Journal of Research in Didactical Sciences
ISSN: 2997-5905 (Online)
VOL. 4, ISSUE 1, 2025
Pages: 1-20

RESEARCH ARTICLE

OPEN ACCESS

Online learning through the eyes of engineering students in the UAE

Mervat Madi [1], Souhir Chouikha [2], Panos Sphicas [3*]

[1] Department of Electrical Engineering, University of Wollongong in Dubai, Heriot Watt University Dubai, UAE
[2] Faculty of English and General Studies, Higher Colleges of Technology, Abu Dhabi, UAE
[3] Department of Mechanical Engineering, School of Engineering, University of Birmingham, UAE
[*] Corresponding author: P.Sphicas@bham.ac.uk

Abstract: The COVID-19 pandemic prompted an unprecedented shift in educational paradigms, compelling learners worldwide to rapidly adapt to fully online modes of instruction. In the United Arab Emirates (UAE), even though online teaching experimentations had existed prior to 2019, the transition to a fully remote learning modality happened abruptly, bringing up several challenges. This study specifically investigates the unique experiences of first- and second-year engineering students during this transformative period, examining their perspectives on online education, the methodologies employed, and the resulting academic outcomes. Engineering students face distinct challenges due to the hands-on, practical nature of their discipline, which often requires specialized software and laboratory work that are difficult to replicate in an online environment. A meticulous survey, addressing diverse facets of the learning experience, was administered to undergraduate engineering students. In contrast with what the researchers hypothesized and expected, engineering students showed a clear preference to online learning, mentioning comfort and flexibility as important elements, while acknowledging that maintaining focus while studying remotely was a challenge. The study sheds light on the integral role of technology, emotional support, and varying learning methodologies, revealing a complex landscape that demands tailored strategies for improved online education.

Keywords: Online learning, engineering education, Covid-19 learning, online education, UAE

INTRODUCTION

The COVID-19 pandemic changed the way we learn. Suddenly, learners had to study, submit homework assignments, and perhaps take exams online. Learners had to use new tools, new technologies and new strategies to stay on top of things (Lockee, 2021). In addition, learners had to cope with the mental stress of keeping safe by maintaining physical distances from family and friends (AlAteeq, et al. 2020). These were challenging tasks. We have made significant progress in developing teaching strategies, particularly with the rise of new tools, including software such as Zoom, MS Teams, Blackboard Learn, and hardware like Wacom tablets with pens (Alhosban, et al. 2020). The academic community in the UAE was well-prepared for this shift, as experimentation with online teaching began as early as 2012, accounting for 20% of teaching delivery (Ati, et al. 2010). However, the sudden transition

to 100% online teaching occurred after only a few days of preparation. During the COVID-19 lockdown, the academic community was under sudden pressure to perform in challenging conditions, and as a result, one critical factor was missing: quality assurance for the new era of learning, "the fully online learning experience." Therefore, as researchers, we had to reassess the situation from the student perspective. Student feedback varied depending on the timing of the survey. For example, after 2 weeks of lockdown, 75% reported that studying online was more challenging than in-person. Whereas, after 12 weeks of lockdown, 57% reported the same (Almendingen, et al. 2021). Specifically, the hidden challenge during online learning was measuring the extent of student involvement. Studies suggested that students who were more engaged in online learning were more likely to choose online learning for the future (Szopiński and Bachnik, 2022).

A recent study by Wallis on the value of online education, reported that a substantial 78% of online learners perceive the virtual classroom environment as equal to or better than traditional face-to-face methods. Additionally, nearly 80% of these students affirmed that online courses and degrees justify their tuition fees (Wallis, 2020). However, in another study by Hess, some students argue that online courses fall short in meeting their holistic needs, especially when it comes to facilities and on-campus services unavailable to remote learners. Surprisingly, over 90% of American students express a desire for universities to reduce tuition fees, considering the absence of on-campus amenities (Hess, 2021). In a different study by Zvalo-Martyn, the students acknowledged the comparable academic outcomes but advocated for cost adjustments due to the limitations of online services. This sentiment emphasized the need for institutions to strike a balance between affordability and quality in the evolving landscape of higher education (Zvalo-Martyn, 2020).

When reflecting on the online learning period during the COVID-19 lockdown, various studies have supported the idea of continuing online learning in the future (Elzainy, et al. 2020). A study involving Master's students in the UK emphasizes the challenges of online learning, such as the need for eye contact and the inability to communicate synchronously in online groups. But on the other hand, students enjoyed live online sessions more than attending recorded sessions (Peimani and Kamalipour, 2021). A study conducted in a Gulf country, with a similar audience to that in the UAE, showed high student satisfaction towards virtual classrooms, online assessment, and online workshops (Elzainy, et al. 2020). Many studies have explored online teaching practices during the COVID-19 pandemic, examining their advantages and disadvantages. However, engineering students face unique challenges due to the hands-on, practical nature of their discipline, which often requires specialized software and laboratory work that are difficult to replicate in an online environment. There is a lack in the literature for studies in

the Middle East and particularly in the education practices as seen by engineering students in the beginning of their studies (first and second year). This study aspires to investigate:

1) the student perspectives on online education,

2) the methodologies employed,

3) the student support,

4) the resulting academic outcomes, and

5) the potential of incorporating online education in the future.

METHODOLOGY

Survey

Our survey, shown in Table 1, aims at assessing the quality of education that the learners received. The tailored questions take into consideration a 360-degree view of the student experience during online learning. This includes three main points:

i- home and parents support having home as the alternative physical location of studying instead of the structured building of school.

ii- mental well-being of the student even though staying at home with family but deprived of physical contact with his fellows and superiors at school. Here we need to take into consideration the comfort of studying at home with virtual socialization versus social direct interactions and learning, in addition to the possible restructuring of schools if students end up choosing home over school for studying.

iii- the effectiveness, practicality and user-friendly interface of different technologies recommended in UAE.

Table 1. Survey used in this work

Where did you study most of the time during Covid-19?
How supportive was the new online learning environment for you? (Compared to in-person teaching)
Rate how supportive were your parents to online learning?
What device did you use in online learning?
Rate the internet connection with 5 for strongly reliable and 1 for weak connection?
Was it easy for you to stay focused all the time when you studied online?
What disturbed your ability to focus during online learning?
How was your attendance to online classes?
Did you do your homework assignments online as required?
How were your final results in the year 2019- 2020, 2020- 2021, and 2021- 2022?

