



LEARNED LESSONS AND NEW NORMAL IN EDUCATION AFTER THE COVID-19 PANDEMIC FROM SAUDI K-12 TEACHERS' PERSPECTIVES

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ABSTRACT

Aim/Purpose	This study evaluated the e-learning experience of Saudi K-12 teachers during the COVID-19 pandemic. More specifically, it explored their perceptions of e-learning. It also investigated the teaching approaches and strategies, tools for facilitating e-learning, assessment tools, and social media used by teachers for communicating with students in e-learning during the pandemic. Furthermore, it identified the weaknesses of e-learning as perceived by the teachers.
Background	The education sector has been severely impacted by the coronavirus disease (COVID-19) epidemic that has spread globally. The lockdown has damaging effects on the educational system as well, notably in Asia. Traditional classroom education has quickly changed to online instruction as a result of the extended closure of schools and institutions.
Methodology	The study used a mixed-methods approach involving quantitative and qualitative data collection and analysis in this exploratory study. A cohort of 426 randomly selected K-12 teachers completed an electronic questionnaire in the second semester of the 2021 school year.
Contribution	The study revealed successful e-learning experiences during the COVID-19 pandemic in Saudi Arabia. The teachers reported favorable perceptions of e-learning and used teaching approaches and strategies aligned with e-learning.
Findings	The results revealed that the teachers' perceptions of e-learning were positive. However, substantial differences in e-learning perceptions in some variables were found, e.g., experience using the Internet and computer applications. However, no significant differences by sex were found. The results also revealed

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	the teaching approaches and strategies, tools for facilitating e-learning, assessment tools, and social media for communicating with students, which were used more frequently by the teachers in e-learning during the pandemic.
Recommendations for Practitioners	The findings of this study would persuade educational institutions and policy-makers to improve the quality of online teaching with the most up-to-date teaching methods, along with government support for bettering basic infrastructure and Internet connectivity, bridging the digital divide, and developing rural areas to make e-learning more successful and well-liked throughout the nation.
Recommendations for Researchers	This new discovery prompts aspiring researchers to explore teachers' perceptions of e-learning. Researchers would find this work important because the results revealed successful e-learning experiences during the COVID-19 pandemic in Saudi Arabia.
Impact on Society	Because of the impact of e-learning during COVID-19, schools and society should not discard it. This can improve the e-learning experience for both teachers and students. Online-based and classroom-based education modes have advantages, and combining both methods is appropriate to benefit from these advantages.
Future Research	Future work will need to be more detailed, including either qualitative or investigations. Further, more research can investigate instructors' discernments alongside students' and parents' insights toward virtual classes.
Keywords	e-learning; Saudi K-12 teachers; COVID-19 pandemic

INTRODUCTION

The COVID-19 pandemic has seriously affected the education sector, where all schools worldwide were forced to shift to online learning, resulting in a significant transformation of the global educational system. As of March 2022, schools worldwide reopened, although the perceptions of and attitudes toward technology have shifted. Enhancing education technology was the goal of all major educational institutions worldwide. For example, the education technology industry (e-learning), such as video conferencing apps, classroom projectors, language apps, virtual tutoring, and e-learning software, was valued at USD 18.66 billion by the end of 2019. It was projected to be around USD 350 billion by the end of 2025 (Li & Lalani, 2020). This is a staggering estimation of the potential growth in the industry. However, the actual growth from 2020 to 2022 has surpassed expectations. As of December 2021, the industry was valued at USD 254.8 billion globally (Yahoo Finance, 2022). With such mass-scale penetration and adoption of e-learning, its impact on education, as mediated by its effect on students and teachers, must be evaluated (Ahlstrom et al., 2020).

The Kingdom of Saudi Arabia has shown commitment toward e-learning with its Vision 2030, which considers the issues of education to be faced, the causes and solutions to be promoted, and the sustainability of the sector (Aldossary, 2021; Boni & Gregory, 2022). The first COVID-19 case appeared in the country on March 2, 2020. Soon after, on March 2, 2020, all schools and universities were closed to prevent the spread of the virus (Saudi MOE, 2020). As a large population of students near the finishing stages of their school years was affected, the Ministry of Education (MOE) suggested conducting distance education, which became another term used frequently during the COVID-19 pandemic to mean e-learning. As a result, distance education was utilized throughout the country. By March 2022, the penetration of online and digital education had considerably increased in Saudi Arabia, bypassing any prior expectations or vision set in 2016 through Vision 2030.

As with policy changes, stakeholders within the education sector have been seriously affected. Stakeholders' responses to the evolving situation have determined the outcomes achieved (Ahlstrom et al., 2020). The outcomes desired through the expansion of e-learning include a better-suited, modern-style, sustainable, and accessible education system that serves the needs of the times. It provides high-quality education to all students and improves learning outcomes by blending many variable education sources into one curriculum to expand creativity and ingenuity (Li & Lalani, 2020). These goals are part of Vision 2030 (Online Learning Consortium, 2021). In promoting and supporting these goals, the role of teachers is critical. Teachers need to lead online sessions, plan sessions ahead of time, choose resources to supply or suggest to students, maintain decorum in an otherwise free online space, and evaluate students based on an evolved set of criteria (Aldossary, 2021). Thus, teachers' feelings, experiences, and perspectives can guide the direction of e-learning and e-learning in any country. However, studies on e-learning have concentrated mainly on students, and the role of teachers in promoting and supporting e-learning has been somewhat neglected.

The COVID-19 epidemic has prompted educators in less developed countries to use digital platforms for instruction and student evaluation in order to sustain their students' academic interests, despite the fact that e-learning was previously more common in affluent countries. This problem has encouraged innovation and improvement in the educational system for students' continued education (Kamal & Illiyan, 2021). E-learning is not very well-known in Saudi Arabia. The majority of the teachers lacked the skills necessary to teach classes and give exams online. Teachers started to educate as though they had no other option because of the widespread lockdown. They had to face difficulties including, but not limited to, a lack of rudimentary infrastructure at home and technological obstacles.

During the COVID-19 crisis, a number of studies (e.g., Joshi et al., 2021; Kulal & Nayak, 2020; Yusnilita, 2020) described the difficulties faced by instructors in virtual teaching within universities and colleges while ignoring schoolteachers' perceptions and difficulties with e-learning in an ongoing epidemic. The negative attitude of teachers toward virtual learning has been linked to numerous types of research (e.g., Hindocha, 2020); however, in this research, both positive and negative perspectives regarding teachers and the difficulties they face are discussed. It stands for the knowledge gap that the current study is trying to fill.

The COVID-19 situation presented a chance to gauge the preparedness of schools and teachers for emergencies and, more importantly, the online delivery of education (Reimers & Operti, 2022). However, in Saudi Arabia, few studies reported the experience of teachers during the sudden transition to e-learning caused by the pandemic (e.g., Almaghaslah & Alsayari, 2020; Khalil et al., 2020). Therefore, the study aimed to evaluate the e-learning experience in Saudi Arabia during the COVID-19 pandemic from the teachers' perspective by understanding teachers' positive and negative views on e-learning as well as the difficulties they encounter that hinder virtual teaching from being effective makes sense given that instructors are the frontline staff of any educational establishment. The current study also carefully examines schoolteachers' perceptions of and challenges with online teaching so that educational institutions and policymakers can use their experiences to implement the necessary changes by incorporating newer techniques and methods of teaching and learning both during and after the pandemic. Specifically, this study aimed to evaluate the e-learning experience of K-12 teachers in Saudi Arabia during the COVID-19 pandemic. The study evaluated: (1) teachers' perceptions of e-learning; (2) the teaching strategies and approaches, tools for facilitating e-learning, assessment tools, and social media for communicating with students used more frequently by teachers in e-learning during the COVID-19 pandemic; and (3) the challenges the teachers faced in e-learning. The study addressed the following questions:

1. What were Saudi teachers' perceptions of e-learning during the COVID-19 pandemic?
2. Do substantial differences exist in Saudi teachers' perceptions of e-learning by sex, experience with using computers and Internet applications, training on the use of IT in teaching, or experience with e-learning before the COVID-19 pandemic?

