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Navigating Education in the Age of Covid-19: From Rapid Reactions to Sustainable Solutions

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Abstract

The pandemic outbreak presented many challenges to higher education in the UAE, but the government and universities adapted quickly to ensure that students could continue their studies without interruption. The Ministry of Education launched a virtual learning initiative that provided universities and colleges with the necessary guidance and resources to deliver their courses and lectures remotely. The government offered financial assistance and launched several initiatives to help students access the necessary tools and technology to continue their studies remotely, such as providing laptops and tablets to students who needed them. The Department of Chemistry at UAEU shifted to online learning, provided faculty-wide support, and ensured that every student was able to participate in digital learning. The measures taken by the UAE government and the Department of Chemistry at UAEU ensured the safety of its students and staff while continuing to deliver quality education.

Keywords: pre-pandemic, post-pandemic, covid-19, higher education

UAE Higher Education in the Pandemic Outbreak and the government's efforts to control the situation

The pandemic outbreak presented many challenges to higher education in the UAE, and universities and colleges had to adapt quickly to ensure that their students could continue their studies without interruption. One of the significant challenges was the sudden shift to online learning, which required universities and colleges to provide their students with the necessary tools and technology to access their courses remotely[1]. To support the shift to online learning, the Ministry of Education launched a virtual learning initiative that provided universities and colleges with the necessary guidance and resources to deliver their courses and lectures remotely. The initiative enabled universities and colleges to offer flexible learning options to their students, ensuring that their education was not affected by the pandemic outbreak.

Another challenge presented by the pandemic outbreak was the financial burden it placed on students, especially those who were struggling to pay their tuition fees. To support these students, the government offered financial assistance and launched several initiatives to help students access the necessary tools and technology to continue their studies remotely[2].

One such initiative was the provision of laptops and tablets to students who needed them. The government recognized that not all students had access to the necessary technology to participate in online learning and

took steps to address this issue. This initiative ensured that all students had access to the tools and technology they needed to continue their studies remotely.

The government also worked with universities and colleges to ensure that students could access the necessary resources to continue their studies remotely. For example, the UAE University, in collaboration with the Abu Dhabi Department of Education and Knowledge, implemented the ALEF digital learning platform. This platform allowed students to access their courses and lectures remotely, ensuring that their studies were not affected by the pandemic outbreak [3, 4].

The UAE government's response to the pandemic outbreak was swift and effective, and it implemented several measures to control the spread of the virus and support businesses, individuals, and the economy during these challenging times. The government's collaboration with universities and colleges to ensure that students could continue their studies without interruption is a testament to its commitment to providing quality education to all students, even in times of crisis[4].

In addition to the measures discussed above, the government also introduced several other initiatives to support businesses and individuals during the pandemic outbreak. These included measures to support small and medium-sized enterprises, reduce the cost of living, and provide financial assistance to individuals who were affected by the pandemic outbreak.

During the pandemic measures taken by the Department of Chemistry, College of Science, United Arab Emirates University

United Arab Emirates University (UAEU) started its new semester with online learning. The campus was vacant, yet online classrooms are full. UAEU offers more than 114 undergraduate, graduate, and doctoral programs across nine colleges were offered online: These colleges offer courses in various disciplines, including but not limited to, accounting, business administration, economics, education, civil engineering, computer engineering, computer science, agriculture, food science, humanities, social sciences, information technology, law, medicine, nursing, pharmacy, chemistry, physics, biology, and mathematics. Around 14387 students with 60 different nationalities, with 3,200 courses being offered online by around 1200 faculty. For the first time since its establishment in 1976, all courses at UAEU 9 colleges were delivered online. This historical move demands joint efforts from faculty, staff, and students, in equal measure [5].

Faculty of Chemistry responded immediately. We developed an online teaching implementation plan covering components of teaching delivery, online classes management and supervision, and learning assessment. Faculty are encouraged to choose appropriate learning platforms they are familiar with. In order to support faculty in their work, we developed five actions:

1. A line-up of main online education platforms were introduced to all faculty by email, blackboard, Teams, Meet, Skype, discussion groups, and department and college website.
2. Faculty were encouraged to share their previous experiences with platforms including Blackboard, Zoom, Teams, Meet, Skype etc
3. Department of Chemistry in collaboration with the Center for Excellence in Teaching & Learning (CETL) assembled a professional team for providing faculty-wide support. The team shared their

knowledge and skills about different platforms and conducted online training. Further, professional companies were invited to train our faculty on using specific tools.