Did online learning affect your GPA? If yes, how?

How did online learning affect your understanding of new material?

What courses were easy to study online?

What courses were difficult to study online?

Were you an active participant in online classes?

During online teaching, which tools did the teachers use?

Did your school/ college provide any counseling or psychological support during Covid 19?

If yes, how effective (good) was it?

Did you receive training on how to use online learning platforms?

Was IT support available when needed during online technical problems?

Were your overall results and grades similar to your results before Covid?

If you have the choice to study online now, will you choose to do so?

Do you still take classes online?

Do you think doing classes online is beneficial?

Do you think online education is the future? Why?

Do you have any ideas on how to improve online learning?

Research Sample

According to the UAE Federal Competitiveness and Statistics Centre (FCSC), in the UAE there are 134 Higher Education Institutions, with a total of about 260,000 students. In 2019 about 52,000 students graduated, an expected number as most undergraduate programs last approximately 4 years. Out of the 52,000 students who graduated, FCSC reports that 11,632 were in the general field of "Engineering, Manufacturing and Construction". No further official numbers are disclosed regarding Mechanical Engineering students (UAE Stat., 2024). The global average is that about 1 in 4 engineering students are enrolled in a Mechanical Engineering degree (NSF, 2024). Applying this rule to the UAE, there are less than 3,000 students enrolled every year in Mechanical Engineering.

Our sample group consisted of fifty-seven undergrad engineering students, aged eighteen to twenty who, like the rest of the world, had to switch to online education during the last two or three years of high school. A detailed mathematical proof falls outside the scope of this paper, but applying statistical sample calculations, we calculated 90% confidence level and 10% margin of error.

A 90% confidence level was chosen to balance reliability and practicality, ensuring that the findings are robust while acknowledging the constraints of the study's scope. This means we can be confident

that if we were to repeat this study multiple times, 90% of the time, the true population parameter would lie within the calculated margin of error.

The 10% margin of error was selected based on the sample size of fifty-seven undergrad engineering students. Given the exploratory nature of this study and the specific focus on first- and second-year engineering students who transitioned to online learning during the latter part of high school, this margin of error allows us to capture meaningful insights without overstating precision.

Purposive sampling requires a clear and well-defined criteria or purpose for selecting the participants (Merriam, 2009). Purposive sampling was applied in this work and the criteria of our samples are:

1) Currently enrolled at an undergraduate engineering degree in the United Arab Emirates,
2) Completed at least one semester of online education.

DISCUSSION

The first two years of the Covid-19 pandemic, from 2020 to 2022, witnessed an abrupt and mandatory shift to online education. However, the subsequent year marked a slow and hesitant return to in-person education. During that time, many institutions either continued to offer online schooling or provided students and their families with the option to choose. Hybrid education became a widespread practice.

Most of our students graduated from high school and then immediately joined their engineering studies. In engineering education, in-person training is usually the preferred learning method.

E-learning engages students fully by incorporating texts, videos, sounds, collaborative sharing, and interactive graphics. It has the potential to enhance teaching and learning quality, address the competitive needs of higher education institutions, and provide global access to education and training for students (Islam et al., 2015). The integration of information technology (IT) through e-learning has led to cost reduction for students while simultaneously improving the quality of education (Songkram, 2015). This underscores the economic viability of e-learning, allowing students to engage in other productive activities during their free time (Aparicio, et al. 2016).

Learners' Perspective on their online learning environment

When queried about the impact of the Covid-19 pandemic on their academic pursuits, specifically during its initial onset in March 2020, it is worth noting that 58% of the respondents conveyed that their studies remained relatively unscathed, primarily due to the fortuitous alignment with a two-week spring

break. Conversely, a smaller proportion of participants reported experiencing initial setbacks or challenges during the early stages of the Covid-19 outbreak.

A striking 80% of the respondents divulged that they engaged in remote learning from the comforts of their homes during the lockdown. An additional 10% opted for nearby cafes, where they could access Wi-Fi while attending their classes. A notable 5% confessed to the daring practice of participating in online classes while driving or during family vacations. Approximately 5% adhered to the mandatory physical distancing measures and physically attended school while continuing to partake in virtual classes (Refer to Figure 1A).

Technology

When inquired about their device preferences for online learning, the participants' responses unveiled laptops as the predominant choice among students, with nearly 30% of respondents utilizing this technology. Desktop computers and smartphones also enjoyed significant popularity, being employed by approximately 15% and 19% of participants, respectively. Conversely, the utilization of tablets and smart boards connected online was relegated to a modest percentage of students. Specifically, a mere 8% of respondents identified tablets as their primary device for online learning (Refer to Figure 1B).

Approximately 31% of the participants assessed their internet connection as either weak, somewhat weak, or moderately reliable during their online study sessions, while the remaining 69% reported possessing a reliable internet connection (Refer to Figure 1C). It is self-evident that, to ensure a seamless and efficacious online learning experience, addressing and enhancing internet connectivity issues faced by students who provided lower ratings becomes imperative.

Comprehending these statistics can empower educational institutions to tailor their online learning platforms to align with the devices most frequently employed by students. By accommodating these preferences, institutions can deliver a streamlined and efficient online learning experience that caters to the diverse needs of all students.

Support

When queried about the degree of support offered within the "enforced" online learning environment, it is noteworthy that approximately 67% of the respondents opted for a "neutral" stance. A further 25% expressed a notably positive perception of the support provided, while a minority of 7% conveyed discontent regarding the support's adequacy. This latter statistic suggests that a fraction of

students may have encountered challenges or obstacles during their online learning experiences, thus perceiving a deficiency in the support they received (Refer to Figure 1D).

In our capacity as educators, it becomes imperative to address the concerns raised by this dissatisfied minority to foster a more inclusive and efficacious learning milieu for all students. Equally noteworthy are the varying responses pertaining to parental support, with 30% of students reporting a high level of parental support, while approximately 60% adopted a neutral position. Conversely, approximately 9% expressed a lack of parental support. These insights hold value not only for educational institutions but also for parents, encouraging collaborative efforts to better cater to the evolving needs of students as they transition between different learning modalities (Refer to Figure 1E).

