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PAPER

Comparing Students' Perspectives on Online Learning during the COVID-19 Pandemic: A Cross-Cultural Study of Undergraduate Students in the U.S. and Saudi Arabia

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ABSTRACT

The global educational landscape has grappled with unprecedented challenges amid the COVID-19 pandemic, prompting a seismic shift from traditional instruction to ubiquitous online learning. This study, employing an exploratory mixed-methods approach with 890 participants from Saudi and United States (U.S.) higher education institutions, scrutinizes and compares the perspectives of undergraduate students on online learning during the pandemic. Multiple regression analyses reveal divergent associations between U.S. and Saudi participants, highlighting varied attributes such as interactivity, learning environment, time management, cost, flexibility, and resource accessibility. Despite these differences, commonalities emerge in participants' views on teacher roles, learning quality, academic success, and social interaction in the online milieu. Thematic analysis uncovers challenges related to the swift transition, including resource inadequacies and perceptions of online teaching quality. Nevertheless, positive aspects of online learning, such as cost-effectiveness and flexibility, are emphasized, underscoring its growing importance in higher education amid the pandemic's challenges.

KEYWORDS

online learning, COVID-19 pandemic, undergraduate students, United States (U.S.), Saudi Arabia, higher education

1 INTRODUCTION

The global outbreak of the COVID-19 pandemic has presented formidable challenges to the field of education on a worldwide scale. Both K-12 and higher education have undergone a paradigm shift in instructional methodologies, transitioning from conventional face-to-face settings to the realm of online learning. This transition has been necessitated as a strategic response to mitigate the transmission of the virus

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and minimize the associated health risks [40]. Although higher education institutions across the globe had been gradually integrating online or blended instructional modes over the preceding two decades, the abrupt and widespread adoption of fully online learning during the pandemic revealed a collective unpreparedness [8].

The challenges encountered in this transition were multifaceted, encompassing issues such as inadequate technological support and infrastructure, faculty unpreparedness for the intricacies of online teaching, and students contending with diminished engagement, motivation, and mental health concerns exacerbated by the stress of quarantine and isolation [3], [7], [16], [31], [38], [41].

While online learning has experienced increased prominence and integration in higher education globally over the past decade [5], the pace of its adoption has varied significantly among different countries. Notably, the United States (U.S.) reported a substantial 36.3% and 42.3% of total distance education course enrollment in undergraduate and graduate programs, respectively [8]. In contrast, Saudi Arabia did not witness widespread implementation of online learning in its higher education institutions before the pandemic [4]. Consequently, the focus of this study is to assess and compare the perspectives of undergraduate students in the U.S. and Saudi Arabia regarding online learning during the COVID-19 pandemic.

2 LITERATURE REVIEW

2.1 Online learning in higher education

The last decade has witnessed a significant surge in the prominence of online learning in higher education globally, propelled by advancements in information and communication technologies [8]. An effective online learning experience and acceptance hinge on various factors, encompassing course content and structure, student motivation and competencies, instructors' teaching style, technical competence, and attitudes toward technology, as well as the learning environment infrastructure and university support [37].

Online learning, as an alternative, addresses fiscal constraints in higher education, offering diverse possibilities and advantages to both students and faculty [13]. Primarily, the accessibility it affords becomes a pivotal benefit, catering to students juggling work and family commitments and those residing in remote areas [21], [39], [33]. Furthermore, it accommodates the needs of students pursuing education while seeking employment online [8], [19], [20], fostering a student-centered approach that enhances engagement and cultivates 21st-century skills [39]. The utilization of technology facilitates global access to information, encouraging intuitive and user-friendly online teaching and learning experiences [35].

However, the advantages of online learning coexist with substantial challenges for both students and faculty. While self-paced and student-centered approaches offer flexibility, feelings of isolation and inadequate support resources may diminish retention rates and impact graduation outcomes [2], [29], [39]. Faculty encounter difficulties in maintaining student engagement and motivation without face-to-face interactions, finding online learning time-consuming due to continuous attention to individual student needs and ongoing communication [28], [25], [26].