4. Learning online was a big challenge for our 3000 undergraduate and graduate students at the College of Science and around 800 students in the Chemistry department. The team informed students about changes, provided two teaching assistants for each online class, and ensured that every student is able to participate in digital learning. Special attention was given to students coming from poor regions and difficult family backgrounds.
5. The COS Chemistry team collected information about all online courses, including their delivery platform, class size, schedule, and student readiness. Few classes were selected for trial lessons at a variety of platforms with the aim to pilot online learning strategies before their large-scale implementation.

Most courses seem successful; students seem to enjoy online learning, and some professors even report that students seem more active than in their physical classrooms. At the research front, we organized a series of webinars which created opportunities for scholars within and beyond China to share their research and thoughts on issues relating to the transition, with the aim to start developing more resilient education systems for the future [6].

As the pandemic outbreak hit the United Arab Emirates, the Department of Chemistry, College of Science, United Arab Emirates University (UAEU) took several measures to ensure the safety of its students and staff while continuing to deliver quality education. These measures included:

1. Shifting to Online Learning: The Department of Chemistry at UAEU shifted to online learning to ensure that students could continue their studies without interruption. The department provided its students with the necessary tools and technology to access their courses remotely, ensuring that their education was not affected by the pandemic outbreak.
2. Implementing Safety Protocols: The department implemented safety protocols to ensure the safety of its staff and students. These protocols included mandatory mask-wearing, social distancing, and regular disinfection of classrooms and laboratories.
3. Providing Online Resources: The department provided online resources to support its students' learning and help them adjust to the new way of learning. These resources included online lectures, tutorials, and practice exercises.
4. Facilitating Communication: The department facilitated communication between its staff and students to ensure that students could receive the necessary support and guidance. The department's faculty members were available to answer students' questions and provide them with the necessary feedback and support.
5. Organizing Online Seminars and Conferences: The department organized online seminars and conferences to keep its students and staff updated on the latest developments in the field of chemistry. These events provided an opportunity for students and faculty members to connect with experts in the field and learn about new research and discoveries.

During the COVID-19 pandemic outbreak, the Chemistry department, college of science at the United Arab Emirates University (UAEU) had to quickly adapt to the online learning environment, which was defined as a learning experience in synchronous or asynchronous environments using different devices with Internet access. While online learning platforms and courses were easily provided, persistent obstacles and challenges were met. Stable digital infrastructure and platforms were required for online course delivery, interaction, and data collection, yet some students across UAE and overseas experienced interruptions due to poor Internet access [7]. Students were required to have the capacity to conduct self-disciplined and self-directed active learning, and faculty needed further professional development. Challenges also included the lack of holistic quality assurance systems for online teaching and learning. The pandemic revealed that quality did not refer only to achieving learning outcomes, but also to the social and emotional development of students . UAE institutions of higher education initiated a series of real-time research projects about higher education experiences during the pandemic to improve evidence-based policy-making mechanisms and more user-friendly digital learning systems [8, 9].

Envisioning Teaching and Learning in a Post-Pandemic World

The COVID-19 pandemic has caused significant disruptions to higher education worldwide, forcing institutions to rapidly adapt to new modes of teaching and learning. In the UAE, this has led to a significant acceleration in the development of online education, with institutions utilizing a range of new technologies to deliver education to students.

While the development of online education infrastructure has been an important first step, it is not sufficient in itself. Rather, it represents a shift towards a new paradigm of teaching and learning, which prioritizes more student-centered activities and a greater emphasis on group work, discussions, and hands-on learning [10].

Ensuring the quality of online education is also crucial for its long-term success, and this requires ongoing evaluation and research into different models of teaching and learning. In addition, staff capacity for online teaching must be developed, and cooperation between universities, international organizations, and other stakeholders must be encouraged to promote high-quality online learning throughout society.

Teachers play a critical role in the provision of high-quality distance education, and therefore it is important that teacher education is adapted to prepare educators for online teaching. This includes the development of online teacher education platforms that can provide learning opportunities to future teachers at all levels, supported by rich digital materials and resources [11].

