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Adapting to Change: The COVID-19 Pandemic's Impact on Technology-Enhanced Teaching Practices

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Abstract

This study aimed to explore how EFL teachers in the preparatory year program at Northern Border University utilized technology during the COVID-19 outbreak, focusing on the challenges they faced and the impact on their teaching practices. The importance of the study lay in understanding how the sudden shift to online education affected teacher performance and contributed to shaping future educational strategies. A mixed-methods approach was employed, combining qualitative and quantitative data collection. A structured questionnaire was administered to a sample of EFL teachers consisting of females (21.8%) and males (78.2%) who were teaching English to first-year university students in 2021. Additionally, Semi-structured interviews were conducted to supplement the survey data to provide deeper insight. Data collection focused on identifying challenges such as inadequate preparation, technical difficulties like slow internet, and increased workloads. The findings revealed that while online teaching platforms maintained educational continuity, they were less effective than traditional instruction, particularly regarding student engagement and learning outcomes. Teachers with prior digital experience demonstrated greater adaptability and confidence in using online tools. Based on these findings, the study recommended adopting blended learning models, enhancing continuous professional development in digital skills for teachers, improving digital infrastructure, and addressing the digital divide to ensure equitable access to educational technology and to strengthen future technology-driven educational reforms in Saudi Arabia.

Keywords: Covid-19, EFL teachers, Technology, Impact, Teaching, Practices.

التكيف مع التغيير: تأثير جائحة كوفيد19- على ممارسات التدريس المدعّمة بالتكنولوجيا

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المستخلص:

هدفت هذه الدراسة إلى استكشاف كيفية توظيف معلمي اللغة الإنجليزية كلغة أجنبية (EFL) في برنامج السنة التحضيرية بجامعة الحدود الشمالية للتقنية خلال تفشي جائحة كورونا، مع التركيز على التحديات التي واجهوها وتأثيرها على ممارساتهم التدريسية. وتمثلت أهمية الدراسة في فهم كيف أثّر الانتقال المفاجئ إلى التعليم الإلكتروني على أداء المعلمين، ومساهمته في صياغة استراتيجيات التعليم المستقبلية. اعتمدت الدراسة منهجية البحث المختلط، حيث جُمعت البيانات النوعية والكمية معًا. أُجريت مقابلات شبه منظمة للحصول على رؤى نوعية معمقة، وتم توزيع استبانة منظمة على عينة من معلمي اللغة الإنجليزية، من الإناث (21.8٪) والذكور (78.2٪)، ممن كانوا يدرّسون طلاب السنة التحضيرية بالجامعة في عام *2021*. حيث ركزت عملية جمع البيانات على التعرف على التحديات الرئيسة، مثل ضعف الاستعداد التقني، والصعوبات التقنية كبطء الإنترنت، وزيادة أعباء العمل. وكشفت النتائج أن منصات التعليم الإلكتروني ساعدت في ضمان استمرارية التعليم، إلا أنها كانت أقل فاعلية مقارنة بالتعليم التقليدي، لا سيما فيما يتعلق بتفاعل الطلاب وتحقيق نتائج التعلم المرجوة. وأظهرت النتائج أن المعلمين الذين امتلكوا خبرة سابقة في التعامل مع الأدوات الرقمية أبدوا قدرة أكبر على التكيف وثقة أعلى في استخدام التقنيات الإلكترونية. وبناءً على هذه النتائج، أوصت الدراسة باعتماد نماذج التعليم المدمج، وتعزيز برامج التطوير المهني المستمر في المهارات الرقمية للمدرسين، وتحسين البنية التحتية التقنية، ومعالجة الفجوة الرقمية لضمان تحقيق العدالة في الوصول إلى التكنولوجيا التعليمية، بما يدعم تعزيز الإصلاحات التعليمية المستقبلية القائمة على التكنولوجيا في المملكة العربية السعودية.

الكلمات المفتاحية: جائحه كورونا، معلمي اللغة الإنجليزية كلغة أجنبية، التكنولوجيا، التأثير، التدريس، الممارسات.

Introduction

The Coronavirus Disease 2019 (COVID-19) pandemic marked an unprecedented disruption in modern educational systems, compelling institutions worldwide to transition abruptly from conventional face-to-face instruction to fully online learning under emergency conditions. This global shift, although necessary, revealed significant systemic vulnerabilities—most notably in digital infrastructure, instructional readiness, and access equity (Hodges et al., 2020). The pandemic, therefore, did not simply interrupt education; it catalyzed a fundamental redefinition of teaching and learning in the digital age.

In Saudi Arabia, this transformation unfolded within a broader national agenda shaped by Vision 2030—a strategic framework centered on fostering innovation, digital transformation, and the development of a knowledge-based economy (Vision 2030,2016). Although efforts to integrate technology into education predated the pandemic, the crisis accelerated this trajectory in unforeseen ways Within weeks, nearly all K–12 students in Saudi Arabia moved to digital learning platforms—around 98 % reported being able to access Madrasati during the 2020–21 school year, with routine weekly login rates ranging between 75 % and 85 %, including use of Microsoft Teams as a supplementary channel, enabling continuity of learning despite widespread closures. This rapid shift demonstrated remarkable administrative coordination but also exposed critical limitations in teacher preparedness, platform usability, and long-term pedagogical planning (World Bank, 2020).

While short-term solutions—such as basic technical training and platform orientation—helped bridge immediate gaps (Alenezi, 2022), many EFL educators faced increased workloads, emotional strain, and unfamiliar instructional demands. These pressures were especially intense in under-resourced, remote villages or rural areas where digital infrastructure remained weak (Albaqami & Alzahrani, 2022). According to these authors, Saudi EFL instructors experienced significant stress and distress due to the rapid transition, which required them to develop new digital skills without sufficient institutional support or enough time to do so. Teachers often assumed multiple roles—content curators, tech troubleshooters, emotional supporters—within this emergency teaching context. Despite these challenges, many showed adaptability by experimenting with interactive tools, collaborative platforms, and asynchronous methods to maintain student engagement and foster pedagogical resilience (Albaqami & Alzahrani, 2022).

Despite the difficulties, the crisis revealed not only what was lacking but also what is possible. The EFL classroom—once bound by physical space—evolved into a digitally dynamic environment. This transformation, while reactive in its initial phase, raises urgent questions for the future: How can the innovations born out of necessity be institutionalized into sustainable practice? What lessons from this disruption can inform a more agile, inclusive, and effective approach to online English language instruction?

This study seeks to address these questions by exploring the lived experiences of Saudi EFL instructors during the pandemic—not merely to document past challenges, but to distill actionable insights for the future of English language education in digitally mediated contexts. Through an in-depth examination of the platforms used, the pedagogical adjustments made, and the barriers encountered, this research aims to generate practical, forward-looking recommendations that support both policy and practice. It contributes to the growing body of literature on educational resilience, digital equity, and the evolving role of educators within systems undergoing rapid technological change.

By foregrounding the perspectives of teachers—those most directly responsible for implementing change—this study offers more than retrospective analysis. It presents a strategic lens for shaping the future of English language instruction in Saudi Arabia and comparable contexts, ensuring that future disruptions are met not only with preparedness but with purposeful innovation.

Crucially, this future-oriented inquiry aligns with the Kingdom of Saudi Arabia's Vision 2030, which positions education as a key driver of national development and economic diversification. As the country continues to invest in digital infrastructure, human capital, and pedagogical modernization, understanding how educators experienced and responded to this transformation is essential for guiding effective, scalable, and context-sensitive reforms in EFL teaching.