Disparities in perceptions between teachers and students surface based on their online learning experiences. Varied faculty status and students' educational levels influence preferences for instructional methods, such as the use of videos or synchronous sessions [36], [23], [22]. Constructive feedback, clear

guidelines, and the availability of recorded lectures contribute significantly to students' satisfaction [23], [22]. Cultural communication factors, when considered by faculty, strengthen students' connections to their academic environment [17].

Despite documented advantages and challenges, the COVID-19 pandemic has compelled a global necessity for online learning over the past two years, shifting it from an alternative to an imperative measure for education continuity amid efforts to contain the virus spread [24]. In the subsequent section, we delve into the literature on online learning in higher education during the COVID-19 pandemic.

2.2 Online learning during the COVID-19 pandemic worldwide

The abrupt transition from traditional face-to-face classes to online learning presented challenges to students, faculty, and higher education institution personnel globally, unprepared for the uncertainties of the unprecedented COVID-19 pandemic [5], [34]. This shift intensified existing advantages and challenges, and new issues emerged due to the unique circumstances of the global pandemic.

Well-designed online courses with high teaching presence were perceived positively by students, fostering increased self-efficacy, responsibility, and motivation [7], [31], [32]. Incorporating peer interaction during live synchronous sessions created a sense of community, aiding in overcoming stress associated with quarantine and isolation [3], [15], [14].

However, challenges during the pandemic included technical difficulties, logistical unpreparedness, unequal access to electronic devices, prolonged screen time, and perceived higher workload [6], [7], [16], [18], [31], [38]. Issues such as delayed availability of recorded lectures and materials added complexity to meeting assignment deadlines [7], [16], [31].

Furthermore, students reported diminished instructor support and perceived lower teaching quality compared to traditional classes [16]. The online learning environment reinforced the perception of impersonality, difficulty in engaging students, and hindered interactions between students and teachers [30], [31], leading to challenges in maintaining focus, self-discipline, and motivation [6], [7], [16], [30], [31], [38]. Ultimately, the pandemic significantly and negatively affected students' mental health, compounded by the challenges of transitioning to online learning amid additional stressors [3], [38].

Research question. Considering the purpose of this study to measure and compare the perspectives of U.S. and Saudi undergraduate students on online learning during the COVID-19 pandemic, the researchers aimed to answer the following research question:

- What are the perceptions of students toward online learning during the COVID-19 pandemic?

3 RESEARCH METHODOLOGY

In the pursuit of comprehensively gauging students' perspectives towards online learning amid the COVID-19 pandemic, an explanatory mixed methods approach was employed [11]. This methodological framework seamlessly integrated quantitative and qualitative facets to elucidate a nuanced understanding of the phenomenon under scrutiny.

During the initial phase, a survey instrument was administered to the participants. In the subsequent phase, the researchers meticulously scrutinized the open-ended questions appended to the survey instrument. This discerning analysis aimed to unearth and distill participants' reflections, emotions, comprehension, and attitudes concerning online learning during the exigencies of the COVID-19 pandemic.

3.1 Participants and design

In adherence to the sanctioned Institutional Review Board (IRB) protocol (#2020-03-0033), participants were comprehensively briefed on the study's protocols. Emphasis was placed on the voluntary nature of their participation and the rigorous measures undertaken to uphold the confidentiality and anonymity of their responses. A total of 890 participants actively engaged in the survey, representing two higher education institutions in the U.S. (408 participants) and one institution in Saudi Arabia (482 participants).

Demographically, the participant cohort comprised 452 males and 438 females, with 70% pursuing undergraduate studies and the remaining 30% enrolled in graduate programs within the social sciences (83.5%) and engineering (16.5%). Noteworthy, the survey achieved a response rate of 25.6%.