3. What teaching strategies, teaching approaches, tools for facilitating e-learning, assessment tools, and social media for communicating with students were more frequently used by Saudi teachers for e-learning during the COVID-19 pandemic?
4. What weak points did the teachers experience that will produce a better e-learning experience if addressed?
5. What is the new normal for mainstream education recommended by teachers after the COVID-19 pandemic?

The following sections present the literature review covering global K-12 education and e-learning challenges worldwide and in Saudi Arabia, the methodology detailing research design and data collection, the results, a discussion interpreting results, implications for educators and policymakers, and a conclusion.

LITERATURE REVIEW

K-12 EDUCATION WORLDWIDE: BENEFITS, CHALLENGES, AND SUGGESTED MODELS AND STRATEGIES

In most countries, after the 12th grade, students are eligible to join the workforce. During this education period, students develop, evolve, and mature their interests and ambitions in education and life in general. They become acquainted with peers and teachers to enhance their social circle and familiarize themselves with instructions, learning, and the superior authority of teachers. Students prepare themselves for tertiary education during K-12, and their character and personality are shaped during this time. The online mode of education supports this cause by enabling students to study multiple resources, stay connected with their instructors to exchange information, quickly and accessibly keep and store information, and comfortably track their progress on assignments and exams (Li & Lalani, 2020).

Despite these benefits of K-12 education and the online mode that has developed over the years, challenges remain in ensuring the delivery of quality education and achieving the desired outcomes of enhancing learning experiences. Some challenges in K-12 education relate to students' learning stage and education cycle. Other challenges have emerged due to the expansion of e-learning during the COVID-19 pandemic (Boni & Gregory, 2022). For example, teachers feel challenged in creating authentic learning experiences, which is defined as having students solve real-world problems and productively collaborate. Researchers at the University of Chicago (Farrington et al., 2012) studied the issues facing teachers of K-12 education. The findings showed that a major challenge for teachers was supporting and developing students' social-emotional skills. These skills included academic behaviors, learning strategies, and academic mindsets. These two challenges are inherent in K-12 education and have only been magnified during the pandemic.

Francom et al. (2021) gauged the impact of e-learning on teachers, considering the already challenging learning environment produced by K-12 education. The findings showed that teachers faced challenges in engaging students and parents, accessing computers and the Internet, and lacking district or school guidelines to support and frame e-learning. They suggested incorporating online and digital education tools with face-to-face classes once the pandemic restrictions are lifted. Another suggestion was to prepare for emergencies such as pandemics in long-term education planning.

Tosun et al. (2021) conducted a study involving 1,071 teachers from different regions in Turkey. The study assessed the adoption of e-learning across a broad spectrum of demographic distributions. It also evaluated the impact of e-learning on Turkish teachers' capabilities to deliver an excellent education in the K-12 domain. The study further assessed the teachers' feelings on the imperative of shifting to a blend of digital and e-learning in the future. They concluded that demographics played a critical role in teachers' feelings, experiences, and perceptions of e-learning and that the success and out-

comes of e-learning, as mediated by the effect on teachers' feelings and experiences, were highly dependent on demographics. For example, women teachers were more likely to lack IT skills, but teachers over 40 were uncomfortable using digital online tools to instruct and use their resources. Lastly, the rural population was more affected by e-learning. The authors suggested a hybrid education model, where online and offline tools are merged, requiring a reassessment of course materials and their development in needed soft form. Additionally, communication guidelines must be issued to mediate student-teacher interactions in a disciplined and professional manner.

Agayon et al. (2022) gathered responses and perspectives from 10 teachers in secondary schools in the Philippines to analyze the impact of the shift to e-learning on teachers' perceptions of e-learning and their skills and readiness for changes in their profession. The findings showed that the teachers faced a significant challenge in learning to ensure quality in e-learning in the same manner as they would have during offline physical education. This arose from the absence of a prior culture of online-only education, a lack of technology and Internet access, a lack of digital and soft forms of instruction, and the teachers' inability to quickly familiarize themselves with the modern tools of video conferencing and lecture delivery (Kovacs et al., 2021).

GLOBAL E-LEARNING BEFORE AND DURING THE COVID-19 PANDEMIC: CHALLENGES AND TEACHERS' EXPERIENCES

Before the COVID-19 pandemic, the global education landscape was primarily centered around in-person teaching and learning. While technology had already made some inroads into classrooms, it was not as pervasive as it became during the pandemic. Some of the challenges and experiences teachers faced in the pre-pandemic era include limited access to technology, resource constraints, limited use of digital tools, etc. (Maatuk et al., 2022). However, despite these challenges, many teachers also had positive experiences before the pandemic. They were able to build strong relationships with their students, create engaging lesson plans, and witness the joy of learning firsthand. In-person interactions allowed immediate feedback and facilitated a sense of community within the classroom. Further, it is important to note that the challenges and experiences of the pre-pandemic may vary depending on the educational context, region, and individual schools. The COVID-19 pandemic has significantly accelerated the adoption of technology in education and brought about substantial changes in teaching and learning practices (Abdelfattah et al., 2023).

E-LEARNING IN SAUDI ARABIA BEFORE AND DURING THE COVID-19 PANDEMIC: CHALLENGES AND TEACHERS' EXPERIENCES

The COVID-19 pandemic significantly impacted the educational landscape worldwide, including Saudi Arabia. The pandemic necessitated the temporary closure of schools and universities, leading to the rapid adoption of e-learning methods and the implementation of various measures to ensure the safety of students and educators. Prior to the COVID-19 pandemic, Saudi Arabia had already started integrating technology into its education system. E-learning initiatives were being implemented to enhance access to education and improve the quality of learning. Online platforms and digital resources were utilized to supplement traditional teaching methods. Prior to COVID-19, although e-learning tools and online methods of teaching in Saudi Arabia were limited (Alali & Xanthidis, 2014; Rajab, 2018), the Kingdom of Saudi Arabia included online teaching and learning as a need and goal of Vision 2030 and invested in the development and success of e-learning as a key component of attaining long-term K-12 goals. These investments included a variety of offerings (online platform, OER, e-content, YouTube, satellite television) and continuous improvement efforts. They resulted in a quick response to the pandemic and an immediate shift to remote instruction. Furthermore, before the pandemic, teachers frequently used these systems to share course content with the students. However, it is worth mentioning that instructors mostly used the blackboard for announcements, sharing lecture resources such as PDFs or PowerPoint slides, and posting students' grades. Similarly, students typically used the Blackboard platform to access information provided by the instructors and submit assignments. Other advanced features of the Blackboard, such as

online quizzes or exams and audio/video lectures, were less frequented by the course instructors and students mainly because of inconvenience, time consumption, and lack of experience (Alatni et al., 2021).

During the pandemic in March 2020, when schools and universities were instructed to proceed with distance education, the Ministry of Education realized that the situation required policy intervention from different perspectives. Therefore, the government of Saudi Arabia implemented a three-phase plan to respond to the problem and considered this as an opportunity to install online and digital infrastructure in public schools and assist private schools by implementing guidelines on online student-teacher interaction, student-class presence, and eventual learning evaluation by year-end (Saudi MOE, 2020). The phases were coping, mitigation, and aftermath. The coping phase involved immediately disbursing the required resources at the primary and secondary school levels. The mitigation phase involved implementing different policy interventions at the public-school level to support broad issues, such as unemployment, health costs, and student/teacher safety. Lastly, the aftermath phase was the learning obtained from these experiences that could assist in adjusting Vision 2030 and educational directorates' strategies.

The Saudi government commissioned a study to evaluate the state of e-learning in the K-12 segment (O'Keefe et al., 2020). The study used a questionnaire and survey to collect and assess the responses of multiple educators and leaders involved in the field. The results showed that e-learning expanded beyond the expectations set in Vision 2030. Most schools relied on hybrid education models even before the study; however, the consistent and comprehensive use of technology for functions such as disseminating, communicating, collecting, and assessing student assignments made the COVID-19 pandemic challenging for the teachers involved (Aldossary, 2021). Overall, O'Keefe et al. (2020) critiqued the conception of educational leaders that online and digital tools should only be considered supplementary, as the study was conducted before the COVID-19 pandemic. The researchers suggested adopting leading-class and international-standard tools to ensure the similarity of online and offline experiences. As such, K-12 education would become sustainable and resilient against such emergencies (Baroudi & Shaya, 2022).