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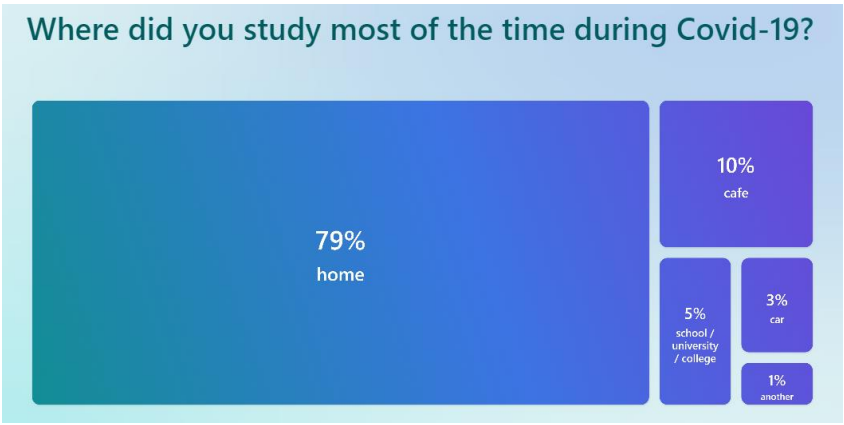

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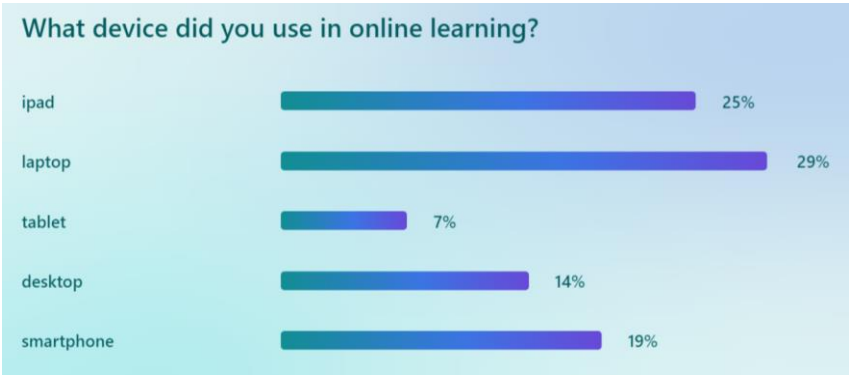

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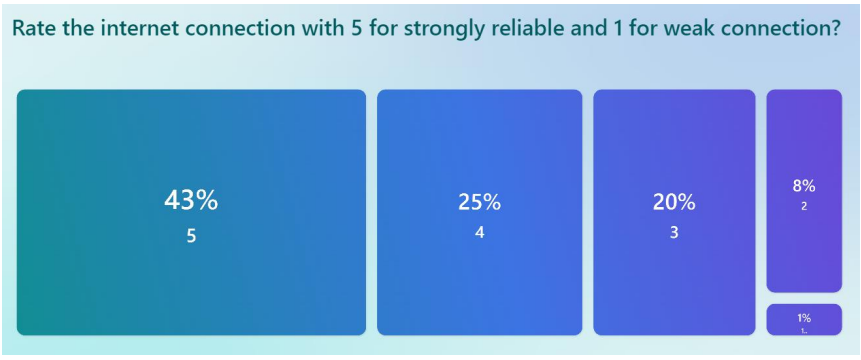

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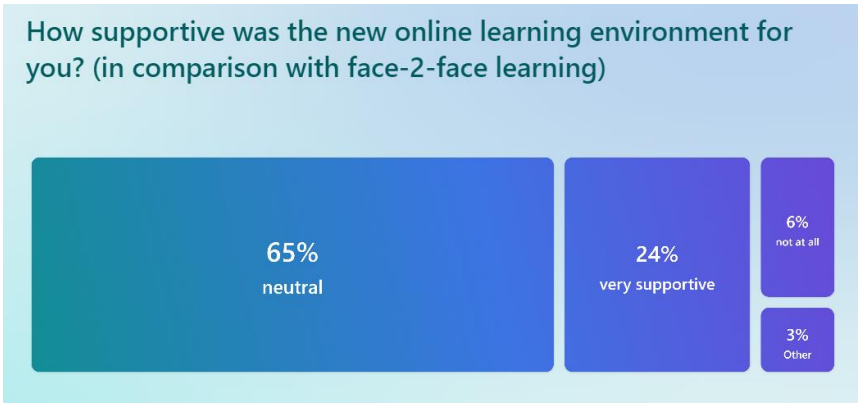

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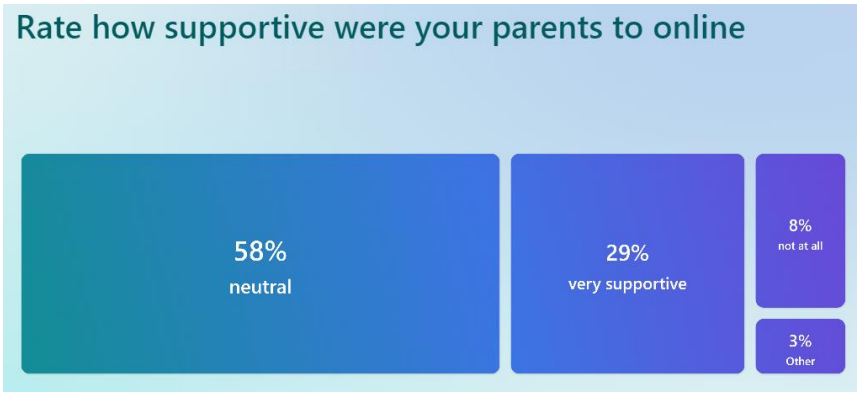

Figure 1

Learners' Perspective on their online learning environment

Learners' Perspective on their learning attitude during online classes

Critical success factors such as fostering a positive attitude, maintaining motivation, demonstrating discipline, and sustaining unwavering focus and task dedication prove to be indispensable attributes both within educational institutions and beyond. What revelations does our survey yield in this regard? A comprehensive 43% of our participants assert their ability to maintain consistent focus either all the time or the majority of the time during their online classes. Remarkably, approximate 45% of the students queried indicated that they are able to uphold a commendable level of focus only intermittently. The residual respondents' responses ranged from "never" to "rarely" (Refer to Figure 2A).