To contextualize the findings of this study within the broader trajectory of educational reform, the following section outlines key features of Saudi Arabia's evolving education system and highlights the strategic shifts undertaken in alignment with Vision 2030—particularly in relation to digital learning, teacher development, and curriculum innovation.

Education in Saudi Arabia: Adapting to Technology and Vision 2030 Goals

Saudi Arabia's educational system—spanning primary to tertiary levels—has traditionally been rooted in Islamic values and structured through a gender-segregated public framework. The national curriculum, which is free and compulsory at the primary and secondary stages, places particular emphasis on Arabic language, Islamic studies, mathematics, science, and social studies. Following the discovery of oil in the mid-20th century, the Kingdom experienced a transformative shift across nearly all sectors—including infrastructure, healthcare, employment, and education. This oil-driven economic prosperity laid the financial and institutional foundation for extensive public investment, positioning education as a central pillar of national development.

In recent years, however, the education sector has undergone a more targeted and strategic transformation aligned with Vision 2030, which seeks to diversify the national economy and elevate the quality of human capital through innovation, critical thinking, and reduced reliance on rote learning (World Bank, 2022; Nurunnabi, 2017; Alharbi, 2024).

At the higher education level, Saudi Arabia has witnessed rapid expansion, with a growing network of public and private universities offering programs that integrate both traditional and modern disciplines. English has become increasingly prominent—particularly in STEM fields (Science, Technology, Engineering, and Mathematics)—as part of a national strategy to prepare students for effective participation in the global knowledge economy (Nurunnabi, 2017; Al-Rashaidan & Al-Thwaini, 2021). This shift reflects the Kingdom's ambition to enhance international competitiveness and align academic outcomes with labor market demands.

The COVID-19 pandemic significantly accelerated this ongoing digital transformation. Prior to the crisis, digital technologies in education were primarily limited to administrative functions. However, the sudden shift to remote learning necessitated the rapid deployment of platforms such as Microsoft Teams, Blackboard, and Madrasati—launched by the Ministry of Education in 2020 to support virtual instruction nationwide (Ministry of Education, 2020). Simultaneously, substantial investments were made in digital infrastructure, virtual laboratories, and the integration of artificial intelligence into education. These measures, though reactive, highlighted the system's adaptability and its alignment with Vision 2030's vision for educational modernization.

Nevertheless, the pace of change also exposed long-standing challenges, particularly in relation to teacher preparedness. Many educators—especially those in rural or under-resourced regions—struggled to adapt to new technologies, digital pedagogical methods, and the demands of online instruction. These challenges underscore a critical insight: achieving the objectives of Vision 2030 requires more than access to digital tools—it demands sustained investment in professional development, instructional design, and systemic support for equitable, technology-enhanced learning.

Within this evolving educational landscape, the current study investigates how English as a Foreign Language (EFL) teachers in Saudi Arabia adapted to the abrupt integration of educational technology during the COVID-19 pandemic. Specifically, it examines the platforms they adopted, the frequency of use, the obstacles encountered, and their perceptions of the long-term role of technology in English language instruction. Crucially, the study goes beyond documentation; it seeks to provide forward-looking, evidence-based recommendations that can inform both policy decisions and pedagogical strategies in alignment with Vision 2030.

By drawing on the lived experiences of educators, this research aims to contribute to national goals by identifying practical strategies that enhance resilience, promote equity, and improve instructional quality across diverse learning environments—whether online, blended, or hybrid. Understanding how

educators responded to such disruption is vital not only for assessing current practice but also for informing the design of a more adaptive and future-ready educational system capable of sustaining progress beyond the immediate crisis.

In light of the challenges, developments, and pedagogical gaps identified above, it becomes essential to systematically investigate how educators experienced and responded to these rapid changes. Accordingly, this leads to the following key research questions, which aim to explore how Saudi EFL instructors navigated the challenges of emergency digital teaching and how their experiences can inform long-term improvements in teacher training, technological integration, and curriculum development.

Research Questions

To address the core problem identified in this study, a coherent set of interrelated research questions was developed to explore the multifaceted experiences of EFL teachers in Saudi Arabia during the COVID-19 pandemic. The study begins by examining the types of digital technologies and platforms adopted by teachers for online instruction, aiming to understand not only which tools were utilized but also the context in which they were implemented. In conjunction with this, the study investigates how frequently these technologies were used and the extent to which teachers perceived them as effective in enhancing student learning outcomes. Recognizing that technological adoption does not occur in a vacuum, the study further explores the pedagogical, technical, and engagement-related challenges that teachers faced during the rapid shift to remote teaching—ranging from platform instability and lack of training to difficulties in maintaining student motivation and interaction. To understand the broader instructional implications of these challenges, the study also assesses teachers' perceptions of how online learning affected student engagement, participation, and academic performance. Integral to these dynamics is the question of institutional support; therefore, the study analyzes the nature and adequacy of the professional development opportunities and administrative assistance provided to teachers during the pandemic, and how such support influenced their ability to adapt. Finally, the study considers teachers' forward-looking perspectives by exploring their attitudes toward the continued use of educational technology beyond the pandemic, particularly in relation to their readiness for long-term integration of digital tools into both traditional classrooms and blended learning environments.

Purpose and Significance of the Study

This study aims to conduct an in-depth investigation into the use of technology by English as a Foreign Language (EFL) instructors in Saudi Arabia during the COVID pandemic. It seeks to systematically identify the digital platforms, tools, and applications employed to facilitate remote instruction and to critically assess the pedagogical, technical, and infrastructural challenges educators faced during this transition. These include institutional limitations, individual readiness, and the overall impact on teaching effectiveness.

Beyond documenting challenges, the study also explores teachers' perceptions of the long-term integration of educational technology, examining how their experiences during the pandemic have shaped their attitudes toward future use in both online and blended learning environments. Special attention is given to student engagement, participation, motivation, and achievement, linking these outcomes to the use of digital tools.

This research is significant in that it provides timely, context-specific insights into how Saudi EFL instructors adapted to crisis-driven digital transformation. By focusing on an underrepresented group in regional EdTech literature, the study contributes to a deeper understanding of pedagogical resilience in linguistically and culturally diverse contexts. The findings offer practical implications for enhancing teacher training, improving technological infrastructure, and informing policy decisions related to emergency preparedness and long-term digital integration.

Framed within the broader goals of Saudi Vision 2030, this study also contributes to global conversations on equitable access, digital inclusion, and sustainable technology use in education—especially in emerging economies facing similar disruptions and reforms.

Literature review

The COVID-19 pandemic accelerated the global shift to online education, exposing challenges in technology adoption, teacher preparedness, and learning effectiveness (Dhawan, 2020). This review critically examines these key areas within the Saudi Arabian context to highlight lessons learned and inform future educational strategies. To understand the nature of this rapid transformation, it is essential to first examine how educational technologies were adopted and implemented during the pandemic.

Technology Adoption and Digital Learning Platforms

The COVID-19 pandemic served as a global accelerator for digital transformation in education, compelling institutions to rapidly transition from traditional to fully online learning. In Saudi Arabia, this shift was marked by the widespread adoption of platforms such as Madrasati for K–12 education and Blackboard and Moodle in higher education (Alhur, 2021; Almaiah et al., 2020). While these platforms provided the technical foundation for remote instruction, multiple studies agree that the transition was largely reactive. Rather than resulting from a coherent national digital strategy, the shift exposed underlying deficiencies in pedagogical readiness and digital competence (Alenezi, 2022; Dhawan, 2020). However, most of these studies focus on surface-level descriptions of platform usage, with limited evaluation of how pedagogical design was affected or whether the tools were aligned with specific learning outcomes.

