

Lessons Learned Transitioning from Traditional Premedical and Medical Education to E-learning Platforms during the COVID-19 Pandemic within the United Arab Emirates

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Siobhán M.O'Sullivan¹, Ali A. Khraibi², Wei Chen³ 
and Peter R. Corridon^{2,3} 

¹Department of Molecular Biology and Genetics, College of Medicine and Health Sciences, Khalifa University of Science and Technology, Abu Dhabi, United Arab Emirates. ²Department of Immunology and Physiology, College of Medicine and Health Sciences, Khalifa University of Science and Technology, Abu Dhabi, United Arab Emirates. ³Pre-Medicine Bridge Program, College of Arts and Sciences, Khalifa University of Science and Technology, Abu Dhabi, United Arab Emirates.

ABSTRACT: Educational systems across the globe were disrupted by the COVID-19 pandemic, and faculty, staff, and students had to rapidly transition to e-learning platforms. These groups had little preparation to cope with the challenges of this newly adopted system. However, as we begin to emerge from the COVID-19 era, efforts are being made to assess the impact of this transition and develop a framework of best practices to help educators prepare for possible future disruptions. This commentary aims to discuss some of the challenges associated with the rapid transition to the new academic environment, including the modes of instruction employed, technical obstacles encountered, student responses to change and efforts made to evaluate didactic and practical aspects of the curriculum in the contexts of premedical and medical education, at the newly established College of Medicine at Khalifa University of Science and Technology in the United Arab Emirates.

KEYWORDS: COVID-19 pandemic, e-learning, premedical, medical education, United Arab Emirates

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CORRESPONDING AUTHOR: Peter R. Corridon, Department of Immunology and Physiology, Khalifa University of Science and Technology, PO Box 127788, Abu Dhabi, United Arab Emirates. Email: peter.corridon@ku.ac.ae

Introduction

With education worldwide being thrown into disarray at the start of the global pandemic,¹ faculty and students were required to adapt to this unprecedented challenge and rapidly transition from traditional face-to-face instruction to online instruction. Many academic institutions that were reluctant to adopt this new mode of instruction, had no choice but to shift to online learning as a matter of urgency.^{2–4} Like numerous other institutions, this was the first opportunity that Khalifa University of Science and Technology (KU), in the United Arab Emirates (UAE), had to deliver this form of instruction.⁵ To compound matters, the faculty, staff and students (premedical and medical) associated with the College of Medicine and Health Sciences (CMHS) had to rapidly and fully transition to e-learning while addressing challenges associated with developing a new medical school that provided US-style education for the first time in the nation's history.^{6,7}

As a college still in its infancy, our first cohort of medical students was, at that time, transitioning from their first to their second year of medical school. Our second cohort of medical students and a new cohort of premedical students were in their first year of study. Luckily, these students were primarily receiving preclinical instruction, but still had little preparation to cope with the challenges of this newly adopted system, and

several individuals among these groups were stranded in multiple locations outside the UAE, due to various COVID-19 travel restrictions. Thus, faculty and staff had to implement new pedagogies that catered to students in different time zones,^{8,9} who felt disconnected from their programs, faculty and classmates.¹⁰

One year later, efforts are being made to assess the impact of our emergency transition to e-learning¹¹ and help develop a framework of best practices.¹² To aid this process, we started by considering modes of instruction employed, technical obstacles encountered and student responses to change, in the context of premedical and medical education, at our newly established CMHS. This article aims to present lessons learned from our rapid adoption of e-learning platforms. It is also hoped that the experiences presented can contribute to the growing body of knowledge available to administrators and faculty to better prepare our medical communities for possible future disruptions.

