Medical educators’ reflection on how technology sustained medical education in the most critical times and the lessons learnt: Insights from an African medical school

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Abstract
Stakeholders in the field of medical education globally would generally agree that sustaining medical education through the dark times of the covid-19 pandemic is worth celebrating. In the midst of the difficulties that were created generally by the covid-19 pandemic, sustaining medical education required persistence, strategy, courageous leadership, and innovative adaptations both on the part of the educators, administrators and the students. The implications of continuing medical education during the covid-9 pandemic goes beyond just keeping medical schools open. It has an affective advantage, by impressing on the mind of trainees the importance of strategic adaptation, courage, and resilience. Should anything shut down, it must not be healthcare, and as such medical education should demonstrate such a level of commitment and character. Thankfully, this was what happened in many instances, including ours. One significant factor that made this possible was the integration of technology and innovation. It might not be out of place to say that technology and innovations literally saved medical education amidst the covid-19 pandemic. We also know that the level and quality of integration of technology and innovations varied from place to place. These might be described as heterogeneity of integration, which was further a reflection of inequity in development and advancements in medical education in different parts of the world. This piece includes our reflections on how technology sustained medical education in the most critical times and the lessons learned.

Keywords
Medical education, technology, integration, covid-19, integration

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Education was sustained by technology
This piece is a reflection and a commentary on our experiences as medical educators and academic leaders on how technology helped to support and sustain the delivery of medical education, with emphasis on the basic medical science during the covid-19 pandemic in an African medical school context. Prior to the year 2020, the roles of technology and innovations in medical education has been strong, but it would appear that the full potential to medical education might not have been fully appreciated. Interestingly, it might not be out of the place to say that technology and innovation saved medical education in the year 2020, in the thick of the covid-19 induced lockdowns that took place globally.¹ The world witnessed the reality that educational technology and innovation could contribute significantly to Medical Education more than we probably had ever imagined. From the delivery of sessions for training or teaching remotely, virtual student assessment, and the need to provide a hybrid form of teaching and training, the integration of technology and innovation played key roles in many instances to support medicine in the year 2020. The culture of education has also been

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We have come to appreciate the place of technology

The reality from the above illustration is that technology helped the world to sustain medical education. Stakeholders in medical education can now reflect and realize that we have come to appreciate the place of technology in medical education. It might have been conventional to relegate the use of educational technology and innovation to the background prior to the year 2020 and this might simply be associated possibly with a lack of adequate appreciation of the roles of technology;1,2,8 but doing the same thing post 2020 might simply mean blatant ignorance of the reality of the current time. The usefulness of technology at this time has shed light on its importance, possibly more than ever before.2,8 In certain instances, schools were first shut down almost indefinitely with the hope that the covid-19 situation would soon abate, and the schools would re-open to resume normal activities. However, the uncertainty that accompanied the long duration of waiting for covid-19 vaccine and other medical interventions brought in a new reality. Something pragmatic had to be done to reopen schools and sustain education. It was also clear that to continue education and prevent the disasters that loomed by shutting down educational institutions indefinitely, technology would be required. With these realities, stakeholders in the educational institutions and government offices were forced to rethink the use of technology in innovative and creative ways.9 The Anatomage table is an example of medical education technology and innovation that came to the rescue [Figure 1]. It has been used successfully for digital dissection of the human body.1

The fallouts

Interestingly, the world in the 21st century had not witnessed a pandemic. Neither was such a pandemic clearly anticipated. Therefore, preparations could not have been made to address the use of technology to support education during the covid-19 pandemic. The level of preparedness and the availability of resources to adapt when the covid-19 pandemic struck with its effect on medical education supposedly varied from place to place.1,5 The better prepared systems and countries were, the better they were positioned to strategize. Educational technologies and innovations were used in various ways. Some of the ways in which technology and innovations were engaged to deliver medical education during the pandemic might be listed as follows:

1. Educational technologies, such as the Zoom videoconferencing platform, were used as teaching and learning platforms
2. Educational technologies and innovations, such as the Anatomage, were used for students’ assessments.
3. Educational technologies and innovations were used for communication [media]
4. Educational technologies and innovations, such as the high-fidelity mannequins and the Anatomage table, were used for simulations in lieu of actual activities
5. Virtual learning environments were used to support teaching and learning

A major fallout from the extensive variations in the level of technological integration that took place in medical education as a result of the covid-19 pandemic includes the fact that the disparities could impact the ways in which medical education was delivered during this period.10 The perceived heterogeneity in the use of digital technology and educational innovation stems from the variations in the reports of how various institutions had deployed technology in their efforts to sustain the delivery of medical education.
Going forward

While it would be highly commendable that many institutions were pragmatic enough to sustain medical education through the use technology and innovation, the resulting heterogeneity and global inequity cannot be allowed to fester for too long. Such a state would further widen the gaps in the quality of medical education being delivered from place to place. Going forward, we must focus on optimal integration of technology and innovations into medical education. We must initiate reforms that emphasise best practices, premised on evidence-based practices. We must positively influence the culture of medical education and provide empirical data on the benefits. This should be part of the processes of re-imagining medical education. It is going to take a significant paradigm shift. We will need courageous leadership to champion the change and to chart the course. We will need quality knowledge and skills. Very importantly, we will need the character that comes along with courage and optimism to get the best out of change!

Going forward, the following points may help us to optimise the potential benefits of technology and innovations if properly integrated into medical education:

- Build resilient educational systems
- Make adequate investment into technology to support medical education
- Need for timely adoption of innovations and technology
- Need for quality global partnership to share resources and knowledge. This might be done by building and curating shared resource platforms, as well as by creating cross-border resources such as MOOCs.

To help institutions leverage on technology in the efforts support medical education, during the ongoing covid-19 pandemic and thereafter, there is a need to provide quality access to technology. Equitable access to technology and supportive infrastructure has greatly helped in our case. More specifically, access to gadgets like desktops, laptops, tablets, smartphones with sufficient capacity to access, or download, store, and use learning material were critical. Also, quality, and reliable internet connectivity would be quite helpful. Furthermore, embracing a tech culture, whereby faculty members, learners and staff demonstrate the willingness to use and engage technology by embracing the philosophy and acquiring competences to engage educational technology would also greatly help. Quality IT support would also be required. There should also be a virtual learning environment [VLE] or learning management system [LMS]. It is also clear, that having significant infrastructural support, as well as institutional and policy framework to guide and support our deployment of technology and innovation was critical to our initial and ongoing successes with the use of technology to support medical education. This is also similar to how technology has been used to support medical education in other climes.

Noting that the COVID-19 pandemic or its effects might last for the next few years to come, the consequences might further strain health systems and educational institutions. These effects might be more pronounced in developing countries such as in Africa. Scarcity of resources would become a vital consideration in sustaining medical education. Technology can effectively support increasing numbers of students without building too much new infrastructure such as lecture halls, physical laboratories, meeting halls, or even dormitories for students. There might also be limitations to procure physical resources such as physical books and handouts for learners. In such instances, technology would be quite helpful to maintain high-quality medical education without raising the cost of delivery enormously.

We would like to conclude that tech supported medical education delivery is possible and, an expedient option. We would also want to mention that it is feasible in Africa, and in line with another previous report from Morocco. We would also like to submit that as against the entrenched sentiment that developing countries might be left behind in this area, it could be effectively done, with results and quality like what is obtainable in the developed world, thus closing the gaps in quality medical education delivery, and driving the agenda for equitable access to quality medical education. We have written this reflection and commentary out of our experiences and a keen observation of developments in medical education, globally. Clearly, our institution has benefitted from the deployment of technology and innovations to support the delivery of medical education in the year 2020 and beyond. We had relied on technology to keep our medical school open, and safe from the negative impact of the covid-19. Evidently, technology is becoming increasingly integral to the successful delivery of medical education.

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