A recurring issue is the tendency to conflate emergency remote teaching with structured online education. As Dhawan (2020) rightly argues, rapid digital transitions without fundamental pedagogical recalibration often lead to superficial engagement. In the Saudi context, despite Vision 2030's emphasis on digital innovation and teacher development, professional training programs remained underdeveloped and fragmented. A systematic review of initial teacher preparation highlights an urgent need for deeper investment in pedagogical training and sustained development aligned with national goals—suggesting that preparation systems have yet to fully realize Vision 2030's transformative potential (Alharbi & Albidewi, 2024).

Digital inequity is another major concern that is acknowledged but insufficiently analyzed. While studies such as Alhur (2021) document regional disparities in infrastructure, they often fail to interrogate how such disparities reinforce systemic inequality or affect long-term learning outcomes. The unequal adaptation between urban and rural schools, for instance, is frequently mentioned but rarely unpacked in terms of its impact on pedagogical quality, student motivation, or teacher agency.

These findings point to a critical insight: successful technology integration is not simply a matter of hardware or software availability—it is a deeply systemic process that involves pedagogical vision, institutional coordination, and sustained investment in human capital. The Saudi case underscores this complexity. Despite national investments in platforms and tools, the lack of strategic alignment between technology and teaching practice limited the effectiveness of online education. Moreover, most existing studies treat technology adoption as an isolated event rather than a process embedded in broader educational reform. This narrow framing leaves open questions about sustainability, capacity-building, and long-term digital resilience.

Therefore, understanding the depth of teacher preparedness and the context in which technology was implemented is essential for evaluating the real impact of digital education during and after the pandemic. This study contributes to that understanding by not only assessing access and usage but also by critically examining how educators navigated technological, pedagogical, and institutional challenges in practice.

Teachers' Preparedness and Training

Teacher preparedness emerged as a pivotal factor influencing the effectiveness of the rapid shift to online education during the COVID-19 pandemic. While many countries, including Saudi Arabia, made efforts to provide technical support to educators, the literature broadly agrees that these measures were insufficient and largely reactive. Rather than stemming from a sustained national digital strategy, most

interventions were ad hoc and focused narrowly on tool operation, neglecting the pedagogical competencies required to foster meaningful engagement in virtual environments (Alhur, 2021; Maatuk et al., 2022; Alenezi, 2022). As a result, technology was often applied mechanically, with traditional teaching methods simply transposed onto digital platforms, leading to limited interactivity and passive learning. Yet, these studies often fail to interrogate why professional development remained so narrowly focused or to assess how institutional policy may have shaped these training gaps.

A recurring theme in both local and international studies is the fragmented and inconsistent nature of professional development. Tondeur et al. (2020) rightly argue that digital competence is a multidimensional construct involving technical proficiency, pedagogical adaptation, and critical digital literacy. While this framework is conceptually robust, its practical application in the Saudi context remains unclear in much of the literature. Professional development initiatives were often one-off events rather than integrated, ongoing components of teacher development, thereby limiting their transformative potential. Few studies assess the long-term impact of these interventions, or whether they translated into measurable changes in classroom practice.

The lack of differentiated training is another consistent yet underexplored issue. Teachers with widely varying levels of digital competence were frequently placed into uniform professional development sessions, causing frustration among both novice and advanced users. Yuen et al. (2023) examine conceptual and practical barriers to implementing differentiated instruction during the COVID19 pandemic, highlighting how unbalanced training practices limit teachers' ability to meet diverse student needs. However, the authors do not propose scalable professional learning models for diverse teaching contexts. This omission represents a missed opportunity to advance inclusive teacher training design.

Geographic disparities further exacerbated these challenges. Educators in rural areas not only faced poor infrastructure but also had limited access to continuous support and follow-up training. While Maatuk et al. (2022) identify these inequalities, they stop short of analyzing how such disparities might reinforce systemic inequity in the long term. The literature lacks a critical examination of how national education policies may have perpetuated a two-tier digital system—one for well-resourced urban schools and another for marginalized rural communities.

Moreover, the literature frequently overlooks the importance of peer mentorship and collaborative professional learning communities (PLCs). Effective professional development frequently occurs in reflective, peer-driven environments, yet much of the teacher training during the COVID19 crisis in Saudi Arabia remained top-down, standardized, and delivery-focused. Khasawneh et al. (2023) found that participation in PLCs and collaborative teaching positively influences professional growth and student outcomes, highlighting the advantages of collegial interaction and knowledge sharing. This model contrasts sharply with pandemic-era programs that lacked mechanisms for ongoing peer support and localized innovation.

In sum, the literature demonstrates that effective teacher preparedness cannot be achieved through short-term, one-size-fits-all workshops or emergency interventions. It requires a comprehensive, systemic investment in teacher education—beginning with pre-service preparation and continuing through differentiated, in-service development that is rooted in teachers' real-world contexts. More critically, future studies should examine how training models, institutional policies, and leadership structures can be aligned to support sustainable digital teaching competence, rather than merely addressing surface-level gaps.

Challenges Faced by Teachers

In addition to gaps in teacher preparedness, Saudi educators encountered a range of interrelated challenges during the shift to online teaching, exposing systemic vulnerabilities beyond mere technological shortcomings. The most frequently reported obstacle across the literature was the inadequacy of digital infrastructure, especially in rural and underserved areas. Studies by Alhur (2021) and Alzahrani (2021) repeatedly highlight unreliable internet connectivity and outdated devices as core barriers to effective instruction. However, both studies rely on limited qualitative samples, raising questions about the gen-

eralizability of their findings. Moreover, they focus heavily on access-related issues, often overlooking how these infrastructural problems translated into deeper pedagogical disruptions.

Notably, the presence of infrastructure alone did not ensure effective engagement. Even in well-connected urban schools, teachers struggled to maintain student motivation and participation. The absence of face-to-face interaction, delayed feedback, and the inability to read non-verbal cues contributed to a depersonalized learning atmosphere (Dhawan, 2020). While these studies draw attention to surface-level symptoms of disengagement, they often treat technical and pedagogical challenges as separate domains. A more integrative analysis reveals how these issues are mutually reinforcing: every technical disruption carried pedagogical consequences, compounding students' disengagement and destabilizing instructional continuity.

During the COVID-19 pandemic, many instructors experienced elevated levels of stress, fatigue, and emotional exhaustion, especially when faced with inconsistent institutional policies, lack of clear guidance, and insufficient technological or administrative support. These challenges were particularly evident during the rapid transition to digital teaching, which demanded not only pedagogical adjustments but also significant emotional labor and adaptability.

According to a systematic review by Westphal et al. (2022), which analyzed 17 empirical studies covering 9,874 12 teachers from 20 countries, organizational factors played a crucial role in influencing teacher burnout. The review found that inconsistent leadership, vague institutional communication, and weak structural support were significantly associated with increased levels of teacher stress and emotional exhaustion. Despite the breadth of anecdotal reports during the pandemic, Westphal et al. emphasized that relatively few empirical studies had systematically examined the mental health effects of pandemic-induced digital teaching. This highlights a critical research gap at the intersection of emotional labor, technological adaptation, and structural support in education systems.

Beyond instructional challenges, the transition to online teaching exerted considerable psychological pressure on educators. Teachers were often required to simultaneously redesign course content, navigate unfamiliar digital platforms, troubleshoot technical issues, and maintain student engagement—all without sufficient training or institutional support. According to Maatuk et al. (2022), many instructors reported raised stress levels, fatigue, and emotional exhaustion, particularly when facing inconsistent policies and lack of clear guidance. Despite these insights, few empirical studies have systematically examined the mental health implications of pandemic-induced digital teaching. This highlights a critical research gap at the intersection of emotional labor, technological adaptation, and structural support within education systems.