Teachers' feelings regarding experiences, comfort level with, and perspectives on e-learning are influenced by their prior exposure to information and communications technology (ICT) (An et al., 2021; Reimers & Operti, 2022). In Saudi Arabia, Mann et al. (2020) found that only 23% of K-12 teachers had attended online courses and/or training to familiarize themselves with online and digital tools during the 12 months leading up to the survey in 2020. This finding indicates a serious lack of preparedness for teachers, so the survey results also showed a serious concern among school principals about the adequacy of e-learning tools if the teachers were not comfortable or trained with them (see Tosun et al., 2021). Mann et al. (2020) also showed that around 73% of Saudi teachers had received formal training sessions on e-learning before being appointed. Overall, they found increased preparedness among teachers for e-learning in Saudi Arabia than in most other Organization for Economic Cooperation and Development (OECD) countries.

However, An et al. (2021) reviewed teachers' experiences with online and digital tools across the levels leading to Grade 12 and suggested strategies to enhance and improve the present scenario. They suggested various strategies to improve the situation while recovering from the pandemic-induced learning loss for K-12 students and teachers' coping and performing outcomes. The most important of these strategies included developing protocols for e-learning, such as empowering them and ensuring that teachers and school staff are the first responders to emergencies and e-learning needs (An et al., 2021). Researchers have recommended mobilizing financial and human resources across the different levels through well-defined processes and policies that address the concerns regarding teachers' skill level, prior e-learning training, student needs and desired outcomes, and the social context of emergency vs. nonemergency situations (Baroudi & Shaya, 2022; Mann et al., 2020).

METHODOLOGY

The study used a mixed-methods approach involving quantitative and qualitative data collection and analysis in this exploratory study. The participants responded to an adapted questionnaire by An et al. (2021), probing their perceptions of e-learning during the COVID-19 pandemic. The questionnaire also collected responses regarding the teaching approaches and strategies, tools for facilitating e-learning, assessment tools, and social media for communicating with students used by teachers in e-learning during the pandemic. The teachers' responses to two open-ended questions about the weaknesses of the e-learning experience and the preferred new normal of schooling after the pandemic were qualitatively treated.

PARTICIPANTS

A cohort of 426 randomly selected K-12 teachers completed an electronic questionnaire in the second semester of the 2021 school year. Those participants who did not fully complete the questionnaire were excluded, resulting in a remaining sample of 315 teachers. The respondents were from the public ($n = 260$) and private ($n = 55$) schools in Saudi Arabia, and they taught in different educational stages: kindergarten ($n = 13$), elementary ($n = 128$), intermediate ($n = 67$), and secondary ($n = 107$). Their ages ranged from 20 to over 50 years. Table 1 lists the characteristics of the participants in the current study.

Table 1. Participants' characteristics

Variable		N	%
Sex	Male	39	12.4
	Female	276	87.6
Experience with using computer and Internet applications	Novice	27	8.6
	Average	166	52.7
	Advanced	122	38.7
Experience with e-learning prior to COVID-19	Yes	90	28.6
	No	225	71.4
Previous training in the use of IT in teaching	≤5 courses	121	38.4
	6–9 courses	70	22.2
	≥10 courses	98	31.1
	No courses	26	8.3

INSTRUMENTS

The study adapted the survey instrument used by An et al. (2021). The questionnaire consisted of three parts: Part 1 included seven demographic questions regarding the teachers' sex, age, educational stage, type of school, experience with e-learning before the COVID-19 pandemic, experience with using computer and Internet applications, and previous training in the use of IT in teaching. Part 2 included ten items regarding the teachers' perceptions of e-learning. Those items were answered on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Part 3 included five questions that the teachers selected, all of which applied to the teaching approaches and strategies, tools for facilitating e-learning, assessment tools, and social media for communicating with students that they used for e-learning during the COVID-19 pandemic. This part also included two open-ended questions: one about the weaknesses of e-learning as perceived by the teachers and the other

about the new normal in education they recommend after the pandemic. The questionnaire was reviewed by three e-learning and teaching experts and five K-12 teachers. The study performed some corrections based on their feedback.

Furthermore, the study established the internal consistency of the perceptions of the e-learning part by calculating the correlations among the items and the total score. The correlation coefficients ranged between 0.31 and 0.86, all significant at the 0.10 level. The study also established questionnaire reliability by Cronbach’s alpha; the alpha was 0.84, which is acceptable.

DATA ANALYSIS

The study used frequencies and percentages to identify (1) the nature of the teachers’ perceptions of e-learning, and (2) the teaching approaches and strategies, tools for facilitating e-learning, assessment tools, and social media for communicating with students used by the teachers in e-learning. The study used ANOVAs and t-tests to explore the differences in the teachers’ perceptions of e-learning by sex, experience with using computer and Internet applications, experience with e-learning before COVID-19, and previous training in the use of IT in teaching. Furthermore, the study used qualitative analysis of the teachers’ responses to the open-ended questions about the weaknesses of the e-learning experience and the preferred new normal after the pandemic. The study performed all statistical analyses using SPSS® 28.0.11.

RESULTS

THE PERCEPTIONS OF SAUDI TEACHERS ON E-LEARNING DURING THE COVID-19 PANDEMIC?

To determine Saudi teachers’ perceptions of e-learning during the coronavirus pandemic, the study used the percentages of the teachers’ responses. For this purpose, the study grouped two responses (“strongly agree” and “agree”) into one category representing agreement and two responses (“strongly disagree” and “disagree”) into another category representing disagreement. The results are shown in Table 2.

Table 2. Saudi teachers’ perceptions of e-learning during the COVID-19 pandemic

Id#	Item	Agreement		Disagreement	
		n	%	n	%
1	I enjoy e-learning	192	60.9	58	18.4
2	I feel at ease with e-learning	204	64.8	55	17.4
3	I am not ready for e-learning	60	19	187	59.3
4	I struggle with e-learning	86	27.3	164	52.1
5	I prefer e-learning to classroom-based teaching	130	41.2	132	41.9
6	I want to learn more about e-learning	222	70.5	49	15.5
7	E-learning is challenging but important	274	71.1	41	13
8	I possess the skills and knowledge required for e-learning	251	79.6	21	6.7
9	I am confident in my ability to deliver e-learning	279	88.6	7	2.2
10	E-learning is demanding	160	50.8	106	33.6

The data in Table 2 show that Saudi teachers’ perceptions of e-learning during the COVID-19 pandemic were generally positive. Approximately 61% and 65% of the teachers reported enjoying (item 1) and feeling at ease with e-learning (item 2). Only 19% and 27% reported being unprepared for (item 3) and struggling with (item 4) e-learning. More than 70% reported a desire to learn more about

e-learning (item 6), and more than 71% asserted that e-learning is challenging but essential (item 7). This concurs with the finding that more teachers (51% vs. 34%) viewed e-learning as demanding (item 10). Most teachers reported possessing the skills and knowledge required for e-learning (item 8) and being confident in their ability to deliver e-learning (item 9). Approximately the same proportion of teachers preferred e-learning (41%) and classroom-based education (42%).

DIFFERENCES IN SAUDI TEACHERS' PERCEPTIONS OF E-LEARNING

Differences in Saudi teachers' perceptions of e-learning by sex

The independent samples t-test revealed no statistically significant differences between women and men in their perceptions of e-learning. This applied to the individual items and the scale as a whole ($t = -0.639$, $p = 0.523$). That is, Saudi teachers of both sexes had similar perceptions of e-learning.

Differences in Saudi teachers' perceptions of e-learning by experience with using computer and Internet applications.