In the postdigital context, online and offline education cannot be thought of as separate from each other, and therefore a holistic approach to teacher education is necessary. This requires the development of evidence-based policies and guidelines for the implementation of online teaching, as well as the establishment of competencies and standards for conducting online teaching.

Overall, the COVID-19 pandemic has presented significant challenges to the education system, but it has also created opportunities for innovation and development. By conducting research and reflection on each sector of education in the UAE and globally, institutions can develop a more sustainable, inclusive, and equitable education system for the future [12].

The COVID-19 pandemic has caused unprecedented disruption to education around the world. Schools and universities have had to rapidly adapt to online teaching and learning, often with little preparation or guidance. While this has been a challenging time for educators, students, and parents alike, it has also presented an opportunity to rethink the way we approach education in the future.

One of the most significant changes we have seen during the pandemic has been the widespread adoption of online learning platforms and digital technologies. This has been driven by necessity, but it has also opened up new possibilities for teaching and learning. In the future, we can expect to see a much more flexible and dynamic approach to education that harnesses the power of these technologies [13].

One key advantage of online learning is that it allows for greater personalization and differentiation. With online platforms, teachers can more easily create and deliver tailored learning experiences for individual students, based on their interests, strengths, and needs. This can lead to more engaged and motivated learners, as well as better learning outcomes.

Another advantage of online learning is that it can break down geographical and cultural barriers. Students from all over the world can participate in the same courses and collaborate with each other, bringing a diverse range of perspectives and experiences to the learning environment. This can help to foster greater understanding and empathy among students, and prepare them for a globalized world [14].

However, we must also be aware of the potential pitfalls of online learning. One concern is that it can be isolating and impersonal, lacking the social interaction and emotional support that are so important for learning and development. To address this, we need to find ways to integrate online and offline learning experiences, creating a hybrid model that combines the best of both worlds.

In addition, we need to ensure that online learning is accessible and inclusive for all students, regardless of their background or circumstances. This requires not only technical infrastructure and digital resources, but also support for students who may be struggling with the transition to online learning. We must also address the digital divide, ensuring that all students have access to the technology and internet connectivity they need to participate in online learning [15].

Beyond the technical and logistical aspects of online learning, we must also consider the pedagogical implications. This means rethinking the role of the teacher and the nature of learning itself. Instead of the traditional model of teacher-centered, lecture-based instruction, we need to move towards a more student-centered, active learning approach. This involves creating opportunities for collaboration, critical thinking, problem-solving, and hands-on learning experiences.

At the same time, we need to ensure that the values of education are not lost in the shift to online learning. Education is not just about acquiring knowledge and skills, but also about fostering social and emotional development, character formation, and ethical values. We must find ways to integrate these aspects of education into the online learning environment, creating a holistic approach to teaching and learning [16].

In summary

The pandemic outbreak presented significant challenges to the UAE's higher education system, particularly the sudden shift to online learning, which required universities and colleges to provide students with the necessary tools and technology to access their courses remotely. To support this shift, the Ministry of

Education launched a virtual learning initiative that provided guidance and resources to universities and colleges. The government also provided financial assistance to students and offered laptops and tablets to those who needed them. The UAE government collaborated with universities and colleges to ensure that students could access the necessary resources to continue their studies remotely.

In response to the pandemic outbreak, the Department of Chemistry, College of Science, UAEU developed an online teaching implementation plan, covering components of teaching delivery, online classes management and supervision, and learning assessment. The department introduced online education platforms to faculty, encouraged them to share their experiences, and assembled a professional team to provide faculty-wide support. The department also ensured that students had access to the necessary resources and provided teaching assistants for each online class. Finally, the department collected information about online courses, including their delivery platform, class size, schedule, and student readiness. It organized trial lessons to pilot online learning strategies before their large-scale implementation. Overall, the department's response was successful, with most courses being delivered successfully, and students seeming to enjoy online learning. The department also organized webinars to start developing more resilient education systems for the future.

In conclusion, the COVID-19 pandemic has presented both challenges and opportunities for education. While the rapid transition to online learning has been challenging, it has also opened up new possibilities for a more flexible, personalized, and inclusive approach to education. However, we must be mindful of the potential pitfalls of online learning and work to address these challenges. By doing so, we can create a vision for the future of teaching and learning that is innovative, sustainable, and equitable.

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