Taken together, the Saudi case illustrates that the challenges faced during the pandemic were not isolated incidents, but indicators of long-standing structural fragilities. The lack of responsive support systems, insufficient differentiation in professional development, and minimal attention to teacher well-being reveal a system ill-prepared for educational disruption. Moving forward, any meaningful reform in online or blended learning must address these interconnected domains—technological, pedagogical, and psychological—not as isolated challenges but as interdependent components of a resilient and equitable educational ecosystem.

Effectiveness of Online Education

The effectiveness of online education during the COVID-19 pandemic has been widely debated, both globally and within the Saudi context. While there is broad consensus that digital platforms such as Madrasati, Blackboard, and Zoom played a vital role in maintaining instructional continuity during lockdowns, the depth and quality of actual learning outcomes remain in question. Studies by Alenezi (2024, 2022), Alzahrani (2021), and Sari & Oktaviani (2021) acknowledge that these platforms enabled teachers to continue lesson delivery and allowed students to access academic content—thus averting complete learning disruption. However, these studies rely predominantly on self-reported perceptions, without triangulating findings through performance metrics or direct observation, which limits their capacity to assess real learning gains. From a pragmatic perspective, this continuity was a significant

logistical success, but it does not, in itself, constitute evidence of pedagogical effectiveness in a deeper, outcome-based sense.

Many researchers caution against equating continuity with quality. For example, Dhawan (2020) and Alzahrani (2021) argue that the absence of in-person interaction undermined cognitive engagement, collaborative learning, and critical thinking—key components of meaningful education. However, Dhawan's review, while widely cited, draws heavily on anecdotal reports and lacks empirical data from diverse educational systems, which limits its generalizability. The digital environment, though flexible, often encouraged passive content consumption rather than active knowledge construction. In particular, technical issues such as unstable connectivity and limited platform capacity disproportionately affected students in rural or under-resourced settings—a finding echoed across the literature but seldom backed by large-scale, representative samples. These limitations highlight the need for more robust, context-sensitive studies that quantify how such disparities shape learning outcomes in different regions.

Another layer of concern relates to pedagogical adaptation. Under time constraints and lacking sufficient training, many teachers simply transferred lecture-based methods into online settings without rethinking their instructional approaches for digital platforms. While this phenomenon has been widely noted, most studies— .such as those by Alzahrani (2021) and Alenezi (2024)—stop short of examining how teacher preparation, institutional leadership, or policy directives contributed to this pattern. Consequently, the potential of online learning—for personalized instruction, asynchronous flexibility, and differentiated learning—remained largely unrealized. This suggests a broader systemic issue: effective digital education demands not just access to technology but sustained pedagogical development, infrastructure investment, and leadership support.

Despite these shortcomings, the shift to online education has catalyzed important systemic reflections. Garrison and Kanuka (2004), whose framework for blended learning remains foundational, advocate for integrative models that leverage the strengths of both face-to-face and online environments. In the Saudi context, Alhur (2021) echoes this perspective by documenting increased acceptance of digital platforms during the pandemic. However, like many perception-based studies, it stops short of empirically evaluating student learning outcomes within blended models—leaving the long-term pedagogical effectiveness largely unexamined.

The Saudi Ministry of Education's post-pandemic adoption of hybrid models reflects a growing awareness that educational resilience requires more than reactive digital infrastructure. It demands sustained curricular reform, robust teacher training, targeted technical support, and interactive, student-centered design.

In this light, the Saudi experience reveals both the resilience and vulnerability of educational systems under pressure. While the rapid technological rollout was logistically impressive, the absence of deep pedagogical integration significantly curtailed its transformative potential. Future research must therefore move beyond surface metrics of access and satisfaction to critically interrogate the quality, equity, and innovativeness of learning experiences. By addressing these deeper questions, studies like the present one can contribute meaningfully to a more sustainable and pedagogically grounded digital transformation in education.

Methodology

This study implements a mixed design approach, combining qualitative and quantitative methods to gain a comprehensive understanding of the research problem. Semi-structured interviews are used to collect in-depth qualitative data, while a structured questionnaire gathers quantitative data for statistical analysis. The integration of both data types provides a more holistic analysis, particularly useful in fields like social sciences, education, and healthcare. Using a mixed research design allows for a fuller exploration of research questions by combining the strengths of both qualitative and quantitative approaches (Creswell, 2014; Tashakkori & Teddlie, 2010).

Data Collection Instruments

This study employed a mixed-methods approach, using a structured questionnaire and semi-structured interviews to explore the research questions from both quantitative and qualitative perspectives (Creswell, 2014; Tashakkori & Teddlie, 2010).

The questionnaire, consisting of 30 items, included mainly closed-ended questions on a 5-point Likert scale (e.g., from "Not effective at all" to "Extremely effective" or "Strongly disagree" to "Strongly agree"), designed to measure participants' perceptions, experiences, and attitudes in a standardized format suitable for statistical analysis (Dörnyei, 2007; Cohen, Manion, & Morrison, 2018). A few open-ended items were also included to capture additional insights and context not easily expressed through fixed responses (Gillham, 2005). The design prioritized brevity and ease of completion—taking under 15 minutes—to support response quality and completion rates (Bryman, 2016; Oppenheim, 2000).

To enrich and contextualize the survey data, semi-structured interviews were conducted with a purposively selected subset of participants. Using a flexible guide of six open-ended questions aligned with the questionnaire themes—such as teaching experiences, technology use, and classroom challenges—the interviews allowed for deeper exploration of individual perspectives (Creswell & Poth, 2018). Each interview lasted approximately 25–30 minutes, was audio-recorded with consent, and transcribed verbatim for qualitative analysis.

Combining data from both instruments enabled the triangulation of findings, allowing the researcher to validate patterns from the questionnaire while uncovering richer, nuanced insights through the interviews (Creswell & Plano Clark, 2018). This integrative approach ensured a more comprehensive and credible understanding of the research problem.

Participants and Setting

The researcher obtained ethical approval to implement the study from the concerned ethics committee at Northern University. All participants signed the consent form to participate in the study. Thirty-two EFL teachers, consisting of females (21.8%) and males (78.2%), were involved in this study. All of them were working in the preparatory program at Northern Border University, teaching English to first-year university students in 2021. The preparatory program is offered at most Saudi universities. It aims to teach students and equip them with various skills, such as communication, critical thinking, computer skills, and English proficiency, with a primary focus on English. The students were taught two modules: English 1 and English 2, with a total of 15 credit hours for each module. Additionally, this program serves all university students from various disciplines, including Medicine, Nursing, Basic Sciences, Administrative Sciences, and Humanities. The competent body responsible for the first-year program is the Deanship of the Preparatory Year and Supportive Studies. The teachers who teach the English course in the foundation year come from diverse nationalities, and not all of them are native Arabic speakers. Some of the teachers are from non-Arabic-speaking backgrounds, bringing a range of skills and teaching experiences. Table 1 provides more details about the participants' age and years of teaching experience.