The study identified three groups of teachers based on self-perceived experience with using computer and Internet applications: novice ($n = 27$), average ($n = 166$), and advanced ($n = 122$). To detect differences in the teachers' perceptions of e-learning through this type of experience, the study used an ANOVA. The results are listed in Table 3.

Table 3. ANOVA test results for differences in the perceptions of e-learning by experience with computer and Internet applications

		Sum of squares	DF	Mean square	F	Sig.
I enjoy e-learning	Between groups	14.267	2	7.133	5.054	0.007
	Within group	440.387	312	1.411		
	Total	454.654	314			
I feel at ease with e-learning	Between groups	11.851	2	5.925	4.534	0.011
	Within group	407.749	312	1.307		
	Total	419.600	314			
I am not ready for e-learning	Between groups	22.144	2	11.072	7.794	0.000
	Within group	443.253	312	1.421		
	Total	465.397	314			
I struggle with e-learning	Between groups	34.779	2	17.390	11.321	0.000
	Within group	479.265	312	1.536		
	Total	514.044	314			
I prefer e-learning to classroom-based education	Between groups	.499	2	0.250	0.132	0.877
	Within group	591.831	312	1.897		
	Total	592.330	314			
I want to learn more about e-learning	Between groups	14.181	2	7.091	5.598	0.004
	Within group	395.196	312	1.267		
	Total	409.378	314			

		Sum of squares	DF	Mean square	F	Sig.
E-learning is challenging but important	Between groups	11.068	2	5.534	4.989	0.007
	Within group	346.062	312	1.109		
	Total	357.130	314			
I possess the skills and knowledge required for e-learning	Between groups	28.965	2	14.483	22.477	0.000
	Within group	201.035	312	0.644		
	Total	230.000	314			
I am confident in my ability to deliver e-learning	Between groups	11.743	2	5.872	11.651	0.000
	Within group	157.228	312	0.504		
	Total	168.971	314			
E-learning is demanding	Between groups	16.591	2	8.296	4.939	0.008
	Within group	524.094	312	1.680		
	Total	540.686	314			
Total	Between groups	.204	2	0.102	0.576	0.563
	Within group	55.307	312	0.177		
	Total	55.511	314			

As shown in Table 3, the study found significant differences in all items except for the total score and the item “I prefer e-learning to classroom-based education.” To identify the direction of these differences, the study used the LSD test for post-hoc multiple comparisons. Significant differences concerning the item “I enjoy e-learning” were identified between (1) those teachers classed as novices ($M = 3.00$, $SD = 1.330$) and those teachers with average experience ($M = 3.66$, $SD = 1.152$) in favor of the teachers with average experience, and (2) those teachers with novice experience ($M = 3.00$, $SD = 1.330$) and those teachers with advanced experience ($M = 3.80$, $SD = 1.204$) in favor of the teachers with advanced experience. This signifies that the more experienced the teachers in using computer and Internet applications, the more they enjoy e-learning.

The study found significant differences concerning the item “I feel at ease with e-learning” between (1) the novice teachers ($M = 3.11$, $SD = 1.340$) and those teachers with average experience ($M = 3.76$, $SD = 1.091$) in favor of the teachers with average experience, and (2) the novice teachers ($M = 3.11$, $SD = 1.340$) and the advanced teachers ($M = 3.84$, $SD = 1.167$) in favor of the advanced teachers. The more experienced the teachers in using computer and Internet applications, the more they felt at ease with e-learning.

The study found significant differences concerning the item “I am not ready for e-learning” between (1) the novice teachers ($M = 3.26$, $SD = 1.375$) and those teachers with average experience ($M = 2.34$, $SD = 1.071$) in favor of the novice teachers, and (2) the novice teachers ($M = 3.26$, $SD = 1.375$) and the advanced teachers ($M = 2.29$, $SD = 1.301$) in favor of the novice teachers. The more experienced the teachers in using computer and Internet applications, the more they felt ready for e-learning.

The study found significant differences concerning the item “I struggle with e-learning” between (1) those teachers with novice experience ($M = 3.63$, $SD = 1.214$) and those teachers with average experience ($M = 2.64$, $SD = 1.202$) in favor of the teachers with novice experience, and (2) those teachers with novice experience ($M = 3.63$, $SD = 1.214$) and those teachers with advanced experience ($M =$

2.38, SD = 1.294) in favor of the teachers with novice experience. That is, the more teachers are experienced in using computer and Internet applications, the less they struggle with e-learning.

The study found significant differences concerning the item “I want to learn more about e-learning” between those teachers with average experience (M = 4.03, SD = 1.029) and the advanced teachers (M = 3.58, SD = 1.205) in favor of the teachers with average experience. That is, the teachers who were less experienced in computer and Internet applications had a stronger desire to learn about e-learning.

The study identified significant differences concerning the item “E-learning is challenging but important” between (1) the novice teachers (M = 4.11, SD = 1.050) and the advanced teachers (M = 3.63, SD = 1.159) in favor of the novice teachers, and (2) those teachers with average experience (M = 3.99, SD = 0.969) and the advanced teachers (M = 3.63, SD = 1.159) in favor of the teachers with average experience. The less experienced teachers in computer and Internet applications regarded e-learning as more challenging.

The study identified significant differences concerning the item “I possess the skills and knowledge required for e-learning” between (1) the novice teachers (M = 3.33, SD = 1.177) and those teachers with average experience (M = 3.86, SD = 0.838) in favor of the teachers with average experience, (2) the novice teachers (M = 3.33, SD = 1.177) and the advanced teachers (M = 4.34, SD = 0.638) in favor of the advanced teachers, and (3) those teachers with average experience (M = 3.86, SD = 0.838) and the advanced teachers (M = 4.34, SD = 0.638) in favor of the advanced teachers. That is, the teachers who were more experienced in using computers and Internet applications possessed more of the skills and knowledge required for e-learning.

The study found significant differences concerning the item “I am confident in my ability to deliver e-learning” between (1) the novice teachers (M = 3.78, SD = 0.934) and those teachers with average experience (M = 4.22, SD = 0.723) in favor of the teachers with average experience, (2) the novice teachers (M = 3.78, SD = 0.934) and the advanced teachers (M = 4.47, SD = 0.632) in favor of the advanced teachers, and (3) those teachers with average experience (M = 4.22, SD = 0.723) and the advanced teachers (M = 4.47, SD = 0.632) in favor of the advanced teachers. That is, the teachers who were more experienced in using computers and Internet applications were more confident in their ability to deliver e-learning.

Finally, the study found significant differences concerning the item “E-learning is demanding” between (1) the novice teachers (M = 3.78, SD = 1.281) and those teachers with average experience (M = 3.34, SD = 1.292) in favor of the novice teachers, (2) the novice teachers (M = 3.78, SD = 1.281) and the advanced teachers (M = 3.00, SD = 1.305) in favor of the novice teachers, and (3) those teachers with average experience (M = 3.34, SD = 1.292) and the advanced teachers (M = 3.00, SD = 1.305) in favor of the teachers with average experience. That is, the teachers who were more experienced in computer and Internet applications found e-learning less demanding.

Differences in Saudi teachers’ perceptions of e-learning by training on the use of IT in teaching

The study identified four groups concerning the training received by the teachers in the use of IT in teaching: ≤ 5 courses (n = 121), 6–9 courses (n = 70), ≥ 10 courses (n = 98), and 0 courses (n = 26). Table 4 shows the ANOVA results for the differences in the teachers’ perceptions of e-learning in this type of training.

