

# Virtualising the School During COVID-19 and Beyond in Africa: Infrastructure, Pedagogy, Resources, Assessment, Quality Assurance, Student Support System, Technology, Culture and Best Practices

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**Abstract:** The COVID-19 pandemic has affected health globally in a manner that this generation has never witnessed. The initial measures to mitigate these effects were focused on health interventions and remedies; rightly so. These had included public health measures including the lockdown, the test-and-contact-tracing and the social or physical distancing measures among others. Measures were also taken by different countries and states to mitigate the economic fallout and these had included palliatives for the people. Countries had borrowed and adjusted their fiscal policies and priorities to cater for the COVID-19 effects. Then, the question arises: what have we done with education in Africa? Education is arguably the most important way to address how COVID-19 would affect our future and the life of the generation whose education has been significantly impacted by COVID-19. This is the reason for this article. The article addresses how best to virtualise the school through strategic adaptations and changes. It addresses key factors including infrastructure, pedagogy, resources, assessment, quality assurance, student support system, technology, culture and best practices.

**Keywords:** COVID-19, Africa, virtual, education, e-learning, teaching

## Introduction

As COVID-19 changes the face of schooling, let us note that virtual school is still school, not just one of the many media. Many African schools that are newly “experimenting” with virtual school need to create a virtual learning environment for the learning. This might be termed virtualising the school. To this end, the learning environment should be created and equipped with all learning resources that are adapted for an optimal learning experience, characterized by best practices and supported by the appropriate culture. One vital thing is the affective aspect of delivery- the institutions need to place emphasis on building a virtual-school culture and this might include approaches to teaching and providing students support services including effective communication. This article highlights a number of factors that require critical attention when virtualising the school.

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## Infrastructure: LMS, UMIS and COMM

A learning management system [LMS] is indispensable to having an ideal virtual learning environment. Virtual school or online learning should guarantee the virtual school environment for learning with specific features for effective delivery of content, facilitation of content delivery, effective student engagement, tools for optimal participation during session activities, as well as assessment tools that are most effective for assessment including proctoring and grading. In addition to LMS, institutions might want to integrate an information system such as the university management information system [UMIS] for the university. An external, integrated or extended communication system [COMM] that could facilitate education in most effective ways and connect learners within the virtual school system as a community should also be considered. This might include educational social platforms and forums.

## Teaching: Pedagogy, Core Skills and Soft Skills

Pedagogy has to be carefully determined and strategically implemented. The traditional pedagogy for the contact or traditional class is the lecture, which is now in many instances described interactive lectures' to show that is could be enhanced for better student engagement. This can no more be the main or primary method in the virtual school context. Many teachers simply think that sitting in front of the computer and giving content-loaded lectures very eloquently, at best, would do the magic. This is far from the truth in the virtual learning context. Methods of teaching [pedagogy] need to be carefully determined.<sup>1</sup> For example, flip classes might be better than real-time lectures, especially when the internet is not reliable. Team-based learning [TBL] sessions might be helpful as well. Rather than giving 2-3-hour didactic lectures, shorter lectures with relevant application questions and group work to encourage self-directed learning and collaborative participation during learning might be quite useful. Teachers, when giving real-time lectures need to carefully choose their environment and their appearance as well as the presentation styles as these would affect students' learning significantly. The media needs to support learning and the choice of teaching methods. E-conferencing media including Zoom, Google meeting and Webex might help better than ordinary video-communicating apps. The teachers'

skills, as well as knowledge and the adherence to best practices in the virtual learning environment, are also worth critical consideration.<sup>2</sup>

## Teaching Materials and Resources

There is a sea of resources to work with nowadays. It would be helpful, if the institutions can afford them, to subscribe to standard online resources that deliver a variety of quality learning materials or content including video of lectures, animations of concepts, flashcards for learners, revisions resources, and self-assessment material among others. Resources like ScholarRx, Lecturio and Osmosis are used in the medical fields for instance. In addition to this or as a suitable alternative, teachers can use [open education resources] OER for their students.<sup>3,4</sup> These resources are available for use and could be "re-packaged" suitably for a specific group of learners in ways that specifically meet their needs. In addition, with a suitable LMS, educators can upload selected videos, short texts, simulations, animations, own lectures recorded as videos or audio for students to use.

