

Pre and post COVID-19, it extremely necessary that we reinvent TVET for our time, and the core challenge will be the need to conceptualize and create TVET structures and methodologies that are appropriate to the new age settings. TVET 2.0 is a call for an upscale TVET, that will be often delivered from various locations, often using virtual means. This should be designed to respond to trainee needs and the market demand for skills.

Douse, Mike & Uys, Philip. (2019) posit that these upscale TVET centers should be staffed with competent, cheerful, well-respected and confident instructors that are working effectively in tandem with the best suited technology.

e. Examples of Policies and Best Practices

i. *UNESCO 10 RECOMMENDATIONS TO PLAN DISTANCE LEARNING SOLUTION* outlines important action points towards the adoption of eLearning solutions. It highlights issues related to data capping for teachers and learners, rules and regulations that guides online teaching and learning processes amongst others. This can be accessed via https://en.unesco.org/news/covid-19-10-recommendations-plan-distance-learning-solutions

ii. *World Bank Guidance on Remote Learning* gives more in-depth analysis on how countries should design and implement remote learning initiatives with emphasis on short, medium and long term plans. This can be accessed via http://documents.worldbank.org/curated/en/531681585957264427/pdf/Guidance-Note-on-Remote-Learning-and-COVID-19.pdf

iii. *OECD Framework to Guide Education Response* covers all areas of legal, inclusivity, health and social services, teacher professional development, regulatory frameworks for online learning amongst others. This can be accessed via https://www.hm.ee/sites/default/files/framework_guide_v1_002_harward.pdf

3. Recommendations

In addition to the recommendation and implementation methodology adopted by the African ministers of education, the following recommendations should also be adopted

1. The DOTSS approach to digitization should be adopted and implemented at all levels of Education.
2. African Education Systems must be redesigned to ensure students are able to follow classes anywhere and anytime. This includes disadvantaged urban settings and rural communities who have limited access to electricity and internet infrastructure.
3. Educators must be strengthened to support and guide learners in a networked environment. This includes training instructors in counselling services to ensure students are in the best frame of mind to study distant and virtually. In addition, constant retraining to adapt to the fast changing world of education technology platforms is crucial.
4. Adequate investments in the needed infrastructure needed to connect students anywhere and anytime. This includes publicly available WiFi services and subsidized or freely available internet services to access education contents.
5. Ensure that Media and Digital, Socio-Emotional literacies are ranked as basic skills for learners at all levels. This means ensuring that syllabuses at all levels incorporate the basic and core components of digital literacy.
6.

For Policy Makers			
Ensure as a matter of policy that internet connectivity is available in primary schools	Ensure education technology experts and curriculum experts for primary education are part of administrative and pedagogic level staff;	Train and retrain teachers on new and modern digitization tools;	Increase national education budget as a percentage of GDP by at least 2% to cater for digitization at all level.

For Administrators			
Budget and invest in hardware digitalization tools needed to ensure continuing learning. Tablets, laptops, PDAs and other mobile devices are available for teachers.	Ensure adequate investments in proper learning management solution, easily accessible and used by learners and teachers alike.	Assessments and attendance tracking should be included in digitization efforts	Innovate ways to include psychosocial support to teachers/instructors to ensure they are in the best frame of mind to teach distantly and virtually.
For Teachers/Instructors			
Ensure teaching and learning materials are converted to online-ready, virtual-ready and distance education ready contents	Provide psychosocial support to teachers/instructors to ensure they are in the best frame of mind to teach distantly and virtually.	Undertake digital trainings to constantly and continually innovate ways and methods to ensure students are learning.	

4. Potential Areas for Further Analysis

A guide on financing Education Digitization for COVID-19 and beyond is a potential area of further research. This will provide the needed guidelines to budgeting for education digitization and highlight the estimated percentage increase in yearly education expenditures. In addition, the research should focus on strategies to resource mobilize to fund the digitization components not covered in national budgets.

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