3.2 Instrument

The survey instrument commenced with inquiries into participants' demographic details, setting the stage for a comprehensive understanding of their backgrounds. Subsequently, the instrument incorporated 5-point Likert-type scale questions, meticulously crafted to gauge participants' perspectives on online learning, with responses ranging from "strongly disagree" to "strongly agree." All items in the instrument were holistically formulated based on insights derived from an extensive literature review, drawing on seminal works such as those by [1], [10], [27]. Notably, two open-ended questions were strategically positioned at the conclusion of the survey instrument, providing participants with an avenue to articulate their reflections, understanding, and attitudes towards online learning.

3.3 Data collection

The data collection phase transpired during the spring of 2020, with the survey instrument meticulously crafted and disseminated via Qualtrics. Department chairs at each of the three universities facilitated the distribution of the survey link to instructors, who subsequently shared it with their students. A total of 3,465 undergraduate and graduate students were recipients of the survey link, accessible for response between April and June 2020. Participants, prior to survey completion, affixed their digital signatures on the informed consent form, prominently featured on the survey instrument's initial page.

3.4 Data analysis

Quantitative data underwent meticulous scrutiny through multiple regression analysis, a statistical technique delineating linear relationships between dependent

and independent variables. This analysis was executed using Python, leveraging the Scikit-Learn library to implement regression functions and categorize the data [12]. The qualitative data, extracted from the open-ended questions, underwent a rigorous analytical process. Descriptive coding was initially employed to identify patterns encapsulating participants' perceptions and experiences with online learning during the pandemic. Subsequently, thematic analysis was applied, refining pertinent codes into overarching themes, thereby capturing the essence of the investigated phenomenon [9].

4 FINDINGS

4.1 Quantitative data analysis

The examination of the relationship between the dependent variable and the independent variables through multiple regression analysis presented a nuanced understanding, treating regression coefficients (β's) as weighted averages (refer to Table 1). U.S. students exhibited positive associations between online learning and various factors. Notably, they connected online learning with an interactive learning environment (β = .20, t = 3.01, p = .001), a comfortable learning environment (β = .19, t = 2.21, p = .002), flexibility (β = .09, t = 3.03, p < .002), accessibility of resources (β = .19, t = 3.11, p < .003), knowledge of online learning platforms (β = .23, t = 3.01, p < .002), online learning experience (β = .13, t = 2.21, p < .002), efficient use of time (β = .21, t = 3.44, p < .001), cost considerations (β = .31, t = 3.02, p < .002), and the quality of assignment feedback (β = .22, t = 2.02, p < .001). Conversely, U.S. students exhibited negative associations between online learning and factors such as teacher roles (β = –.20, t = 2.13, p = .002), academic success (β = –.17, t = 2.54, p = .001), overall learning quality (β = –.08, t = 3.12, p = .001), social interaction (β = –.13, t = 3.01, p = .001), and engagement in proactive learning activities (β = –.09, t = 2.21, p = .002).

Table 1. Summary of multiple regression analysis

Dependent Variable	Predictors	*B*	*SE B*	β	Adj. R^2	*F*
Interactive learning environment	U.S.	.03	.03	.20*	.04	3.02
	Saudi	.05	.06	–.21		
Comfortable learning environment	U.S.	–.04	.02	.19**	.07	3.12**
	Saudi	.10	.04	.18*		
Effects of teacher roles	U.S.	–.04	.04	–.20	.08	5.25***
	Saudi	.06	.05	.14*		
Academic success	U.S.	.05	.03	–.17	.13	5.02***
	Saudi	.04	.04	.19*		
Quality of learning	U.S.	–.09	.03	–.09	.06	7.43***
	Saudi	.03	.06	.27*		
Cost (Cost of learning)	U.S.	.05	.02	.31**	.12	4.78***
	Saudi	.08	.03	–.14		

(Continued)