Table 1: Demographic information

Demographic information	Categories	Frequencies	Percentages
Age	24-34	9	28.1%
	35-44	14	43.8%
	45-54	7	21.9%
	55 and above	2	6.3%
Gender	Male	25	78.1%
	Female	7	21.9%

Demographic information	Categories	Frequencies	Percentages
Experience teaching	No experience	1	3.11%
	1-5	3	9.4%
	6-10	13	40.6%
	11-15	6	18.8%
	More than 15	9	28.1%
Nationality	Sudanese	4	12.5%
	Tunisian	1	3.1%
	Pakistani	8	25%
	Indian	7	21.9%
	Jordanian	9	28.1%
	Saudi	3	9.4%
Qualification	MA	28	87.5%
	PhD	4	12.5%
Platform Used	Zoom	5	15.6%
	Microsoft Teams	2	6.3%
	Google Classroom	0	0.0%
	Google Meet	3	9.4%
	Moodle	0	0.0%
	Blackboard	22	68.8%
	WhatsApp	0	0.0%
Frequency of Use	Daily	27	84.8%
	4-5 times a week	3	9.4%
	3-4 times a week	2	6.3%
	Once a week	0	0.0%
	Raely	0	0.0%
	Never	0	0.0%

The data provides a detailed overview of the participants' demographics and usage habits. The largest group of respondents is in the 35-44 age range, representing 43.8%, followed by the 24-34 age group at 28.1%. A significant gender imbalance is evident, with 78.1% of respondents identifying as male. In terms of teaching experience, most participants have between 6-10 years of experience, making up 40.6% of the sample, while others are spread across varying levels of experience. When considering nationality, Jordanian respondents account for the largest portion at 28.1%, followed by Pakistani and Indian participants. Most respondents hold a Master's degree (87.5%), with a smaller portion holding a PhD (12.5%). Regarding platform usage, Blackboard is the most commonly used platform, with 68.8% of participants reporting its use, while Zoom and Google Meet are also frequently used. The majority of respondents, 84.8%, use technology daily, indicating a high level of engagement with the tool. These results suggest a well-educated and highly engaged user group, predominantly male, with a strong preference for established educational platforms.

Procedures

After obtaining ethical approval. All participants were informed about the objectives and procedures of the study and signed an informed consent form to confirm their voluntary participation.

Data collection occurred in two main stages over three weeks during the Fall semester of 2021. In the first stage, a structured questionnaire was distributed electronically to 32 EFL teachers working in the university's preparatory year program. The questionnaire, which included both closed-ended Likert-scale items and open-ended questions, was designed to be completed in less than 15 minutes. Participants were asked to complete the questionnaire within one week, and the majority responded within that timeframe.

To ensure the reliability of the instrument, the internal consistency of the Likert-scale items was examined using Cronbach's alpha. The computed coefficient was 0.84, which is considered to indicate good internal consistency and suggests that the questionnaire items reliably measured the intended constructs (George & Mallery, 2003).

In the second stage, a subset of participants was purposively selected from those who completed the questionnaire, based on criteria such as years of teaching experience, familiarity with online platforms, and willingness to provide in-depth feedback. A total of 10 EFL instructors were interviewed to ensure diversity in experience and teaching styles. Interviews were conducted individually via Zoom, each lasting approximately 25–30 minutes.

An interview guide consisting of six open-ended questions was used to ensure consistency across sessions, while still allowing flexibility to explore emerging themes. All interviews were audio-recorded (with consent) and later transcribed verbatim for qualitative analysis.

Throughout the data collection process, confidentiality and anonymity were strictly maintained. Participants' responses were coded, and all data were stored in encrypted, password-protected digital files. The use of both quantitative and qualitative procedures allowed for a richer, triangulated understanding of the research problem.

Data analysis

Data analysis is a critical process involving the systematic examination, organization, and interpretation of data to uncover patterns, generate insights, and answer specific research questions (Creswell, 2014; Miles et al, 2014). This study employed a mixed-methods approach, incorporating both qualitative and quantitative data to provide a comprehensive and multidimensional understanding of the research problem.

Quantitative data were analyzed using SPSS software, where frequencies and percentages were computed to illustrate the distribution of responses collected through the questionnaire. This statistical treatment enabled the identification of key numerical trends and patterns within the dataset, facilitating a clear and objective interpretation of the quantitative findings.

For the qualitative component, data obtained from semi-structured interviews were transcribed verbatim to preserve the richness and authenticity of participants' narratives. Thematic analysis was conducted following the six-phase framework proposed by Braun and Clarke (2006): (1) transcribing the interviews, (2) immersing in the data through repeated readings, (3) generating initial codes to capture significant features, (4) organizing codes into potential themes, (5) reviewing and refining themes to ensure coherence and relevance, and (6) defining and naming the final themes to encapsulate the core meanings. This rigorous, structured approach to qualitative analysis ensured a systematic exploration of participants' experiences, ultimately enriching the study's findings and contributing to a deeper understanding of the research phenomenon.

Findings

Analysis of participants' responses to the online questionnaire revealed diverse opinions and per-

spectives regarding technology integration in online classes during the COVID-19 pandemic in Saudi Arabia. The findings also highlighted varying perceptions of the relationship between student success or failure and the effectiveness of technology integration, particularly in relation to the objectivity of the teaching process. The quantitative results obtained from the questionnaire are presented in the following sections.

Table 2: Evaluation of Online Learning Tools' Effectiveness

Statements	Frequency	Percentage
Not effective at all	2	6.3%
Slightly effective	1	3.1%
Moderately effective	3	9.4%
Very effective	9	28.1%
Extremely effective	17	53.1%

The data in Table 2 from the survey on the effectiveness of online learning tools shows a highly positive response, with 81.2% of respondents rating the tools as either "Very effective" (28.1%) or "Extremely effective" (53.1%). A smaller percentage, 9.4%, rated them as "Moderately effective", while only 9.4% found them less effective, with 6.3% selecting "Not effective at all" and 3.1% choosing "Slightly effective". Overall, most participants were satisfied with the tools, indicating that they facilitated learning well. However, the few negative ratings suggest that some users may have encountered challenges, such as technical issues or a lack of engagement, which could be addressed to improve the tools further.

Table 3: Advantages of Using Online Learning Technologies for Teaching

	Statements	Frequency	Percentage
	Increased student engagement.	1	3.1%
	Flexibility in planning and organizing.	1	3.1%
	Easier communication with students and parents.	10	31.3%
	Access to a wide range of digital learning resources.	8	25%
	Ability to monitor student progress and performance.	8	25%
	Facilitates self-learning.	4	12.5%

The data shows that the primary advantage of using online learning technologies for teaching is easier communication with students and parents, with 31.3% of respondents highlighting this benefit. Additionally, 25% of respondents appreciated having access to a wide range of digital learning resources and the ability to monitor student progress. 12.5% mentioned that these technologies facilitated self-learning, while 3.1% cited advantages like flexibility in planning and increased student engagement. Overall, the data suggests that online tools are particularly valued for improving communication and providing resources, while their impact on engagement and planning flexibility is less pronounced.

Table 4: Impact on Student Engagement and Learning Outcomes

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Online learning led to an increase in student engagement.	12 (37.5%)	6 (18.8%)	8 (25%)	3 (9.4%)	1 (3.1)

Online positively affected students' academic achievement.	21 (65.6%)	2 (6.3%)	4 (12.5%)	4 (12.5%)	1 (3.1%)
The use of technology helped students better understand the material.	17 (53.1%)	3 (9.4%)	7 (21.9%)	5 (15.6%)	0 (0.0%)
Students preferred online learning to face-to-face learning.	25 (78.1%)	4 (12.5%)	2 (6.3%)	1 (3.1%)	0 (0.0%)

The data shows that most participants viewed online learning positively. For student engagement, 56.3% (37.5% strongly agree + 18.8% agree) felt online learning increased engagement, while 12.5% (9.4% disagree + 3.1% strongly disagree) disagreed, and 25% were neutral. Regarding academic achievement, 71.9% (65.6% strongly agree + 6.3% agree) believed online learning positively impacted academic performance, while 12.5% disagreed.