Table 4. ANOVA test results for differences in the perceptions of e-learning by training on using IT in teaching

		Sum of squares	DF	Mean square	F	Sig.
I enjoy e-learning	Between groups	15.479	3	5.160	3.654	0.013
	Within group	439.175	311	1.412		
	Total	454.654	314			
I feel at ease with e-learning	Between groups	5.038	3	1.679	1.260	0.288
	Within group	414.562	311	1.333		
	Total	419.600	314			
I am not ready for e-learning	Between groups	11.839	3	3.946	2.706	0.045
	Within group	453.558	311	1.458		
	Total	465.397	314			
I struggle with e-learning	Between groups	1.628	3	0.543	0.329	0.804
	Within group	512.417	311	1.648		
	Total	514.044	314			
I prefer e-learning to classroom-based education	Between groups	10.772	3	3.591	1.920	0.126
	Within group	581.558	311	1.870		
	Total	592.330	314			
I want to learn more about e-learning	Between groups	2.852	3	0.951	0.727	0.536
	Within group	406.526	311	1.307		
	Total	409.378	314			
E-learning is challenging but important	Between groups	2.308	3	0.769	0.674	0.568
	Within group	354.822	311	1.141		
	Total	357.130	314			
I possess the skills and knowledge required for e-learning	Between groups	17.746	3	5.915	8.667	0.000
	Within group	212.254	311	0.682		
	Total	230.000	314			
I am confident in my ability to deliver e-learning	Between groups	15.385	3	5.128	10.384	.000
	Within group	153.586	311	0.494		
	Total	168.971	314			
E-learning is demanding	Between groups	4.774	3	1.591	0.924	0.430
	Within group	535.911	311	1.723		
	Total	540.686	314			
Total	Between groups	1.957	3	0.652	3.789	0.011
	Within group	53.554	311	0.172		
	Total	55.511	314			

The study found significant differences in the four groups and the total score. The LSD test results showed the direction of these differences. The study identified differences in the item “I enjoy e-learning” between (1) those teachers with ≤ 5 courses ($M = 3.39$, $SD = 1.186$) and those teachers with 6–9 courses ($M = 3.84$, $SD = 1.137$) in favor of the teachers with 6–9 courses, and (2) those

teachers with ≤ 5 courses ($M = 3.39$, $SD = 1.186$) and those teachers with ≥ 10 courses ($M = 3.87$, $SD = 1.215$) in favor of the teachers with ≥ 10 courses. That is, the teachers with more training in the use of IT found e-learning more enjoyable. Differences in the item “I am not ready for e-learning” arose between (1) those teachers with ≤ 5 courses ($M = 2.64$, $SD = 1.212$) and those teachers with 6–9 courses ($M = 2.23$, $SD = 1.157$) in favor of the teachers with ≤ 5 courses, and (2) those teachers with ≤ 5 courses ($M = 2.64$, $SD = 1.212$) and those teachers with ≥ 10 courses ($M = 2.22$, $SD = 1.281$) in favor of the teachers with ≤ 5 courses. That is, the teachers with more training in using IT in teaching tended to be more ready to teach online.

Differences in the item “I possess the skills and knowledge required for e-learning” arose between (1) those teachers with ≤ 5 courses ($M = 3.75$, $SD = 0.837$) and those teachers with ≥ 10 courses ($M = 4.33$, $SD = 0.743$) in favor of the teachers with ≥ 10 courses, (2) those teachers with 6–9 courses ($M = 4.00$, $SD = 0.917$) and those teachers with ≥ 10 courses ($M = 4.33$, $SD = 0.743$) in favor of the teachers with ≥ 10 courses, and (3) those teachers with no courses ($M = 3.88$, $SD = 0.816$) and those teachers with ≥ 10 courses ($M = 4.33$, $SD = 0.743$) in favor of the teachers with ≥ 10 courses. That is, the teachers with more training in using IT in teaching were more skilled and knowledgeable about e-learning.

Differences in the item “I am confident in my ability to deliver e-learning” arose between (1) those teachers with ≤ 5 courses ($M = 4.05$, $SD = 0.717$) and those teachers with 6–9 courses ($M = 4.39$, $SD = 0.687$) in favor of the teachers with 6–9 courses, (2) those teachers with ≤ 5 courses ($M = 4.05$, $SD = 0.717$) and those teachers with ≥ 10 courses ($M = 4.54$, $SD = 0.612$) in favor of the teachers with ≥ 10 courses, and (3) those teachers with no courses ($M = 4.04$, $SD = 0.958$) and those teachers with ≥ 10 courses ($M = 4.54$, $SD = 0.612$) in favor of the teachers with ≥ 10 courses. Finally, differences in the total score were identified between those teachers with ≤ 5 courses ($M = 3.38$, $SD = 0.379$) and those teachers with ≥ 10 courses ($M = 3.57$, $SD = 0.451$) in favor of the teachers with ≥ 10 courses. That is, the teachers with more training in using IT in teaching tended to have better perceptions of e-learning.

Differences in Saudi teachers' perceptions of e-learning by experience with e-learning before the COVID-19 pandemic

The study conducted an independent samples t-test to identify the differences in the perceptions of e-learning compared to previous experiences with e-learning before the COVID-19 pandemic. These results are shown in Table 5.

Table 5. The t-test results of the differences in the perceptions of e-learning by experience with e-learning before the COVID-19 pandemic

Item	Group	N	M	SD	T-value	Sig.
I enjoy e-learning	Yes	90	3.88	1.120	2.039	0.042
	No	225	3.57	1.227		
I feel at ease with e-learning	Yes	90	3.88	1.100	1.405	0.161
	No	225	3.68	1.175		
I am not ready for e-learning	Yes	90	2.17	1.292	-2.134	0.034
	No	225	2.49	1.177		
I struggle with e-learning	Yes	90	2.48	1.283	-1.268	0.206
	No	225	2.68	1.276		
I prefer e-learning to classroom-based education	Yes	90	3.29	1.400	1.613	0.108
	No	225	3.01	1.358		

Item	Group	N	M	SD	T-value	Sig.
I want to learn more about e-learning	Yes	90	3.90	1.200	0.546	0.586
	No	225	3.82	1.120		
E-learning is challenging but important	Yes	90	3.88	1.198	0.140	0.889
	No	225	3.86	1.012		
I possess the skills and knowledge required for e-learning	Yes	90	4.26	0.801	3.408	0.001
	No	225	3.90	0.857		
I am confident in my ability to deliver e-learning	Yes	90	4.43	0.750	2.423	0.016
	No	225	4.21	0.719		
E-learning is demanding	Yes	90	3.07	1.364	-1.551	0.122
	No	225	3.32	1.287		
Total	Yes	90	3.522	0.4983	1.298	0.195
	No	225	3.454	0.3845		

The study found significant differences in four items. First, the difference in the item “I enjoy e-learning” favored those teachers with prior experience ($t = 2.04, p = 0.042$). This means that teachers with previous experience with e-learning before the COVID-19 pandemic tended to enjoy e-learning more. Second, the difference in the item “I am not ready for e-learning” favored those teachers with no previous experience with e-learning before the COVID-19 pandemic ($t = 2.13, p = 0.034$). This revealed that those teachers with no experience with e-learning before the COVID-19 pandemic were less ready to teach online. Third, the difference in the item “I possess the skills and knowledge required for e-learning” favored those teachers with previous experience ($t = 3.41, p = 0.001$). That is, the teachers with experience with e-learning before COVID-19 were more skilled and knowledgeable about e-learning. Finally, the difference in the item “I am confident in my ability to deliver e-learning” favored those teachers with previous experience ($t = 2.42, p = 0.016$). This indicates that the teachers with previous experience with e-learning before the COVID-19 pandemic were more confident in their ability to deliver e-learning.

TEACHING APPROACHES, STRATEGIES, TOOLS, AND SOCIAL MEDIA FREQUENTLY USED BY SAUDI TEACHERS IN FACILITATING E-LEARNING DURING THE COVID-19 PANDEMIC?

Teaching approaches used in e-learning during the COVID-19 pandemic

Most teachers used a mix of teacher-centered and learner-centered teaching (80%). The approach used by the smallest number of teachers (7%) was learner-centered teaching (project-based and self-regulated learning) (Figure 1).