Table 1. Summary of multiple regression analysis *(Continued)*

Dependent Variable	Predictors	*B*	*SE B*	β	Adj. R^2	*F*
Social interaction	U.S.	–.02	.10	–.13	.13	6.12***
	Saudi	.07	.05	.17**		
Flexibility	U.S.	–.09	.04	.09*	.03	3.51***
	Saudi	.09	.08	.21**		
Accessibility of resources	U.S.	.04	.05	.19**	.07	5.11***
	Saudi	–.03	.03	–.12		
Knowledge of online learning platforms	U.S.	–.07	.07	.23**	.12	6.09***
	Saudi	.04	.03	–.15		
Online learning experience	U.S.	–.09	.05	.13**	.05	4.11**
	Saudi	.06	.06	–.19		
Use of time	U.S.	.04	.12	.21**	.15	4.71**
	Saudi	–.07	.04	–.13		
Assignment feedback quality	U.S.	–.04	.06	.19*	.14	3.81**
	Saudi	.11	.09	–.22		
Proactive learning activities	U.S.	.03	.07	–.09	.10	4.09***
	Saudi	–.07	.03	–.21		

Note: *p < .05; **p < .01; ***p < .001.

In contrast, Saudi students demonstrated positive associations between online learning and several dimensions. They linked online learning with teacher roles (β = .14, t = 3.02, p = .001), academic success (β = .19, t = 2.31, p = .002), learning quality (β = .27, t = 2.06, p = .001), social interaction (β = .17, t = 2.45, p = .001), flexibility (β = .21, t = 2.21, p = .002), efficient use of time (β = .13, t = 2.91, p = .001), and proactive learning activities (β = .21, t = 2.21, p = .002). Conversely, they exhibited negative associations between online learning and certain aspects, including a comfortable learning environment (β = .18, t = 2.76, p = .003), an interactive learning environment (β = –.21, t = 2.21, p = .001), accessibility of resources (β = –.12, t = 2.76, p < .003), knowledge of online learning platforms (β = –.15, t = 2.90, p < .001), online learning experience (β = –.19, t = 3.21, p < .002), efficient use of time (β = –.13, t = 2.32, p < .001), cost considerations (β = –.14, t = 3.34, p < .003), and assignment feedback quality (β = –.22, t = 2.02, p < .001).

4.2 Qualitative data analysis

Five themes emerged from the thematic analysis: 1) interactive and comfortable learning environment, 2) academic success and learning quality, 3) cost of online learning, 4) flexibility, and 5) time management. Overall, the findings revealed the challenges students experienced concerning the rapid shift to online learning, including the lack of resources and infrastructure in the online environment and their perceptions of quality teaching and learning online. The findings also emphasized positive features of online learning based on the participants' perceptions of its cost-effectiveness, flexibility, and need to develop time-management skills.

Interactive and comfortable learning environment. The first theme emerged from the participants' perspectives of online learning based on their background experiences. The U.S. students experienced a smooth, comfortable transition from face-to-face, traditional classes to online learning, in which they highlighted their familiarity with its interactive features. The following quotes exemplify their perspectives:

> *Interactive online learning doesn't have to be difficult. First, it's important to select the right elements based on our goals and the needs of our audience. Then, everything should come together naturally. I believe instructors should use digital interactive tools like Kahoot, Twiddla, Duolingo, and Quizlet in their online courses because they are fun and promote interactive learning* (U.S. Participant 1).
>
> *We began our group discussions on online forums. Our instructor encouraged us to solve problems together using online group chats and incorporated social media into our eLearning strategy. Working in groups allowed us to add a human touch to our eLearning courses, even though we weren't meeting in person* (U.S. Participant 2).