Modes of instruction employed

The modes of instruction used for online learning have become more important, now more than ever. The pandemic brought on a desperate shift from the traditional and most employed form of teaching, the face-to-face lecture. Online learning started in



March 2020 and coincided with the UAE's Ministry of Education's recommendations and precautionary safety measures to curb the transmission of the virus.¹³ Higher education institutions were forced to close temporarily, and spring break was moved 2 weeks forward to allow institutions time to implement training in distance learning.¹³ With this shift, all adopted modes of instruction required a greater level of technical insight and support. Such a need highlighted the essential role of information technology (IT) in the COVID-19 age. IT support was crucial in rolling out the new instructional platforms, providing training and support and troubleshooting in real-time.

Like numerous educators across the globe, we had little time to research the best practices on adopting a fully online curriculum. We discovered little in the literature that could have been applied to the then current situation. As a result, we initially relied heavily on email and messaging broadcasting services provided by our learning management system (LMS). We also reverted to phone calls as a basic standard form of communication, as free and ubiquitous video conferencing services were then primarily restricted in the UAE.¹⁴ However, similar to other groups in education, we then implemented a combination of open-source, BigBlueButton,¹⁵⁻¹⁷ and subscription-based, Blackboard Collaborate, web conferencing tools as government restrictions were eased to usher in distance learning. As time passed, we replaced these systems with Zoom and Microsoft Teams and also supplemented our adapted approaches to include instant messaging services like WhatsApp.

Technical obstacles encountered

Our emergency conversion to e-learning proved to be problematic. Previous studies have outlined similar outcomes, as exposure and adoption to this new environment requires careful consideration.¹⁸ Interestingly, both students and instructors experienced several challenges. The students of today are considered digital natives. However, like their faculty counterparts, we recognized that our students' competencies varied in stark contrast to popular portrayals and personal beliefs of the digital native.¹⁹ Regrettably, the majority of students and faculty currently did not possess the requisite skills to make the most of the educational experience,^{20,21} as both groups adapted to this mode of instruction within a 2-week period. While there has been extensive research on the merits and challenges of online learning, students typically enjoy taking online classes that are planned in advance.²² Also, in most situations, a student's first introduction to online learning is given through blended learning models that provide faculty the time and experience needed to successfully deliver content within this environment.

Apart from the limited technical capacities we observed among individuals, we also experienced issues related to internet connectivity, sociocultural factors and integrity. The adoption to distance learning across the UAE created surges in internet traffic volume. Such substantial demands to instantly send and receive data during the pandemic would have overloaded

network capabilities and limited bandwidths needed to support video conferencing platforms dedicated to e-learning.²³ For the majority of our students, several sociocultural issues arose. One study outlined that E-learning also presented an invasion of privacy and Islamic doctrines,²⁴ especially among our females in our community who have spoken out against webcam policies. At the same time, there are growing concerns regarding academic integrity, and administering assessments have become one of the greatest challenges as the burdens related to the use of remote proctoring software far outweigh the reward. Paradoxically, the use of webcams translated into greater levels of trust and comfort between students and faculty.²⁵

Student responses to change

For many students, the traditional college experience has been lost in the interim, with some students now living at home or confined to student accommodation where they have to continue their academic work under radically different circumstances than they are used to. The new college classroom for most students is a virtual one where rules and etiquette are different than face-to-face class time.²⁶ The initial responses of many students were confusion and uncertainty. Although channels of communications, using available methods (e-mails, telephones, etc.), were immediately established between students and faculty, there have been many significant barriers for online learning to be carried out smoothly on a daily basis, for example, navigating through the new learning management system, solving technical problems, understanding instructional goals. As compared to a traditional face-to-face classroom, students are more easily distracted when learning from their residences. Such unconventional study sessions are often likely to be interrupted by electronic devices that students are constantly using for both personal and academic communications. Let alone that students, like most of others in the world, are also worried about their safety and the safety of their family amid the evolving pandemic. Furthermore, many students have had to cope with the sense of isolation and loneliness that aligns with social distancing guidelines.^{27,28} This has been worse for the students who newly joined CMHS in Sep 2020 had even fewer opportunities to develop any personal relationship with peers and faculty. It is unfortunate that the level of social support a virtual community can provide is unlikely to match that of traditional college life. Social support can be particularly important for our students, who are under 25 years and experiencing the period of emerging adulthood, a critical time for identity development.²⁹ Low levels of perceived social support may impair identity development³⁰ and even impose risks for their mental health.³¹