## Assessment: Formative, Summative and Others

Assessment in the virtual school or learning environment can only be effective when it follows evidence-based practices and the appropriate principles.<sup>5</sup> Tests formats such as long and short essays, direct observations and practical sessions are more difficult to organise in the virtual learning environment. This brings to the fore the ongoing argument about the efficiency of these methods in the context of students' assessment. While this article is not in any way an attempt to take a side along these lines of argument, it emphasises the fact that the impracticality of certain methods in certain context and the misalignment of assessment with pedagogy and context could mess up things in the context of virtual learning environment. Efficiency, therefore, requires the need to use only evidence-based practices and methods supported by empirical data and reliable evidences.

Formative assessment from a collection of different approaches may include reflections or reflective practices, multiple-source formative assessments [360°], portfolios, digital or micro-badges, short learner's reports in forms of short essays or short answers to specific questions, testing students with critical thinking cases after which they will be required to provide original responses or answers;

group work including literature reviews and specifically defined problems-based questions among others. These formative assessments should give adequate opportunity for student to explore information using the internet-enabled electronic library materials. If properly used, formative assessments should carry significant proportion of the final grades weight in a virtual learning environment. Summative assessment which is high-stake could help in determining the final level of students learning and knowledge or proficiency. In this case, except when practical skills and performances are required such as in the clinical setting in medicine and nursing and in the workshop or laboratory setting such as in engineering, multiple-choice questions when properly structured, deployed and implemented are arguably the most effective means of summative assessment in the virtual learning environment. However, the higher-order learning attributes as indicated in the Miller's pyramid may not be testable using this method.

Connectivism is a proposed modern theory of learning;<sup>6,7</sup> despite its accompanying controversies. It could help in addressing the current situations. This includes the effective use of the internet to facilitate human interactions and connections as a learning community to facilitate learning. It provides the basis for how best to use the internet in the most effective ways for learning. It also helps to structure virtual learning in a learner-center approach conducting teaching and assessments following evidence-based principles and practices in such context. This theory is worth consideration in current scenarios. It might be helpful for institutions to also consider portfolios, digital badges and other methods of facilitating learning and rewarding learning in standardised and creative ways in addition to the traditional methods of assessment.

## Quality Assurance: Security and Academic Integrity

Quality assurance or ensuring academic integrity will be of utmost importance in a virtual learning environment. The ability to use technology-enabled security measures and features such as attendance of sessions and participation which could be recorded by Learning Management Systems would be quite helpful. Records of participation on the learning management system and the use of computers would be quite helpful. Institutions deploying virtual learning facility should invest in security apps some of which could help to monitor student screen during

examination as well as their physical environment. Certain apps can be used for examination proctoring and these can prevent students from accessing any other materials except what is provided for the purpose of assessment on the learning management system. In addition to this, plagiarism checks, done with apps or software would help to deter students from indulging in plagiarism and similar vices. This would ensure academic integrity, serving as a measure of quality assurance. By extension, these measures would ensure originality when students are given tasks. These measures and practices will help to ensure academic integrity.

## Student Support System

The online learning environment is a peculiar one since there is no contact not just between the teacher and learners but also between the students and the school support systems. Support is therefore expected to be provided virtually. Many students who require support systems more frequently can be troubled students, and lack of quality support can worsen their perception of the quality of services and education that they receive. In addition to the skills of providing this service, online presence of the school support system as well as demonstrated empathy and quality engagement will be critical to meeting students' needs. The online environment should not be one in which students' mails and messages are not read or replied for several days. Service providers would see inquiring students like a student standing right in front of them. Do you keep such a person for three days before responding? No! This explains why students might get easily frustrated and consequently lose interest when online or virtual school support systems are dysfunctional and ineffective. Institutions would have to train their support service staff and equip them with communication skills to deal with the peculiarities of the demands in the online school environment.