When probed about the factors influencing their ability to concentrate, learners discerned a multitude of hindrances, including disruptions stemming from family members, encroachments by social media, and the allure of online gaming, all of which significantly impede their concentration. Additionally, they identified an array of additional distractions, such as feelings of ennui, perceived disengagement with the learning material, background noise, fatigue, suboptimal technological resources, and a lack of conducive physical space. Notably, several learners underscored particular factors, such as the allure of

a comfortable bed during study hours, the impact of the teacher's vocal tone on their attentiveness, prolonged screen time leading to visual fatigue, and apprehensions about their future prospects. The presence of a comfortable bed, for instance, may induce feelings of drowsiness or relaxation unsuitable for concentrated learning. The teacher's vocal delivery was identified as a potential obstacle to maintaining focus, underscoring the significance of vocal engagement in online pedagogy. Excessive screen exposure can lead to visual weariness and a decline in concentration, highlighting the necessity for strategies to manage screen time effectively. Furthermore, preoccupation with future concerns can divert attention from present learning endeavors, emphasizing the potential value of mindfulness techniques or other methods to enhance concentration. Lastly, some respondents acknowledged the impact of language barriers on their comprehension and focus, underscoring the importance of language support for students in online learning settings (Refer to Figure 2B).

These distractions underscore the urgency of implementing tailored strategies to manage potential diversions, boost student engagement, and enhance the efficacy of online learning. It is incumbent upon educators and students alike to recognize these potential impediments and contemplate strategies for their mitigation.

In addition, in response to inquiries concerning active participation in online classes, a noteworthy 45.6% of respondents confirmed their status as active participants during the majority of their online sessions, while an additional 40.4% reported that they are occasionally active in their virtual classrooms. However, a diminutive proportion of respondents (approximately 12.3%) exhibited lower levels of engagement, admitting to infrequent or negligible participation in online classes (Refer to Figure 2C). These insights underscore the significance of formulating strategies aimed at nurturing student engagement and concentration in online learning environments.

When evaluating attendance in online classes, a striking 40.4% of respondents reported near-ideal attendance, ranging from 90% to 100%. Moreover, about 36.8% disclosed attendance levels spanning 80% to 90%. An additional 15.8% maintained attendance rates within the bracket of 70% to 80%. Intriguingly, a mere 3.5% acknowledged attendance levels falling between 60% and 70%, while none of the respondents reported attendance rates below 60% (Refer to Figure 2D). These statistics allude to a generally high level of commitment to online learning among the surveyed students. It is plausible that this heightened commitment can be attributed to the educational context of an engineering school where attendance and punctuality are held in high regard, and non-compliance can potentially lead to expulsion.

Moreover, when assessing diligence in completing homework assignments, approximately 56.1% of the respondents affirmed their consistent completion of online homework assignments as stipulated, while an additional 19.3% executed this task with regularity. In contrast, around 14% of the students we queried adhered to the online homework requirements only intermittently, while a concerning 7% reported seldom or almost never complying with the assignment demands as prescribed (Refer to Figure 2E).

The corollary question arises: Does this heightened level of attendance correlate with an elevated level of discipline and academic accomplishment?

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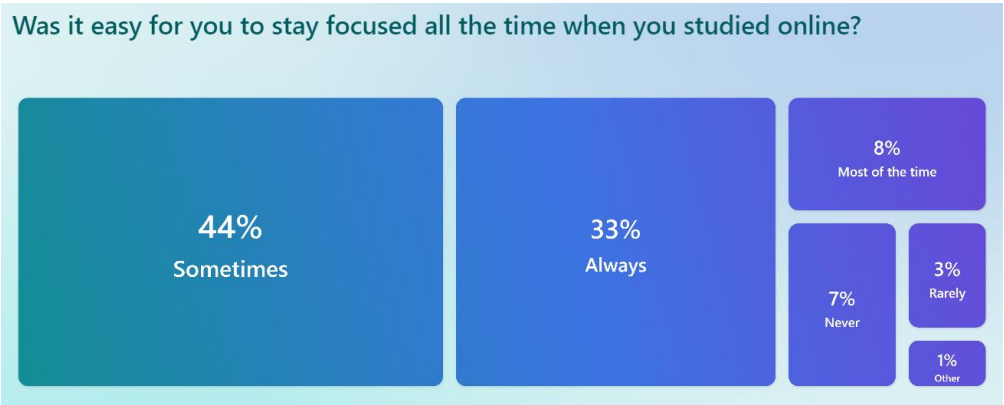

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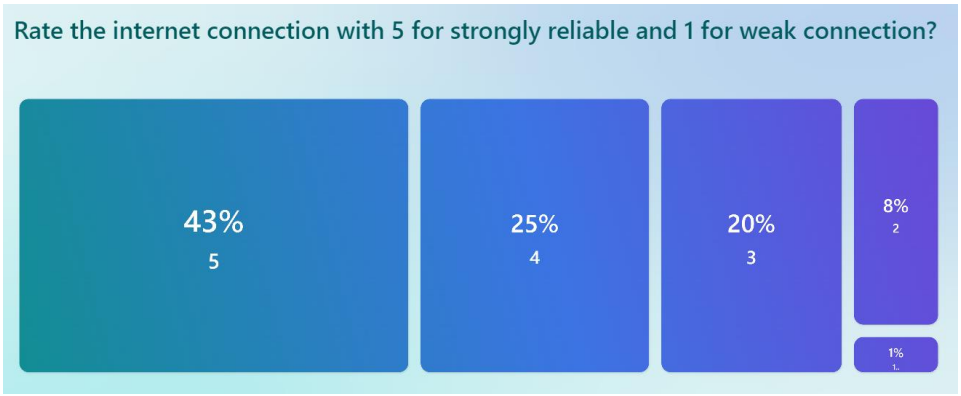