Efforts are made at all institutional levels to ensure quality education continues regardless of emergencies and/or upheavals. For students, a quality education amid the pandemic not only benefit them with continued professional training, but also with a sense of purpose in life that helps to build psychological resilience.^{26,32} Online courses could be dynamic,

interesting and interactive experiences. Effective online instructions are used to facilitate feedback from the students, encourage them to question and broaden their horizon beyond the online arena,³³ although it has also meant revisiting and adjusting content to ensure it meets the curriculum and pedagogical needs whilst engaging the students.³⁴ Timely feedback is provided during the course. Recordings of lectures are provided for students to review offline on their own pace. Faculty-student mentoring initiatives that previously existed have been actively utilized by many students. These initiatives, which were not mandatory, were designed to encourage students to contact their mentors and discuss any issues they may have experienced during that unpredictable period.

The frequent communications between students and faculty both during and after class time help to promote a sense of belonging. Students are also encouraged to have their own group without faculty supervision (eg, WhatsApp groups and breakout rooms on Zoom). These independent groups are meant to provide an opportunity for students to engage with each other, which helps to relief their loneliness to some extent. On a positive note, we observed that the online learning experience has given many students the confidence and experience to express their views clearly and improve their communication skills, as well as public speaking in an interactive environment. This is likely because, while in the traditional face-to-face classroom, both nonverbal and verbal forms of communication can be used, students have to rely on verbal communications almost exclusively in a virtual classroom.

Efforts to evaluate didactic and practical aspects of the curriculum. Given the pace at which the transition occurred, the pre-clinical curriculum was not changed per se; however, modes of assessment were re-examined. At the early stages of the pandemic, CMHS classes were entirely online. Nevertheless, with time and mandatory COVID testing in place on campus for all students and faculty, classes were run in a hybrid format. Faculty discussed alternative modes of testing, such as open-book exams in place of in-house quizzes and online synchronous quizzes using our LMS. In addition, COVID 19 curtailed the objective structured clinical examination (OSCE), creating a hiatus in such live instruction.

As a matter of urgency, the curriculum was revised. Physical exam sessions were modified to ensure student safety by replacing conventional physical examinations with self-demonstrations and those conducted on a standardized patient. Mindful of the need for ongoing clinical training, we improvised using activities such as a flipped OSCE utilizing Zoom teleconferencing.³⁵ Students worked in groups using break-out rooms, facilitated by a faculty member with a standardized patient.

Conclusions

Abrupt changes can be difficult and disruptive to the educational process. Contingency plans have to be available and ready to be implemented on short notice since, unfortunately, this might not

be the last global pandemic. Nevertheless, as we assess the impact of this transition and develop a framework of best practices to help educators prepare for possible future disruptions, hardware and software platforms should be updated periodically to be ready for any abrupt changes in the academic process. With the acknowledgement that some students will be affected more than others with abrupt changes in the academic process, contingency plans should be designed with this in mind. At some level, we started knowing our students more than before (strengthened relationships between student and faculty and students and their mentors). Overall, it is hoped that the experiences presented can contribute to the growing body of knowledge available to administrators and faculty to better prepare our medical communities for possible future disruptions.

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Author Contributions

PRC devised the project, and PRC and SMO structured the main conceptual ideas.

AAK and WC further supported the development of the project's theoretical framework.

All authors contributed to the writing, editing and final version of the manuscript.

ORCID iDs

Wei Chen  <https://orcid.org/0000-0003-0121-6172>

Peter R Corridon  <https://orcid.org/0000-0002-6796-4301>

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