## Technology

Technology should support the virtual learning system adequately. It is better if vital consideration is given to how technology would enable effective integration of LMS, UMIS, resources, communication and social forums.<sup>8</sup> The ICT teams should consider the quality of internet access including the speed or the bandwidth in the design of the virtual school system. Just as critical considerations are given the structure of the physical learning environment, technology and internet quality, strength and

compatibility will be crucial to the success of the virtual learning environment. It is however important to note that it would be very wrong to think that technological investment is the single most important factor in virtualising the school. While training teachers and learners on how to use technology to achieve learning is important and necessary, it is simply one of the many factors that should be considered.

## Cultivating the Virtual School Culture

It is very important to emphasise the need to build the culture that would enable the virtual school to be effective and to meet the need of the learners. First, school, being learner-centered, more than ever before now puts emphasis on the learner than ever before. Virtual schools should ensure access with equitable opportunities for such access. This should be considered in the planning and implementation of the online schools.<sup>1</sup> The platform should enable learners to have access to materials, resources, classes and teachers with minimal difficulty. For instance, using an LMS that comes with varieties of opportunities for access such as through the desktop, phones including all kinds of smartphones would be a better option than a conventionally built website. Conversely, android and iPhone compatible apps can easily allow access for students whose preference or only options would be their phones. There is a need for a quality online presence of both teachers and the school support system. Etiquette in the online environment – now coined as netiquette – is important and the culture should shape this. Inclusion is another keyword to consider.<sup>9</sup>

## Beware of Litigations!

Schools in their attempts to be pragmatic are currently setting up virtual classrooms and engaging students. There are however challenges that come with every new culture and with change. In the older order of didactic classes, things happen within classrooms and offices and often end up there – it was like a closed system! Now that the virtual system has emerged, schools and teachers have to be careful and watchful. Professionalism and ethics are keywords here. Teachers should be careful with reckless use of materials that do not belong to them as teaching materials. The era of subtle plagiarism, including repackaging and repurposing the work of other people for use without permission is gone. There could be serious

litigations arising from such practices which often go unnoticed in the physical environment. Another thing to consider is the teaching sessions. Political jokes and comments as well as racially, sexually, religiously and socially sensitive and offensive comments might be riskier than ever before. Online sessions can easily be recorded or copied by different people and this if found wanting could be used against the teacher and the institution. Now, people can easily compare the quality of teaching in one institution with what is available in another. There are many more things to consider, but here is the bottom line; while institutions can be enthusiastic about the new normal, they are required to do things right!

## Moving Forward

Now that we have the new normal, it is not enough to be pragmatic to quickly virtualise the school; all quality assurance methods and standard checks should be put in place. In fact, institutions should put in place mechanisms to ensure that all activities meet the required standards. Governments and regulators should be involved. Institutions should be required to meet certain standards for online schools. Videoconferencing with learners in random and haphazard manners would not suffice. Capacity building for teachers to engage learners in the “virtual world” would be helpful. Learners need to be taken through the transformation processes and it would be good to bear in mind the fact that learners would be on various levels of not just learning but with the use of technology and how well they appreciate the system.<sup>10</sup>

## Conclusion

I will conclude with an appeal, especially to institutions in Africa [and the rest of the developing world] with this statement: it is impractical to absolutely graft virtual learning into an existing rigid traditional education system and to continually premise teaching on learning theories and practices of the physical learning environment or contact methods. It might be very expedient to engage appropriate expertise and methods in the efforts to develop applicable virtual learning environments with adequate infrastructures that will deliver. Also, it would be very important to put in place effective training or workshops on knowledge, skills and attitude of how to teach in the virtual environment. Significant emphasis should be placed on the need for a paradigm shift so that teachers and learners can be effective in the virtual learning environments.

Institutions should start cultivating a sustainable and compatible culture in support of virtual schools while encouraging teachers to continuously advance their expertise in this domain through continuous professional development and continuous use of the applicable technology so as to eventually achieve proficiency. Virtual school has its culture and institutions should develop this in a strategic manner.

## Disclosure

The author reports no conflicts of interest in this work.

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