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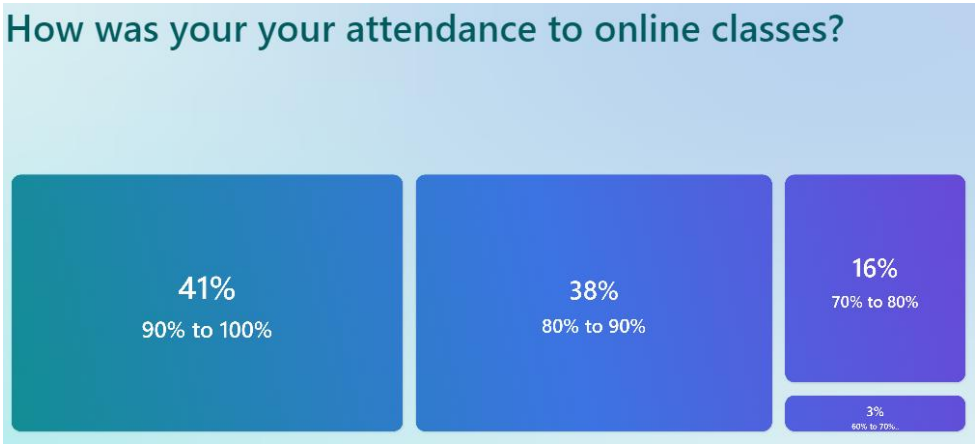

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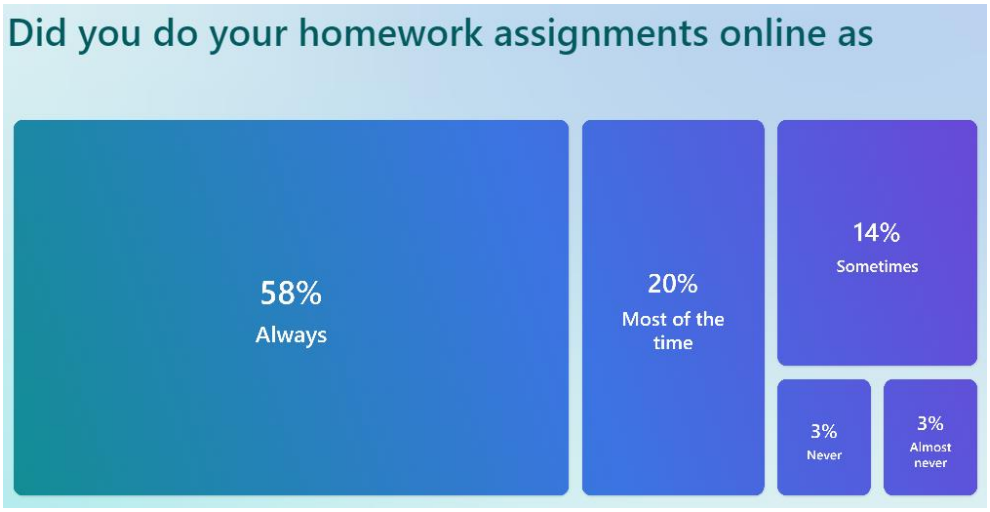

Figure 2

Learners' Perspective on their learning attitude during online classes

Impact of the Covid-19-Induced Transition to Online Learning on Learners' Academic Achievement

The survey encompassed inquiries regarding students' academic achievements both before and after the transition to online learning. The gathered data indicates that, during the COVID-19 pandemic years,

there were modest yet discernible improvements in students' final results following the shift to online learning.

In the academic year 2019-2020, preceding the widespread integration of online learning, 14.0% of participants reported securing grade 'A' (87 to 100), while 19.3% attained grade 'B' (77 to 86) (Refer to Figure 3A). Progressing to the academic year 2020-2021, the percentage of 'A' grades experienced a slight uptick, reaching 15.8%, while 'B' grades witnessed a commensurate decrease to 17.5% (Refer to Figure 3B). In the academic year 2021-2022, the proportion of 'A' grades further improved to 17.5%, whereas 'B' grades declined to 12.3%. Additionally, a minor upturn in 'C' grades (67 to 76) was noted, increasing from 1.8% in the academic years 2019-2020 and 2020-2021 to 3.5% in the academic year 2021-2022 (Refer to Figure 3C). It is noteworthy that no students reported obtaining grade 'D' (60 to 66) or 'F' (0 to 59) during any of the examined years. Responses to the open-ended question reveal that some students perceived their overall results and grades to remain consistent with their pre-pandemic standards.

In summary, the transition to online learning appears to have coincided with incremental improvements in grade distribution among the surveyed students, with a gradual increase in 'A' grades observed over the three-year period. Nevertheless, it is essential to acknowledge that these trends could be influenced by multiple factors, and establishing a direct cause-effect relationship solely from this data is challenging.

Furthermore, we scrutinized the data provided by respondents concerning their Grade Point Average (GPA) before and after the shift to online learning in response to the pandemic. In brief, the data suggests that online learning had a notable impact on students' GPA, with the majority of respondents (73.7%) affirming this influence (Refer to Figure 3D). Interestingly, among those who reported a change in their GPA, a significant proportion (61.4%) experienced an increase, while a smaller contingent (8.8%) witnessed a decrease. Conversely, 12 respondents (21.1%) indicated that online learning had no discernible effect on their GPA, and 3 students (5.3%) expressed uncertainty. These findings suggest that while online learning seemed to affect the academic performance of most students, the precise nature of this impact varies, with the majority reporting a positive influence on their GPA (Refer to Figure 3E).