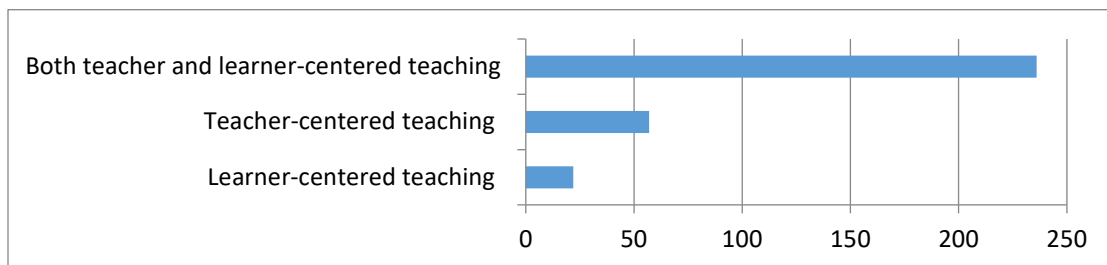


Figure 1. Teaching approaches used by the teachers in e-learning

Teaching strategies used by teachers in e-learning

The teaching strategy most frequently used by the teachers was synchronous virtual classrooms (82%), followed by assigning material for watching (65%), synchronous discussions (60%), game-based teaching (40%), and asynchronous activities (39%). On the other hand, the least frequently used teaching strategies included asynchronous discussion via educational platforms (19%), assigning material for reading (19%), and project-based teaching (19%) (Figure 2).

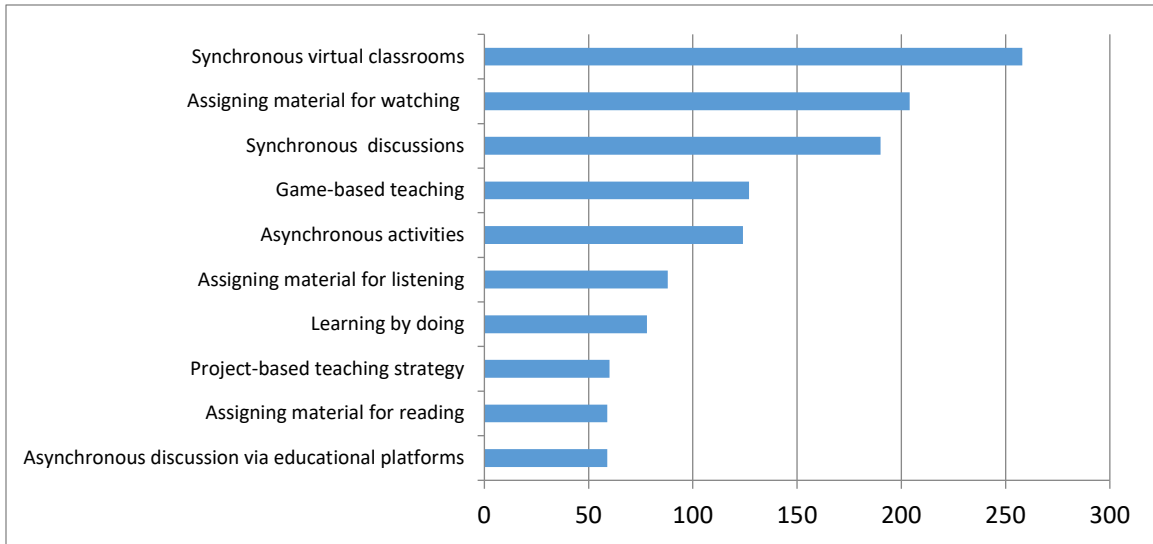


Figure 2. Teaching strategies used by the teachers in e-learning

Tools employed to facilitate e-learning during the COVID-19 pandemic

The tools more frequently used by the teachers to facilitate e-learning were Microsoft applications (83%), Google applications (48%), assessment applications (41%), and digital games (38%). Conversely, the least-used tools were virtual trips (2%), seesaw applications (5%), and augmented reality applications (9%) (Figure 3).

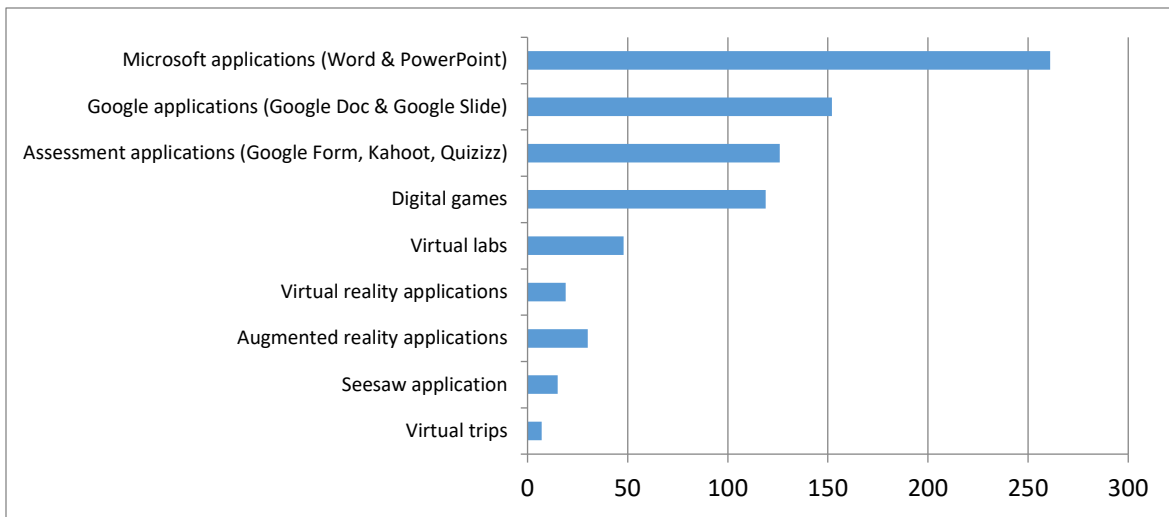


Figure 3. Tools employed by the teachers to facilitate e-learning

Tools used to assess learning in e-learning during the COVID-19 pandemic

The teachers most frequently used electronic tests to assess learning (92%). Discussions ranked second (61%), followed by projects (39%) and presentations (27%) (Figure 4).

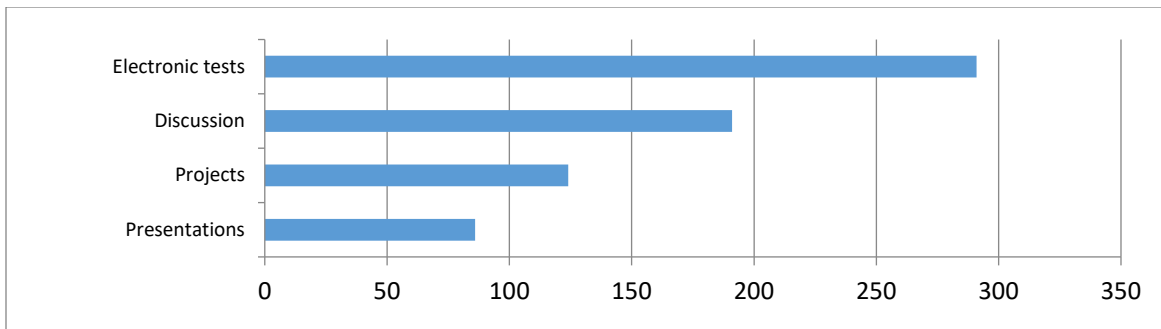


Figure 4. Tools used by the teachers to assess learning in e-learning

Social media used to communicate with students in e-learning during the COVID-19 pandemic

The teachers' most frequently used communication tool in the learning management system was the My School Platform (76%). Other frequently used tools were Microsoft Teams (70%) and WhatsApp (57%) (Figure 5).