Conversely, the Saudi students' lack of previous experiences made them uneasy about the transition, which resulted in several issues adapting to the online mode of instruction. As a matter of fact, they indicated that their first experience with online learning occurred during the COVID-19 pandemic. Nonetheless, they highlighted that the blackboard discussion platform was one valuable tool for their online courses that contributed to their learning experiences. For example, one Saudi participant stated, *We just started using online learning platforms during COVID-19 pandemic. We didn't have knowledge of online learning platforms; therefore, we were having serious difficulties and didn't feel comfortable* (Saudi Participant 10). Likewise, another one added that *our classes were not very interactive since we did (sic) all our courses through Zoom. It is very limited to interact with the instructors and classmates* (Saudi Participant 5). Repeatedly, the Saudi participants emphasized that online learning was not interactive, which made them uneasy and uncomfortable using it.

Nonetheless, participants from both countries highlighted that the instructors should have stayed active during the course by checking message boards, grading, facilitating discussions, and providing useful feedback regularly. They also emphasized the need for instructors to commit to continual curricular and technology use improvements for teaching and learning.

Academic success and learning quality. The second theme emerged from the participants' perspectives of quality online learning. They emphasized the need for online learning to be accessible for learners with special needs, to offer user-friendly interface, and take full advantage of a variety of technological tools to improve teaching and learning. Ultimately, high-quality online learning was perceived as one that increases student academic success. One of the participants noted that, *In online discussions, we can think about others' comments before replying or moving on. This gives us time to create thoughtful responses, unlike in face-to-face conversations where we have to respond immediately or miss our chance to join the discussion* (U.S. Participant 8).

In the same vein, the absence of interactions between instructors and students online was considered a hindrance to high-quality online learning and, consequently, to student academic success. In the participants' view, fruitful dialogues and interactions between instructors and students online compensate for the lack of physical presence and connections established in the traditional, face-to-face learning environment. For example, one of the participants said,

> *Even if the instructor is skilled at creating a good virtual classroom, not being physically present at the institution can be a drawback for an online program. Both instructors and students might miss out on meetings and events that need face-to-face interaction, which can be a limitation* (Saudi Participant 9).

Ultimately, the participants suggested that instructors should use different strategies to compensate for the lack of physical presence in online learning by building a supportive atmosphere within online courses where all students would feel comfortable joining and know that the instructor was accessible and concerned for their academic success.

Cost of online learning. The third theme emerged from the participants' perception of online learning as cost-effective. Participants from both countries agreed that online learning was a more reasonable financial option for students interested in receiving high-quality education at a much lower cost than traditional modes of instruction on campus. The following quotes exemplified their perspectives:

> *Online learning is often less expensive than traditional education. Recent reports show that a degree from a traditional university or college costs about $85,000 on average. In contrast, an online degree typically costs around $30,000* (U.S. Participant 3).
>
> *Online education is generally more affordable than in-person learning. This cost difference is because online courses don't require physical infrastructure or full-time teachers. However, some online courses are now priced similarly to traditional education* (U.S. Participant 5).
>
> *Traditional education involves costs for classes, accommodation, meals, activity fees, and books. Online learning is cheaper because you avoid expenses for items like paper handouts, classroom space, desks, chairs, and other supplies* (Saudi Participant 2).

The U.S. and Saudi participants expressed that online learning's lower cost was crucial during the pandemic. The lower tuition fees allowed them to save money during economic instability and heightened concerns with home/family/health responsibilities. Thus, online learning's cost-effectiveness feature positively impacted their perceptions and experiences compared with traditional learning.

Flexibility. The fourth theme emerged from the participants' perspective that flexibility was the main advantage of online learning. Participants from both countries emphasized the importance of flexibility to balance their home/work and academic responsibilities as well as to complete their assignments at their own pace. The following quotes exemplify the views shared by the U.S. and Saudi participants, respectively;

> *This is an important point for freshmen and working students to think about before signing up for any course. Online studying is flexible, especially for those with jobs or family duties. With online courses, we can attend classes in our free time instead of being tied to a set schedule* (U.S. Participant 7).
>
> *We can fit learning into our schedules when courses don't have fixed deadlines. Most online courses require us to read or watch all materials and complete an online assessment, but they don't specify how long we need to spend online. This flexibility makes online learning perfect for those of us with full-time jobs* (Saudi Participant 4).