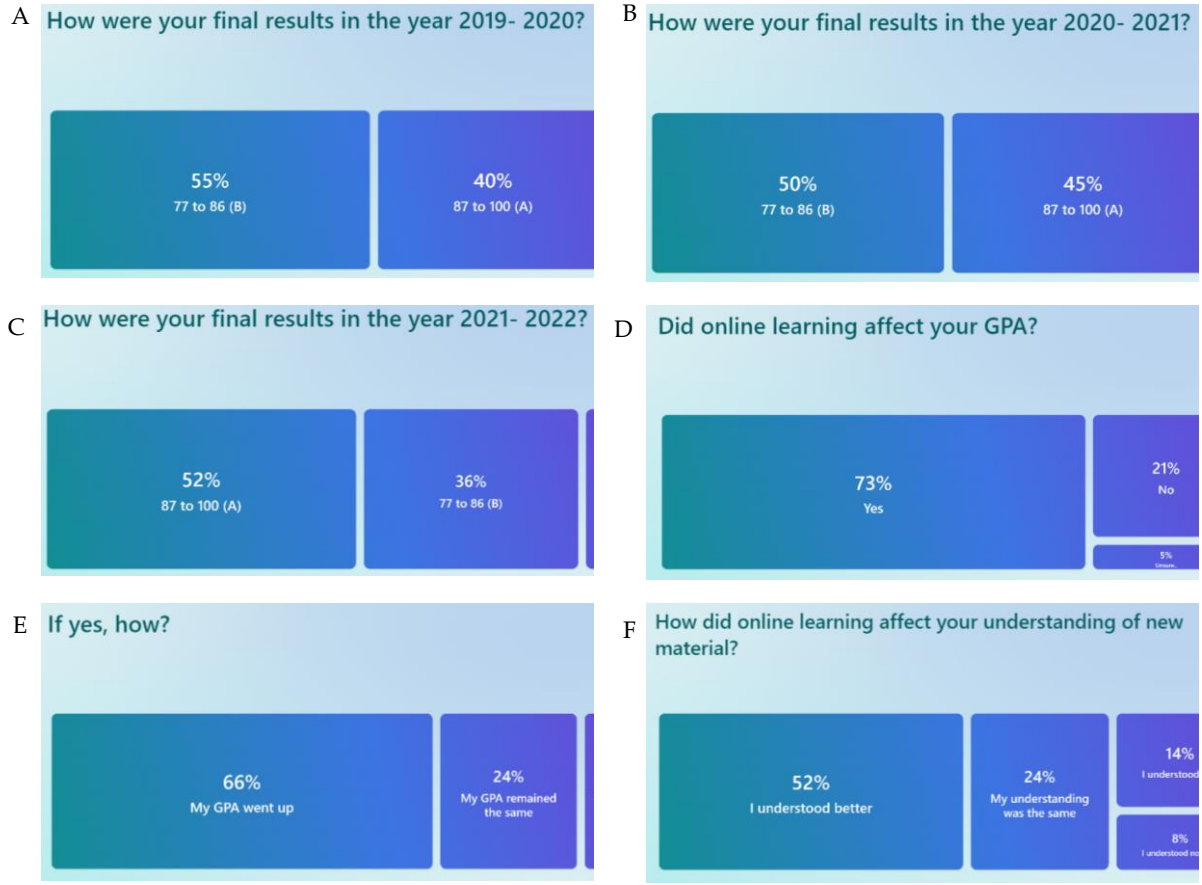

Figure 3

Impact of the Covid-19-Induced Transition to Online Learning on Learners' Academic Achievement

Upon reviewing the data furnished by the respondents, it becomes evident that the shift to online learning did not detrimentally impact the academic performance of the majority of students and, in fact, may have yielded positive outcomes for most (Refer to Figure 3F). It is crucial to bear in mind, however, that these data points reflect the experiences of the surveyed students and may not universally apply.

Impact of the Covid-19-Imposed Shift to Online Learning on Teaching and Learning Methodologies

Based on the responses from students concerning the tools and methodologies employed by educators during online learning, the following noteworthy conclusions can be gleaned:

Prevalent Use of PowerPoint Presentations: The most prevalent instructional tool was the utilization of PowerPoint presentations, delivered through platforms like BBLearn or Teams. An impressive 100% of respondents confirmed their exposure to this method, underscoring the enduring significance of slide-based presentations in the realm of digital instruction.

Emphasis on Video Conferencing: A substantial majority, constituting 72.2% of students, acknowledged the incorporation of video conferencing tools, including Zoom, Skype, and Collaborate Ultra. This high percentage highlights the essential role of live, synchronous sessions in the online learning milieu.

Integration of Multimedia: A noteworthy 63.9% of respondents reported encountering multimedia elements, such as videos and audios, within their online learning experiences. This signifies that educators are leveraging multimedia resources to enhance the breadth and depth of the learning encounter.

Adoption of Interactive Whiteboards: The use of interactive whiteboards was acknowledged by 43.9% of students, signifying a shift towards more interactive and dynamic pedagogical approaches.

Diverse Communication Methods: Traditional means of communication, such as email, were employed, as corroborated by 36.8% of respondents. Furthermore, newer and more immediate communication platforms, like WhatsApp, were also in use, though to a somewhat lesser extent (35.1%).

Integration of Learning Management Systems (LMS): Approximately 30.7% of students reported the use of Google Classroom, implying that certain educators and institutions are embracing comprehensive LMS platforms in their instructional strategies.

Gamification and Interactive Platforms: The mention of tools like Kahoot, Quizizz, and Nearpod under the "Other" category suggests that educators are also introducing gamified and interactive platforms to engage students and evaluate their comprehension in a more interactive and engaging manner.

In summation, educators appear to be adopting a blended approach, combining conventional instructional methodologies (such as PowerPoint presentations) with newer, more interactive and dynamic tools (like Kahoot and interactive whiteboards). This approach incorporates both synchronous (live) and asynchronous methods, with the use of multiple platforms to facilitate effective communication and instruction. This diversified approach reflects a comprehensive endeavor to adapt to the challenges of online learning while catering to diverse learning preferences and requirements (Refer to Figure 4).

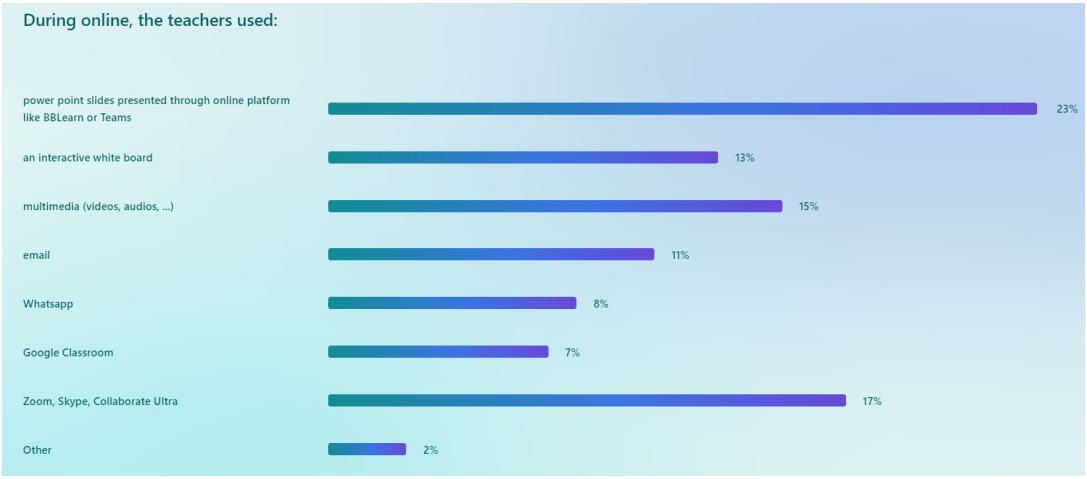

Figure 4

Impact of the Covid-19-Imposed Shift to Online Learning on Teaching and Learning Methodologies

Emotional Support while Studying Online

Amidst the backdrop of the Covid-19 pandemic, a dichotomy emerged among high schools in the UAE regarding the delivery of psychological and counseling support to their students. A slightly more than half of the student respondents (56.4%) affirmed the provision of such services within their high schools, whereas the remaining 43.6% conveyed their absence of access to these vital resources (Refer to Figure 5).