On whether technology helped students understand the material, 62.5% (53.1% strongly agree + 9.4% agree) felt it did, while 15.6% disagreed, and 21.9% were neutral. For preference, 90.6% (78.1% strongly agree + 12.5% agree) preferred online learning over face-to-face classes, with only 3.1% disagreeing and 6.3% remaining neutral. Overall, online learning was seen as effective, particularly in engagement and preference, though a small group of participants had mixed opinions.

Table 5: Professional Development and Support

Statement	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
The training I received was sufficient to use online teaching tools effectively.	10 (31.3%)	4 (12.5%)	7 (21.9%)	9 (28.1%)	2 (6.2%)
The support from my school was helpful to overcome challenges with online teaching.	9 (28.1%)	4 (12.5%)	9 (28.1%)	9 (28.1%)	1 (3.1%)
I feel confident in using technology for future teaching.	11 (34.4%)	8 (25%)	10 (31.3%)	3 (9.3%)	0 0.0%))

The data reflects mixed views on online teaching tools, training, and support. While 31.3% of the teachers felt the training was sufficient, 34.3% disagreed or were neutral, suggesting room for improvement. Regarding school support, 40.6% found it helpful, but 31.2% disagreed or were neutral. For future confidence in using technology, 59.4% felt confident, but 31.3% were neutral, indicating some uncertainty. Overall, while many teachers feel confident about using technology, improvements in training and support could enhance their readiness.

Table 6: Future Use of Technology in Education

Statement	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
Technology should continue to be integrated into teaching after the pandemic.	22 (68.8%)	8 (25%)	2 6.2%))	0 (0.0%)	0 0.0%))
Online learning will remain an essential part of education in the future.	28% (87.5%)	4 (12.5%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
I believe technology improves teaching and learning outcomes.	21 (65.6%)	4 (21.5%)	5 (15.6)	2 (6.2%)	0 (0.0%)

I am willing to continue using Technology in the classroom even after the pandemic is over.	29 (90.6%)	4 (12.5%)	0 (0.0%)	0 (0.0%)	0 (0.0%)

The data shows strong support for the continued use of technology in education after the pandemic. Most respondents agree (combining "Agree" and "Strongly Agree") that technology should remain integrated into teaching (93.8%) and that online learning will remain an essential part of education in the future (100%). Nearly all respondents believe technology improves teaching and learning outcomes (90.6%). A majority (78.1%) are willing to continue using technology in the classroom post-pandemic, although a smaller portion (21.9%) is neutral or disagrees. Overall, the responses suggest a positive outlook on the ongoing role of technology in education.

Table 7: Challenges Faced During Online Teaching

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I faced technical difficulties (e.g. poor internet, platform issues while teaching online.	29 (90.6%)	3 (9.3%)	0 0.0%))	0 (0.0%)	0 0.0%))
I did not receive adequate training to use online teaching tools effectively.	28% (87.5%)	4 (12.5%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
My students faced significant challenges in accessing online education (e.g., lack of devices, poor internet).	18 (56.3%)	4 (21.5%)	8 (25%)	2 (6.2%)	0 (0.0%)
I found it difficult to keep students engaged during online lessons.	23 (71.9%)	6 (18.8%)	3 (9.3%)	0 (0.0%)	0 (0.0%)
I was not able to adapt to online teaching quickly and effectively.	28% (87.5%)	1 (3.1%)	2 (6.3%)	1 (3.1%)	0 (0.0%)

The data shows that most educators faced significant challenges during online teaching, including technical difficulties (90.6%), lack of adequate training (87.5%), and struggles in keeping students engaged (87.5%). A large portion (71.9%) also reported that their students faced access issues, such as poor internet or lack of devices. Additionally, many teachers found it difficult to adapt quickly and effectively to online teaching. Overall, the responses highlight the difficulties of transitioning to online education and the need for better support, resources, and training for both educators and students.

The following section presents the qualitative findings based on interviews conducted with selected participants. These interviews were intended to support the questionnaire results and to provide a deeper understanding of the phenomenon under investigation.

Code 1: Technology Platforms Used

It was evident that teachers relied on a variety of technology platforms during online teaching. T1 explained that:

> ***"****We mostly used Microsoft Teams for lessons and Zoom for smaller group discussions. I also used Google Classroom for assignments and assessments.****"***

Similarly, T5 pointed out:

> ***"****We used a lot of different tools: Zoom for live lessons,*

> *Google Classroom for assignments, for quizzes and interactive activities."*

In addition, T2 emphasized the role of Blackboard, stating:

> *"We mostly used Blackboard for course content and Zoom for live classes. I also integrated YouTube videos to explain complex concepts."*

Code 2: Frequency of Technology Use

The frequency of technology use varied, but most teachers reported regular engagement with digital platforms.

T8 mentioned:

> *"I used Microsoft Teams for every lesson, and Zoom was used two or three times a week for interactive sessions. It was very effective, especially for group work and discussions."*

Likewise, T9 highlighted that:

> *"Blackboard was used every day to upload materials and manage assessments. Zoom was used three times a week. I felt these tools were effective, especially in explaining difficult topics."*

Meanwhile, T10 noted:

> *"Zoom sessions were held once a week, and WhatsApp was used daily for quick announcements or clarifications. Quizlet was used once a week for vocabulary revision."*

Code 3: Challenges Faced in Adapting to Online Teaching

Many teachers faced difficulties adapting to online teaching, especially related to technology and connectivity.

T8 stated:

> *"The biggest challenge was internet connectivity. Some students couldn't log in because of weak connections. Also, many teachers weren't trained to use online tools effectively."*

T9 added:

> *"Technical difficulties were a major issue. Some students had outdated devices or couldn't access the platform. Plus, I didn't have enough time to learn the new tools thoroughly."*

Similarly, T5 pointed out:

> *"The main challenge was adapting to the new environment. I wasn't familiar with Blackboard initially, and there was a steep learning curve."*

Code 4: Student Engagement and Learning Outcomes

Student engagement was reported to be lower in online classes compared to traditional settings. T1 observed:

> *"Student engagement dropped compared to in-person classes. Many*

students didn't actively participate in lessons. However, their performance in written assignments remained consistent."

T2 similarly noted:

"Engagement was a challenge. Many students didn't turn on their cameras, and it was difficult to know if they were paying attention. Their grades stayed the same, but I felt there was a lack of enthusiasm in the lessons."

T4 confirmed:

"Student engagement was lower. Many students were distracted, and some missed lessons. However, their results on assignments remained the same."

Code 5: Professional Development and Support

Support and professional development opportunities for teachers were often minimal. T10 stated:

"There was some training provided on how to use Microsoft Teams, but it was minimal. Most of what I learned was through online tutorials or trial and error."

T9 explained:

"I attended a few workshops, but the focus was more on basic usage. There wasn't enough follow-up support or guidance on how to handle specific challenges in online teaching."

T5 added:

"I didn't receive any formal training but had access to some online tutorials. Colleagues were really supportive and helped me with technical challenges."

Code 6: Attitudes Towards Continued Use of Technology

Teachers generally expressed positive but cautious attitudes toward the future integration of technology. T2 shared his view:

"I think technology should be used more in the classroom, but it should complement in-person teaching. It helps with organization and accessibility, but nothing beats face-to-face interaction."

T4 agreed, stating:

"I believe technology can enhance learning, but it shouldn't replace traditional methods. I'd like to see more hybrid models in the future, combining online tools with in-person lessons."

T8 emphasized:

"I think online tools should be part of education moving forward, but they need to be balanced with in-person learning. They help with organization and assessment."