Overall, the participants shared positive views on online learning's flexible learning trait, mentioning the ability to access course content and complete assignments whenever and wherever they wanted. In addition, the convenience and accessibility of online learning allowed the students to create a flexible schedule and personal study plan based on their personal, professional, and academic needs. Consequently, none of the participants had given up any responsibility and could ensure the continuity of their studies during the pandemic.

Time-management. The final theme that emerged highlighted the participants' views of the importance of developing time-management skills to ensure that they would effectively complete their courses and academic responsibilities. For example, they mentioned that online learning could be distracting; therefore, they avoided wasting time and could focus on completing their course assignments by developing and perfecting their time-management skills. One of the participants said,

> *A straightforward way to make use of your time is to tackle simple tasks during moments you might not usually consider. For instance, if you are taking an online course, you could listen to the course materials while commuting to and from your daily activities* (U.S. Participant 9).

In addition, time-management skills allowed the participants to plan their schedules effectively, from watching live synchronous lectures to rewatching recorded video lessons to catching up with missing information to complete their assignments. Another critical aspect of time management was evidenced when the participants mentioned watching online lectures and completing discussions on the Blackboard platform while at work. One of the participants explained this matter:

> *This is especially important for online students who have full-time jobs, take care of their families, or handle other responsibilities. Without the support of classmates or a scheduled time to be on campus, managing your time well is essential to staying focused* (Saudi Participant 6).

The Saudi participants asserted that a consequence of acquiring time-management skills was their perceived increased productivity in their personal and professional lives. Notably, while most university students are challenged with time-management issues in their academic life, both U.S. and Saudi participants highlighted that, by developing good time-management skills, they could avoid other distractions online, establish a study schedule, and multitask with other responsibilities.

5 DISCUSSION

The primary objective of this study was to assess and juxtapose the perspectives of undergraduate students in the U.S. and Saudi Arabia regarding online learning amid the COVID-19 pandemic. Employing an explanatory mixed-methods approach, the researchers utilized a survey instrument crafted in Qualtrics, which was then distributed to undergraduate and graduate students across one Saudi and two U.S. higher education institutions. The ensuing comparison of participants from both countries unearthed both convergent and divergent viewpoints, which will be explicated in the subsequent discussion.

In alignment with antecedent research, our findings underscored that U.S. students exhibited positive associations between their experiences in online

learning and its favorable attributes, specifically interactivity, flexibility, and accessibility [21], [22], [39]. It appears that these affirmative associations emanated from the participants' pre-existing knowledge and familiarity with digital platforms, culminating in a heightened level of comfort during the transition from face-to-face to virtual learning environments.

Paralleling this, U.S. students also mirrored negative associations between online learning and various factors such as the role of teachers, academic success, quality of learning, social interactions, and proactive learning activities—a concordance with prior studies [28], [29], [39]. The paramount challenges of online learning, as evidenced, revolve around sustaining student engagement and motivation, fostering an online learning community conducive to learning, and thereby shaping students' perceptions of high-quality online learning experiences, particularly in the context of the pandemic [3], [7], [15], [31], [41].

Moreover, quantitative findings revealed that Saudi participants exhibited negative associations between online learning and a comfortable learning environment, teacher roles, academic success, quality of learning, social interaction, and proactive learning activities. Despite the pandemic introducing Saudi participants to online learning, the period of restrictions, quarantine, isolation, and uncertainties contributed to their pessimistic views. Notably, the lack of prior experience with online learning among Saudi participants highlighted the necessity for a well-designed infrastructure to familiarize them with and enable them to appreciate the benefits of online learning platforms and tools [41]. Open-ended survey responses from Saudi participants emphasized their discomfort with online learning due to limited interactions with peers and instructors, aligning with previous studies that underscored synchronous online sessions as an effective strategy to mitigate feelings of isolation [17] [22].