For those students fortunate enough to benefit from these support services, the feedback was overwhelmingly favorable. Among those who shared their experiences, a notable 56% characterized the support as "good." This high percentage indicates a strong positive reception of the support services. Furthermore, descriptors such as "thoughtful," "awareness and motivation," "effective," and "noteworthy awareness" collectively reflect a predominantly constructive perspective on the assistance received. These terms suggest that the support was not only functional but also empathetic and encouraging, addressing both academic and emotional needs. Such positive feedback highlights the crucial role of support services in enhancing the online learning experience during challenging times. However, there were a couple of "illegible" responses, suggesting that a subset of students may have held more intricate or ambivalent sentiments regarding the support they received. These illegible responses could indicate nuanced experiences that are not easily categorized, pointing to the need for further investigation into individual student experiences to fully understand and address their unique needs. This mixed feedback underscores the importance of continually assessing and refining support services to ensure they meet the diverse requirements of all students.

In summation, although a significant number of high schools in the UAE acknowledged the necessity for and implemented counseling and psychological support during the pandemic, a notable portion of students remained devoid of this pivotal assistance. For those fortunate enough to access these resources, the majority expressed positive sentiments, underscoring the paramount importance of such interventions, particularly during arduous periods like the Covid-19 pandemic.

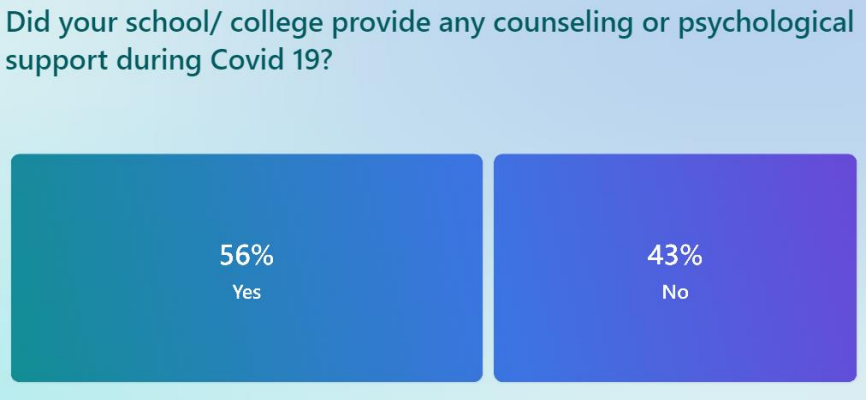

Figure 5

Emotional Support while Studying Online

Training and IT Support During the Shift to Online Learning

The data offers valuable insights into the infrastructure and support provided to high school students in the UAE during their transition to online learning in the midst of the COVID-19 pandemic. A substantial majority, comprising 78.2% (43 students), reported having received training on how to effectively utilize online learning platforms (Refer to Figure 6A). This statistic implies that educational institutions were proactive in equipping students with the requisite knowledge and skills to proficiently navigate the online learning environment. Similarly, 76.4% (42 students) confirmed the availability of IT support to address technical issues encountered during online classes, signifying that schools acknowledged the potential challenges associated with online education and took measures to mitigate technical disruptions (Refer to Figure 6B).

However, it is noteworthy that, despite the majority receiving training and support, 21.8% (12 students) reported not having received training, and 23.6% (13 students) did not have access to IT support. These figures underscore that a significant minority may have encountered difficulties and interruptions in their online learning journey. In summary, the data underscores the commitment of educational institutions in the UAE to ensure a seamless learning experience for their students in the

face of unforeseen challenges. It also emphasizes the importance of ensuring universal access to resources and training to foster an equitable online learning experience for all students.

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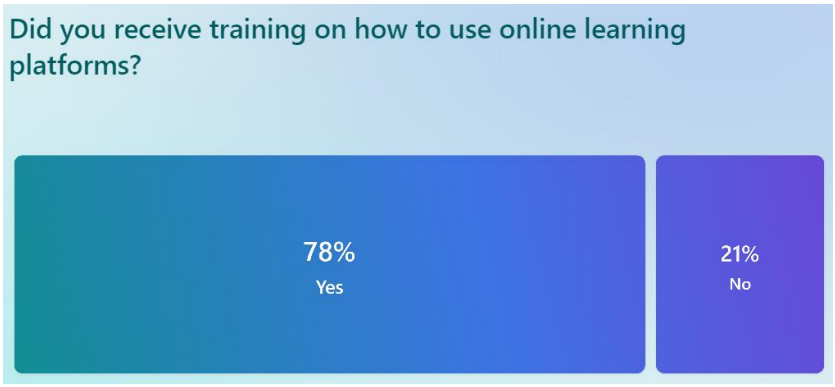

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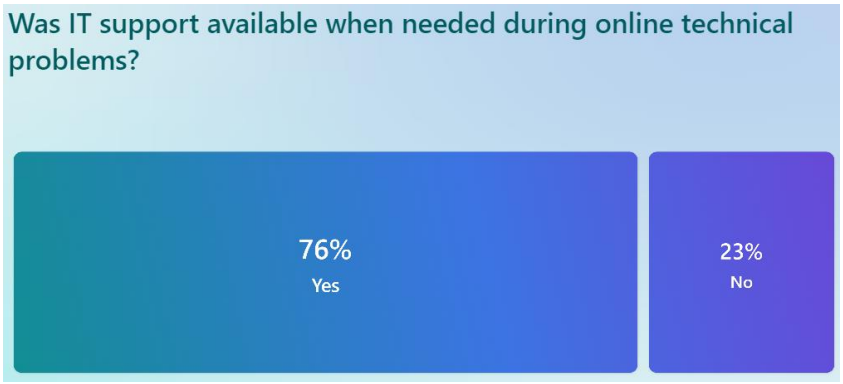

Figure 6

Training and IT Support During the Shift to Online Learning

Learners' Perspectives on Online Learning: Benefits, Drawbacks and Prospects.