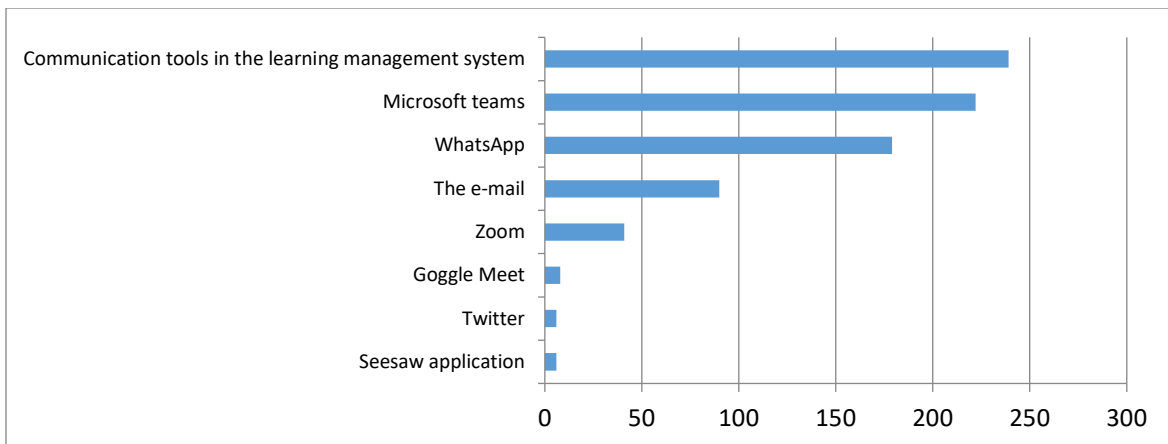


Figure 5. Teachers use social media to communicate with students in e-learning

THE CHALLENGES AND WAY FORWARD FOR A BETTER E-LEARNING EXPERIENCE

The study analyzed the teachers' responses to the open-ended question about the limitations of e-learning according to their experience and identified recurring themes. This analysis revealed ten themes, as follows:

1. *Unrealistic assessment.* This point was mentioned by 273 teachers (87%). The teachers raised doubts about students completing tests on their own. They reported that online assessment, as applied, allowed for cheating. Many teachers stated that they knew that family members completed the tests for their children. They also reported that students could use textbooks and Internet sites to answer test questions. Students also used WhatsApp groups to cheat. In brief, the teachers confirmed that the lack of careful monitoring of online tests led to unrealistic assessments.

2. *Disruption of teachers' time.* This issue was raised by 208 teachers (66%). The teachers reported that with the traditional teaching mode, they work fixed hours, which leaves them enough time to prepare for the next day's work, rest, and engage in leisure activities. However, with e-learning, they were overwhelmed and worked at various times, including in the evening.
3. *Poor Internet connection.* This problem was noted by 192 teachers (61%). The teachers reported that many students, especially those living in remote villages, had poor Internet connections. Even teachers and students living in large cities experience this problem due to pressure on the networks. Thus, students missed classes, and much time was wasted waiting for students to join classes.
4. *Poor learning motivation.* This point was mentioned by 166 teachers (53%). The teachers reported that physical separation during e-learning reduced students' motivation to learn. Some of the teachers said that the learning motivation of students who used to be hard-working declined with e-learning. They attributed this to the absence of physical learning with others, which energizes students and increases their learning motivation. Some teachers also reported that they could better foster learner motivation in classroom-based learning than in e-learning.
5. *Learners' poor computer skills.* The teachers ($n = 162$, 51%) mentioned that students' poor computer skills disrupted classes. Students also faced difficulties with the electronic writing of assignments. Students thus sought the help of family members in such aspects, which reduced their self-reliance.
6. *Learner inattentiveness.* The teachers ($n = 156$, 49%) reported that learners were less attentive online than in classroom-based education. They attributed this to a lack of eye contact, which keeps students focused. Some students may have been concerned with other distractions in their environment that they were present only as numbers, as reported by the teachers.
7. *Poor interaction with learners.* This drawback was mentioned by 142 teachers (45%). The teachers reported that the interaction quantity and quality were lower with learners in e-learning than in the traditional mode of education. Several teachers stated that, in classrooms, they could discern students who need to become involved in activities and discussions.
8. *E-learning is more demanding.* This theme was mentioned by 132 teachers (42%). They said that e-learning requires much time for planning and follow-up. They stated they spent much time preparing for classes, giving classes, and following up on learners.
9. *Concerns about learning.* Ninety-seven (31%) teachers mentioned that learning via the traditional mode is more effective than e-learning. They attributed this to the reasons mentioned in other themes, e.g., learners' lack of motivation and inattentiveness. In addition, they stated that, in classrooms, teachers could read learners' facial expressions, identify their difficulties, and address them.
10. *Lack of human touch.* Sixty-five (21%) teachers stated that human touch is lacking in e-learning, e.g., dealing with learners' emotions. They also mentioned the lack of socialization and direct communication with other students and teachers.

THE RECOMMENDED NEW NORMAL IN EDUCATION AS MAINSTREAM AFTER THE COVID-19 PANDEMIC?

Analysis of the teachers' responses to the open-ended question about the new normal in education they recommend as mainstream after the pandemic produced the following results: approximately 48% of the teachers ($n = 152$) recommended blended education; approximately 45% of the teachers ($n = 143$) suggested a return to the conventional classroom-based normal. Only 11 teachers (3.5%) recommended e-learning. The remaining nine teachers recommended that either online or classroom-based education be used (Figure 6).

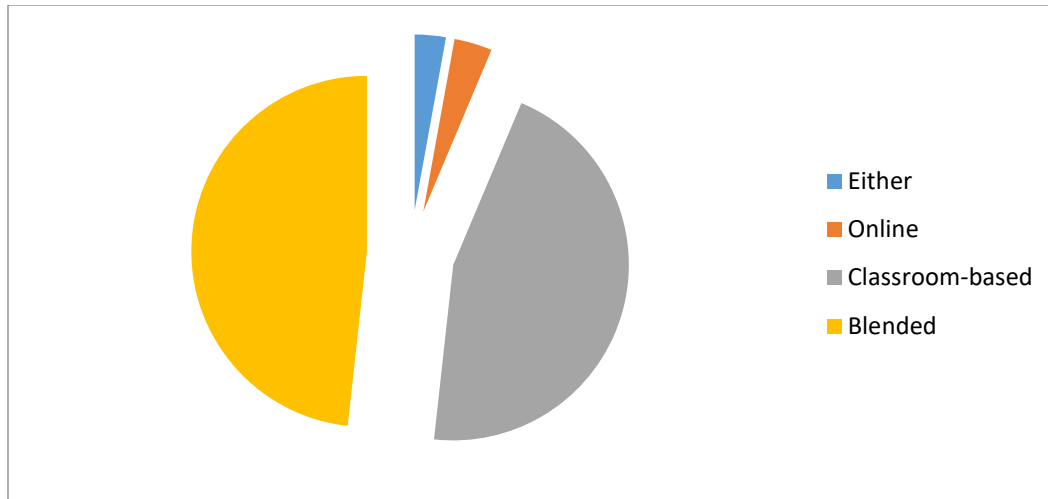


Figure 6. New normal in education recommended by the teachers after the pandemic

DISCUSSION

Online instruction has been quite popular after the COVID-19 outbreak. Many schools demand that all of the instruction be done online. Assuring the effectiveness and quality of online instruction has grown in importance as a study area. The quality of teaching and learning is strongly impacted by how teachers see online instruction (Jiang et al., 2023). This study used a convergent mixed research technique that combines quantitative and qualitative methodologies to examine instructors' opinions of online teaching and learning in several disciplines.

The results of this study revealed that K-12 Saudi teachers' perceptions of e-learning were generally positive. They tended to enjoy (61%) and feel at ease (65%) with e-learning. Approximately 60% of the teachers reported that they were ready for e-learning, and 52% said that they did not struggle with e-learning, but 27% did. More than 70% reported a desire to learn more about e-learning, and more than 71% asserted that e-learning is challenging but essential. This indicates that they deemed e-learning to be simultaneously important and challenging, and thus wanted to learn more about it. This concurs with the finding that more teachers (51% vs. 34%) viewed e-learning as demanding. This may reflect their awareness that e-learning is not easier than classroom-based education. Approximately 80% and 87% of the teachers reported possessing the skills and knowledge required for online teaching and being confident in their ability to deliver e-learning, respectively. Approximately the same number of teachers preferred e-learning (41%) as classroom-based education (42%). This seems logical because teachers, by tradition, are more accustomed to classroom-based teaching. This may hint at a favorable attitude toward blended learning. These results align with those of Aldossary (2021), from a study that was conducted on a comparable but much smaller ($N = 80$) sample of Saudi teachers from various schools in Saudi Arabia. This study's findings are also consistent with An et al. (2021), obtained from a sample of 110 American teachers.