Similarly, Saudi participants expressed negative associations between online learning and an interactive learning environment, accessibility of resources, knowledge of online learning platforms, online learning experience, and assignment feedback quality. Success in online learning is contingent on students' access to resources and their ability to navigate virtual learning platforms, ensuring a user-friendly, intuitive, and collaborative learning experience [21], [35], [39].

Finally, the perspectives of both U.S. and Saudi participants regarding the importance of time management and the cost-effectiveness of online learning resonated with findings from previous studies [13], [21], [39]. The convenience of managing personal and professional responsibilities, coupled with cost savings from eliminating commuting, meals, and other expenses, emerged as positive aspects of online learning during the pandemic [7], [16], [30], reinforcing the viability and advantages of this mode of learning for students in both countries [13].

6 CONCLUSION

The ubiquity of online learning, while not a novel phenomenon, has become increasingly prevalent, with a surge in its adoption globally, notably accelerated by the exigencies of the COVID-19 pandemic [5], [13], [24], [30]. Despite the pre-existing variations in the availability of online learning across different nations, this study endeavors to gauge and juxtapose the perspectives of undergraduate students in the U.S. and Saudi Arabia regarding online learning during the pandemic. The outcomes illuminate both convergent and divergent viewpoints among the participants.

Irrespective of the varying degrees of familiarity with online learning before the pandemic, participants shared analogous negative sentiments concerning teachers'

roles, academic success, learning quality, social interactions, and proactive learning activities. Furthermore, the shared challenge of sustaining student engagement and motivation within an environment conducive to active learning emerged as a common thread across both countries.

The study underscores the imperative for enhanced preparedness of instructors in creating proactive learning environments that mitigate the absence of face-to-face interactions and cultivate online student engagement and motivation. Faculty development programs and workshops aimed at augmenting educational technology proficiency are posited as essential mechanisms to empower instructors and, consequently, enhance the academic experience of their students.

Significantly, the Saudi participants, lacking prior exposure to online learning, manifested discomfort during the transition from traditional face-to-face to virtual learning. This underscores the necessity of equipping students with online learning experiences throughout their academic journey to instill 21st-century skills crucial for their post-graduation careers [39]. Beyond the immediate academic benefits, integrating educational technology tools and online learning experiences for Saudi undergraduate students is deemed pivotal for substantial improvements in their academic and career development, thereby enhancing their prospects after graduation.

Despite the absence of synchronous online sessions reported by the participants during the COVID-19 pandemic, prior studies advocate for the efficacy of such sessions in mitigating feelings of isolation and fostering communication and interactions [17], [22]. The perceived lack of student engagement and motivation in this study accentuates the necessity for instructors to refine their online instructional skills, incorporating synchronous activities and discussions to enrich students' learning experiences and alleviate feelings of isolation.

Given the diverse academic backgrounds of participants in this study, future research endeavors may delve into evaluating the outcomes of online learning development within specific content areas. Additionally, a lacuna in this study pertains to the omission of information regarding participants' immigration status (e.g., exchange or international students). Subsequent investigations could explore the perceptions and experiences of these student demographics in both the U.S. and Saudi Arabia, providing nuanced insights into online learning.

Furthermore, comprehensive investigations that encompass the viewpoints of faculty and instructional designers are recommended to attain a holistic understanding of the imperatives for enhancing online learning in higher education in both the U.S. and Saudi Arabia.

In conclusion, this study underscores the escalating significance of online learning in higher education, elucidating its benefits and implementation challenges, particularly in the context of the COVID-19 pandemic. The findings underscore the imperative to fortify instructors' educational technology training and foster the development of 21st-century skills among students for an enriched academic experience and enhanced career prospects.

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