The data collected from high school students in the UAE provides a multifaceted perspective on their encounters with online learning during the COVID-19 pandemic.

Preference for Online Learning: A substantial 84% of students expressed a preference for continuing with online learning if given the choice, in stark contrast to the mere 5% who would opt against it (Refer to Figure 7A). Reasons cited for favoring online learning encompass comfort, the flexibility it offers in terms of both location and timing, and the perception that it represents the future of education.

Current Status of Online Learning: Approximately 24% of students are presently engaged in online classes, while a notable 53% have returned to in-person learning. An additional 22% opt for online classes solely when their teachers are not physically present (Refer to Figure 7B).

Perceived Benefits of Online Education: An overwhelming 68% of respondents find online learning to be advantageous. A mere 20% expressed disagreement, with the remainder recognizing benefits under specific circumstances (Refer to Figure 2C). In discussions concerning the future of online education, a significant number of students believe it to be the path forward, citing factors like technological advancements, convenience, and the omnipresence of the internet and social media in their lives. Nonetheless, certain individuals harbor concerns about potential decreases in job opportunities, reduced focus and attention, and the impersonal nature of online learning.

Enhancements for Online Learning: Feedback regarding improvements for online learning is diverse in nature. Some students propose advanced technological integrations, such as 3D and virtual reality, while others emphasize the significance of increased IT support and the development of more user-friendly applications. Nevertheless, a substantial portion of students either refrained from providing suggestions or harbored reservations about online learning from the outset.

Figure 7

Training and IT Support During the Shift to Online Learning

CONCLUSION

In conclusion, the study of students' experiences during the COVID-19 pandemic highlights important insights into the transition to online learning. The swift shift exposed the need for robust quality assurance measures. Student feedback evolved, indicating the necessity of understanding and addressing their changing needs. Students favored laptops, pointing to the need for optimized educational platforms and materials. Maintaining engagement amid distractions is crucial, as is the need

for tailored strategies. The transition led to modest academic improvements, showcasing the system's resilience. A combination of traditional and modern teaching methods, including multimedia and interactive tools, proved vital. Emotional support was beneficial, but access needs improvement. IT support was generally adequate, though equitable access remains a priority. While many students preferred online learning for its comfort and flexibility, concerns about job opportunities and personal interaction persist. Student feedback underscores the need for advanced technological integrations and increased IT support to enhance the online learning experience. Future research should explore the long-term impacts of online learning for engineering students, particularly in how it affects their practical skills, employability, and adaptation to professional environments that require hands-on experience. Such studies would provide a deeper understanding of the evolving educational landscape and help tailor strategies to better prepare engineering students for the future.

The findings of this study contribute valuable insights not only within the UAE but also globally. The experiences and adaptations observed among UAE students mirror those faced by learners worldwide, emphasizing the universal need for improved online education strategies, quality assurance measures, and support systems. By addressing these global challenges, educational institutions can enhance online learning experience and ensure that students everywhere are equipped to thrive in an increasingly digital world.

REFERENCES

AlAteeq, D.A., Aljhani, S., & AlEesa, D. (2020). "Perceived stress among students in virtual classrooms during the COVID-19 outbreak in KSA." Journal of Taibah University Medical Sciences, 15(5), 398-403. doi: 10.1016/j.jtumed.2020.07.004.

Alhosban, A., & Amoush, R. (2022). "Distance Learning Transition at the University of Michigan during a COVID-19 Pandemic: Challenges and Solutions." In Proceedings of the 13th International Conference on Information and Communication Systems (ICICS) (pp. 275-280). Irbid, Jordan. doi: 10.1109/ICICS55353.2022.9811229.

Almendingen, K., Sandsmark Morseth, M., Gjølstad, E., Brevik, A., & Tørris, C. (2021). "Student's experiences with online teaching following COVID-19 lockdown: A mixed methods explorative study." PLOS ONE Journal, August 31.

Aparicio, M., Bacao, F., and Oliveira, T., (2016). Cultural impacts on e-learning systems' success. The Internet and Higher Education, 31, pp. 58-70

Ati, M., Modafar, M., & Guessoum, N. (2010). "E-Learning in the United Arab Emirates."

Elzainy, A., El Sadik, A., & Al Abdulmonem, W. (2020). "Experience of e-learning and online assessment during the COVID-19 pandemic at the College of Medicine, Qassim University."

Hess, A.J. (2021). "As College Students Head Back to Class, Some say Benefits of Online Learning should not be Forgotten." Englewood Cliffs, NJ: CNBC.

Islam, N., Beer, M., and Slack, F., (2015). E-learning challenges faced by academics in higher education. Journal of Education and Training Studies, 3(5), pp. 102-112

Lockee, B.B. (2021). "Online education in the post-COVID era." Nature Electronics, 4, 5–6.

Merriam, S. B. (2009). Qualitative Research: A Guide to Design and Implementation. San Francisco, CA: Jossey Bass.

Peimani, N., & Kamalipour, H. (2021). "Online Education in the Post COVID-19 Era: Students' Perception and Learning Experience." Education Sciences, 11(10), 633

Songkram, N., (2015). E-learning system in virtual learning environment to develop creative thinking for learners in higher education. Procedia-Social and Behavioural Sciences, 174, pp. 674-679.

Szopiński, T., & Bachnik, K. (2022). "Student evaluation of online learning during the COVID-19 pandemic." Technological Forecasting and Social Change, 174, 121203. doi: 10.1016/j.techfore.2021.121203.

UAE Stat. Available at: https://uaestat.fcsc.gov.ae/en (Accessed: 14 May 2024).

Wallis, L. (2020). "Growth in Distance Learning Outpaces Total Enrollment Growth." Available online at: QualityInfo (accessed January 3, 2022).

Zvalo-Martyn, J. (2020). "Why My Students Like Online Learning." Washington, D.C: American Association of Colleges and Universities.

Please Cite: Madi, M., Chouikha, S., & Sphicas, P. (2025). Online learning through the eyes of engineering students in the UAE. Journal of Research in Didactical Sciences, 4(1), 1-18. doi: https//doi.org/10.51853/jorids/15869

Received: 14.05.2024 ▪ Accepted: 19.12.2024