The study found no significant differences in the perceptions of e-learning by sex in individual items or the total score. Both male and female Saudi teachers had similar perceptions of e-learning. The study identified significant differences by experience with the use of computers and Internet applications for all items except for "I prefer e-learning to classroom-based education" and the total score. All the differences favored those teachers who were more experienced in using computers and Internet applications. They enjoyed e-learning more, felt more at ease with it, struggled less, and felt more confident in their ability to deliver it. This finding seems logical because experience using computers and Internet applications is crucial for delivering e-learning. The lack of significant differences among

teachers with novice, average, and advanced experience with the use of computer and Internet applications regarding the item “I prefer e-learning to classroom-based education” also seems logical. All of the teachers seemed to hold a favorable view of classroom-based education, given tradition and familiarity. However, this does not mean that an unfavorable view of e-learning was held by approximately the exact proportions of teachers reporting preferring both modes of education. This means that the teachers perceived the two modes as complementary. In other words, the finding indicates that the teachers favored blended education.

The study found significant differences in training in using IT in teaching in four items and the total score. Again, all of the differences favor those teachers who had completed more training courses in IT. More specifically, they reported enjoying e-learning more, being more ready for e-learning, possessing better skills and knowledge required for e-learning, and being more confident in their ability to deliver e-learning. This finding seems logical because e-learning heavily relies on using IT in teaching. Finally, the study found significant differences in experience with e-learning before the COVID-19 pandemic in four items. Again, all of the differences favored those teachers with experience with e-learning before the pandemic. More specifically, they enjoyed e-learning more, were more ready for e-learning, possessed better skills and knowledge required for e-learning, and were more confident in their ability to deliver e-learning. Overall, the data revealed that those teachers skilled in using IT held better perceptions of and were more experienced in delivering e-learning.

The teachers were found to use specific teaching approaches and strategies more often than others. The most frequently used teaching approach was a mix of teacher- and learner-centered teaching (80%), followed by teacher-centered teaching (18%). This is consistent with the teaching strategies they reported using more frequently, some of which were embraced under teacher-centered and others under learner-centered teaching: synchronous virtual classrooms (82%), assigning material for watching (64.8%), synchronous discussions (60.3%), game-based teaching (40.3%), assigning material for listening (27.9%), and learning by doing (24.8%). This indicates that the teachers aimed to ensure students assumed a more active role in their learning. This is a beneficial shift in Saudi teachers’ teaching practices, which used to be only teacher-centered with an overdependence on lecturing (Al-muhailib & Al-Ahdal, 2021; Gulnaz et al., 2015).

The teachers used a variety of tools to facilitate e-learning. Ranked first among these tools were Microsoft applications (83%), followed by Google applications (48%), assessment applications (41%), and digital games (38%). This shows that the teachers effectively used IT applications to support learning due to the nature of e-learning, which requires IT applications to compensate for the lack of face-to-face contact with students. Saudi Arabia is a wealthy country; nearly all its citizens have access to modern IT devices. In addition, teachers and students have smartphones and can use various applications for distance communication. Furthermore, the official educational platforms used for e-learning during the pandemic had built-in applications that the teachers had to use for delivering instruction, assessing learning, and communicating with students.

To assess learning during the pandemic, the teachers most frequently used electronic tests (92%). They also used discussions (61%), projects (39%), and presentations (27%). This seems logical because the only alternative to classroom-based tests is electronic tests. Furthermore, the teachers assessed students’ performance through discussions and presentations in regular virtual classes and assigned projects. The results also revealed that the teachers used various social media to communicate with students. A learning management system (i.e., My School Platform) was most frequently used (76%). Microsoft Teams (70%) and WhatsApp (57%) were the most commonly used media. Again, this seems reasonable as the use of social media has become widespread.

Finally, the teachers mentioned ten limitations of the e-learning experience. Ordered from the most to least, these were unrealistic assessment of learning, disruption of teachers’ time, poor Internet connection, poor learning motivation, learners’ poor computer skills, learner inattentiveness, poor inter-

action with learners, e-learning being more demanding, concerns about learning, and the lack of human touch. Similar weaknesses were identified in other studies conducted in different contexts (e.g., Almahasees et al., 2021; Axmedova & Kenjayeva, 2021).

Regarding the preferred new normal in education after the pandemic, the teachers most recommended blended education (48%), followed by classroom-based education (45%). The teachers who recommended blended education accounted for their preference by mentioning benefits such as online- and classroom-based education. Many of them stated that avoiding the use of the Internet and technology in the age of technology is not helpful. Unlike previous generations, today's learners have access to modern technological devices and can use them proficiently. This is an advantage that should be applied in education. The teachers who recommended classroom-based education provided observations about learning, interaction, and assessment being more controllable in the traditional classroom. In brief, most teachers recommended blended education as the new normal after the pandemic.

IMPLICATION AND CONCLUSION

Overall, the results revealed successful e-learning experiences during the COVID-19 pandemic in Saudi Arabia. The teachers reported favorable perceptions of e-learning and used teaching approaches and strategies aligned with e-learning. They also used a variety of IT applications to facilitate e-learning and communicate with students. The shift to e-learning was abrupt, but these teachers handled it with progressive success, applying the IT literacy characteristic of daily living owing to the spread of IT devices and applications. Those teachers who were more experienced with computer and Internet applications and had better training in the use of IT reported more positive perceptions of e-learning, indicating the significance of training teachers regarding IT. Thus, teachers should be trained on how to teach online effectively. Furthermore, it seems imperative that teachers are prepared for e-learning if similar emergencies occur in the future or if their schools decide to use blended education as their mainstream mode of education.

Teachers require training on aspects that are additional to technical ones. The teachers in this study described concerns about learning, interaction, and motivation in e-learning. This indicates that they need to be offered professional development training on how to foster learner motivation and improve interaction in the online setting. They need to be educated on how to keep learners' attention in virtual classes. The provided training should also focus on effective teaching strategies that lead to improved learning. The concerns raised by the teachers about online assessment should be addressed. Solutions are required to guarantee that online assessment is as realistic as possible. Teachers need to be trained on how to handle this problem technically.

This study contributed to the expanding body of knowledge concerning the challenges and opportunities associated with online teaching from the perspective of educators. In addition, the findings of this study would persuade educational institutions and policymakers to improve the quality of online teaching with the most up-to-date teaching methods, along with government support for bettering basic infrastructure, Internet connectivity, bridging the digital divide, and developing rural areas to make e-learning more successful and well-liked throughout the nation. Furthermore, since it has been found to be a requirement for the successful adoption and delivery of online classes, proper technological training for teachers on how to provide virtual classes should be emphasized. Additionally, the teachers' confirmation that e-learning disrupted their time needs to be considered. If the experience occurs again, careful scheduling will be required so that teachers can have an improved work-life balance. Finally, the teachers mentioned that learners' poor computer skills caused issues during e-learning. For this reason, students should be offered continuous training to improve their digital competences.

Based on the study results, e-learning should not be discarded with the return to classroom education. Instead, at least one course should be taught online in all grades. This can improve the e-learning experience for both teachers and students. Online- and classroom-based education modes have advantages, and combining both methods is appropriate to benefit from these advantages.

In conclusion, this study examined teachers' perspectives on the impact of e-learning during the COVID-19 epidemic using quantitative and qualitative data. A small sample of KSA school instructors who teach online were included in this study. The limitations of this study include a small number of participants and the fact that it employs a limited number of variables and methodologies, which might reduce the power of the study. In terms of the scope of future research in this area, a similar type of study can be repeated later, and results can be generalized to many regions or countries. Future work will, therefore, need to be more thorough and include either qualitative or investigative methods. Additional research can examine teachers' judgments, along with students' and parents' perceptions of e-learning.

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