Summary of Findings

The combined results from the questionnaire and interviews reveal that most EFL teachers in Saudi Arabia perceived online learning tools as effective during the COVID-19 pandemic. Approximately 81.2% of respondents rated these tools positively, citing benefits such as enhanced communication, easier access to educational resources, improved progress monitoring, and increased flexibility. Platforms like Zoom, Microsoft Teams, and Google Classroom were commonly used.

Despite these advantages, several challenges were consistently reported. Technical issues, poor internet connectivity, limited student access to devices, and low student engagement were major barriers. Additionally, many teachers found the training they received to be insufficient, and although peer support was helpful for some, a clear need for more formal and structured professional development was identified.

While views on the impact of online teaching on professional growth were mixed, a significant number of teachers recognized its positive influence on student learning outcomes. Overall, there was strong support for the continued integration of technology in education, with teachers expressing optimism about its role in enhancing future teaching and learning experiences.

Discussion

This study set out to investigate the experiences of EFL teachers in Saudi Arabia during the COVID-19 pandemic, with a particular focus on the sudden shift to online instruction and the broader implications of integrating educational technology into language teaching. A central objective was to explore not only the nature of technologies used, but also the pedagogical, technical, and institutional dynamics that shaped the effectiveness and sustainability of remote learning. The discussion below critically interprets the findings in light of the study's five core research questions and evaluates them against the existing literature presented in the review.

The first research question asked: What types of digital technologies and platforms were adopted by EFL teachers, and how frequently were they used to facilitate online instruction? The results showed that teachers primarily relied on officially endorsed platforms such as Microsoft Teams and Blackboard. While these tools were implemented nationwide as part of the Ministry of Education's digital response, their use in practice varied significantly in depth and consistency. Many teachers confined themselves to the basic features of these platforms, often utilizing them for attendance and content delivery without fully engaging students in interactive learning processes.

This limited engagement is consistent with the findings of Hodges et al. (2020), who argue that emergency remote teaching differs fundamentally from well-designed online education. According to their work, many global efforts to digitize instruction during the pandemic were characterized by surface-level technological adoption without pedagogical transformation—an observation that echoes in this study's data. Teachers were often users of platforms, not designers of digital learning experiences. This distinction is crucial, as frequency of use alone does not indicate instructional effectiveness. In line with Tondeur et al. (2020), who emphasize the importance of meaningful digital integration, the findings suggest that without structured support and training, teachers may adopt platforms as a formality rather than as a strategic instructional choice.

Addressing the second research question—What pedagogical, technical, and engagement-related challenges did teachers encounter during the transition to remote teaching?—the findings revealed overlapping domains of difficulty that significantly affected instructional quality. Pedagogically, many EFL teachers reported a lack of preparedness to redesign their lessons for online settings. As language instruction typically depends on real-time verbal interaction, collaborative tasks, and contextualized communication, the virtual environment posed constraints that many teachers were not equipped to navigate. This lack of preparedness supports the concerns raised by Darling-Hammond et al. (2017), who highlight that short-term, superficial training cannot substitute for sustained, in-depth professional development focused on both technical and pedagogical capacities.

Technical barriers further exacerbated these challenges. Teachers frequently mentioned issues such as poor internet connectivity, unstable platforms, and lack of access to appropriate devices. These observations closely align with Alzahrani's (2021) analysis of the Saudi context, in which he identified infrastructure limitations as one of the main barriers to effective online education. These technical difficulties were not just logistical inconveniences; they disrupted lesson continuity, demotivated teachers, and alienated students. Similar issues are also noted by Dhawan (2020), who found that in many global contexts, online education in rural or underdeveloped areas was severely hindered by inadequate digital access. In the present study, technical limitations were cited by teachers across various regions, suggesting a systemic issue in digital readiness, particularly among under-resourced schools.

In terms of student engagement, many teachers observed a decline in motivation, participation, and attentiveness during online lessons. Some attributed this to students' unfamiliarity with online learning environments, while others emphasized the absence of direct supervision and face-to-face accountability. These reflections align with the findings of Lay et al. (2020), who reported that during the pandemic, both students and teachers struggled to maintain engagement due to the lack of structured interaction and tailored digital pedagogy. Moreover, the findings show that teachers lacked tools and strategies to rebuild that engagement virtually, reflecting an institutional gap in both policy and practice.

The third research question examined: How did teachers perceive the impact of online learning on student motivation, participation, and academic performance? Teacher perceptions were predominantly negative, with many reporting that online learning diminished students' ability to engage meaningfully with language content. Skills such as speaking and listening—core to EFL development—were particularly difficult to cultivate in a digital setting. Teachers noted that students often remained silent, muted, or distracted during online sessions. This perception aligns with Alzahrani (2021), who concluded that online learning in Saudi Arabia often fails to maintain student engagement without strong pedagogical scaffolding.

Despite this, some teachers acknowledged that online learning provided flexibility and convenience, particularly for students with strong self-regulation skills or those in geographically remote areas. This duality in perception reflects Dhawan's (2020) global findings, which highlight both the advantages and limitations of online education. Yet, the effectiveness of such learning remains contingent on the quality of instructional design and teacher competence—factors that were notably uneven among participants in this study.

Tondeur et al. (2020) similarly assert that digital tools alone cannot improve learning outcomes; rather, they must be part of an intentional, pedagogically sound approach. The results of this study support that view. Teachers who had previous experience with online tools, or who had received prior training, expressed greater confidence and perceived higher student engagement. This reinforces the importance of not only access to technology but also training in how to use it effectively to enhance learning.

The fourth research question asked: What forms of professional development and institutional support did teachers receive, and how did this influence their ability to adapt to online instruction? Participants overwhelmingly reported that the professional development they received was inadequate in both content and delivery. Many teachers described the training as heavily focused on platform mechanics—such as scheduling sessions or sharing screens—without sufficient emphasis on how to adapt instruction for digital environments. This mirrors the concerns raised by Darling-Hammond et al. (2017), who argue that impactful teacher development must be comprehensive, sustained, and embedded in practice—not isolated technical sessions.

Moreover, the findings support the argument presented by Lay et al. (2020), who found that during the pandemic, teacher development initiatives were often reactive, fragmented, and detached from classroom realities. In the Saudi context, participants in this study reported that most institutional support was short-term, top-down, and lacking in follow-up mechanisms. As a result, many educators turned to informal peer networks, self-learning, and trial-and-error methods—approaches that, while admirable, point to institutional gaps in leadership and preparedness.

Teachers also reported increased workloads as they adapted to new technologies while simultaneous-

ly redesigning lesson plans and managing student behavior online. These pressures often led to elevated stress and emotional fatigue. This finding is strongly supported by Alqassim et al. (2022), who found that nearly 70% of teachers in the Jazan region exhibited moderate to high symptoms of burnout during the pandemic, with emotional exhaustion being the most prominent. The alignment between that study and the current findings underscores the urgency of redesigning institutional support systems to prevent long-term professional deterioration among educators.

The fifth research question explored: What are teachers' attitudes toward the sustained use of educational technology beyond the pandemic, particularly in relation to blended learning models? Interestingly, despite the many difficulties they encountered, most teachers in this study expressed cautious openness toward continued technology integration. Their willingness to use digital tools in the future was conditional on certain factors: improved infrastructure, more relevant training, and balanced workloads. Many advocated for blended learning models, arguing that a combination of online and face-to-face instruction could allow for flexibility, better engagement, and instructional diversity.

This attitude is echoed in Alhur (2021), who promotes blended learning as a strategy for future readiness in Saudi education. According to her study, hybrid models can offer the best of both worlds—accessibility through online content and depth through in-person interaction. Likewise, Garrison and Kanuka (2004) found that blended learning environments foster autonomy, flexibility, and social presence—all of which are necessary for language acquisition. The alignment between participants' views and these prior studies indicates that teachers are not resistant to change, but rather are calling for more thoughtful, systemic implementation of digital learning models.

However, participants also raised concerns about long-term equity. Several noted that the digital divide remains unresolved, particularly in rural or economically disadvantaged regions. This concern aligns with the findings of Al-Rashaidan & Al-Thwaini (2021), who warned that unless policies actively address disparities in digital readiness, the move toward technology-enhanced learning may exacerbate educational inequality. Teachers in this study recognized that sustainability of digital learning hinges not just on willingness, but on inclusive planning, equitable resource distribution, and a rethinking of traditional teaching norms.

Furthermore, teachers emphasized the need to align technology integration with national goals, particularly those related to Saudi Arabia's Vision 2030. This resonates with Nurunnabi (2017), who contends that building a knowledge economy requires more than hardware or internet access—it requires curriculum reform, teacher development, and coherent policy frameworks that empower educators, not merely obligate them.

Addressing the sixth research question—What are teachers' attitudes toward the continued use of technology in education after the pandemic?—the findings reveal a cautiously optimistic stance among EFL teachers. While many voiced dissatisfaction with their emergency experiences during the pandemic, a substantial number of participants acknowledged the potential of digital technologies to enrich instruction and improve access to learning. Teachers advocated for the continued use of technology in a blended format that combines the flexibility of online learning with the depth and immediacy of face-to-face instruction.

This perspective aligns with Alhur (2021), who argues that blended learning models represent a promising path for Saudi education post-pandemic. According to her research, the hybrid format allows for differentiated instruction and fosters student engagement across diverse contexts. Similarly, Garrison and Kanuka (2004) emphasize that blended learning enhances autonomy, interaction, and reflection—core components of effective language acquisition. Teachers in this study echoed these benefits, noting that digital tools could support independent learning and allow students to revisit material at their own pace.

However, teachers also raised concerns about structural inequalities in digital access and readiness. These concerns are validated by Al-Rashaidan & Al-Thwaini (2021), who warn that unless digital equity is systematically addressed, educational technology may exacerbate existing disparities, especially in under-resourced regions. Several participants underscored that successful long-term adoption requires

not just tools, but an ecosystem of support—including stable internet, functional devices, sustained training, and responsive leadership.

Finally, teachers emphasized the need to align digital learning initiatives with Saudi Arabia's Vision 2030. Their views resonate with Nurunnabi (2017), who argues that developing a knowledge economy requires comprehensive educational reform, not just technological infrastructure. Participants in this study saw themselves as critical agents in this transformation—willing to embrace change, but expecting to be equipped, supported, and included in strategic planning.

Conclusion

This study examined the use of technology in education by instructors in Saudi Arabia during the COVID-19 pandemic, focusing on the challenges they faced and the impact on teaching effectiveness. The rapid shift to online education revealed significant obstacles, including insufficient teacher preparedness, technical issues such as internet connectivity problems, and an increased workload. Despite these challenges, technology-driven educational platforms played a crucial role in maintaining instructional continuity. Educators with prior digital experience demonstrated greater confidence in effectively using online tools.

Although online learning offered flexibility, it proved less effective than traditional face-to-face instruction, particularly in terms of student engagement and learning outcomes. This finding aligns with global research that highlights the limitations of online education, especially regarding student interaction and participation. The study also suggests that blended learning models—combining online and in-person instruction—offer a promising approach to enhancing future educational experiences.

Based on these insights, the study provides a substantial and practical contribution to the ongoing discourse on digital transformation in education. It sheds light on how educators in Saudi Arabia navigated the challenges of emergency remote teaching during the COVID-19 pandemic and identifies the key factors that influenced their instructional effectiveness. These include digital competency levels, access to technological infrastructure, student engagement limitations, and institutional support mechanisms.

From a practical standpoint, the findings offer clear, evidence-based directions for a variety of stakeholders:

For policymakers, the study highlights priority areas for intervention, including the urgent need to address the digital divide, particularly in underserved or rural regions. Investments in infrastructure—such as reliable internet access, device availability, and school-based IT support—should be strategically targeted based on the disparities revealed.

For teacher training institutions and education ministries, the findings can directly inform the design of targeted professional development programs. These programs should go beyond basic digital literacy and focus on pedagogically sound technology integration strategies, classroom management in virtual environments, and subject-specific digital tools.

For school administrators and education leaders, the results underscore the importance of providing ongoing support, not only through infrastructure and training, but also through clear communication, flexible policies, and platforms that facilitate collaboration and resource sharing among educators.

For curriculum developers, the study draws attention to the need for content that is adaptable to both online and blended formats, ensuring continuity of learning regardless of instructional modality.

In addition to these practical implications, the study identifies several avenues for future research that can build on its findings. Specifically, there is a need to:

Evaluate the long-term effects of prolonged online and blended learning experiences on student academic performance, critical thinking, and engagement across different age groups and educational levels.

Investigate the impact of sustained digital training programs on teachers' instructional practices and

student outcomes, particularly in the Saudi context.

Explore the scalability and sustainability of blended learning models, including cost-effectiveness, teacher workload management, and institutional capacity to maintain such models post-pandemic.

Examine regional disparities in technology access and use, to inform localized strategies that ensure educational equity.

While the study offers practical and policy-relevant insights, certain limitations must be acknowledged. The relatively small and purposively selected sample limits the generalizability of the findings to the broader population of educators in Saudi Arabia. Additionally, the reliance on self-reported data—both in the questionnaire and interviews—introduces the possibility of response bias, as participants may have over- or under-reported their experiences due to social desirability or personal perceptions. These limitations suggest that future studies should consider larger, more diverse samples and incorporate objective measures—such as classroom observations or performance data—to enhance validity and reliability.

Nevertheless, the study also revealed meaningful contradictions that warrant critical reflection. While many educators reported significant challenges in integrating technology—such as limited training and inadequate infrastructure—some participants nonetheless expressed high levels of confidence and perceived teaching effectiveness. This contrast suggests that individual factors, such as prior digital literacy, adaptability, and institutional support, may have played a more influential role than initially anticipated. Moreover, although online learning was generally perceived as less effective, a minority of participants observed benefits such as improved student autonomy and enhanced digital communication skills. These findings indicate that the impact of educational technology is not inherently positive or negative, but highly dependent on context. They also underscore the importance of avoiding overgeneralizations and highlight the need for more nuanced, context-sensitive research into how various factors shape the outcomes of technology-integrated teaching.

By offering both a diagnostic view of challenges and a forward-looking roadmap, this study moves beyond theoretical discussion to deliver practical, actionable insights that can directly influence educational reform, digital policy design, and capacity-building efforts in Saudi Arabia and similar contexts.

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د. سلطان سماح عامر المجلاد، أستاذ اللغات الحديثة ودراسات الترجمة المساعد، في قسم اللغات والترجمة، بكلية العلوم الإنسانية والاجتماعية، في جامعة الحدود الشمالية، (المملكة العربية السعودية). حاصل على درجة الدكتوراه في اللغات الحديثة من جامعة. ليمريك بأيرلنداعام.2022 تدور اهتماماته البحثية حول قضايا الترجمة وتعليم اللغات الحديثة، ولاسيّما الفارسية والعبرية والفرنسية بالإضافة استخدام إلى التكنولوجيا الحديثة في تعليم اللغات الأجنبية.

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