

Exploring the Effectiveness of Virtual Learning on the Sustainable Development of Saudi EFL Students' Motivation and Learning Anxiety

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Abstract—This paper attempts to explore the impact of virtual learning on the sustainable development of Saudi EFL students' motivation and learning anxiety. The main objective of the paper is to show the extent to which virtual learning conducted by digital platforms such as Blackboard Collaborate contributes to improving EFL students' motivation and reducing their learning anxiety in the Saudi EFL context. The study uses a mixed-method approach that is demonstrated by both quantitative and qualitative procedures and manifested in two analytical instruments: questionnaires and interviews. This study addresses two overarching research questions: First, how does virtual learning contribute to enhancing Saudi EFL students' motivation? Second, how does virtual learning contribute to reducing Saudi EFL students' learning anxiety? The sample of this study consists of 165 Saudi EFL students and 16 EFL teachers. All participants are affiliated with one Saudi university. Findings reveal that virtual learning has made a substantial contribution to the sustainable development of Saudi EFL students' motivation and learning anxiety by enhancing the former and reducing the latter. Pedagogically, this study recommends the use and application of virtual learning as a main education system in Saudi Arabia, as it functions to produce better learning outcomes in terms of the different learning constructs.

Index Terms—learning anxiety, motivation, virtual learning, sustainable development, Saudi EFL context

I. INTRODUCTION

Over the last decades, virtual learning has become an influential tool of learning, particularly in light of global tendencies toward digitalization and online education. In the Saudi context, where English as a Foreign Language (EFL) is an essential component of academic and professional development, it is important to understand how virtual learning environments affect learners' motivation and anxiety to provide sound, sustainable educational progress. Despite greater application of technology in Saudi classrooms (Al-Shehri, 2021), relatively little research has been conducted to explain the effects of such virtual learning environments on the motivational and emotional aspects of EFL learners. Specifically, there is no empirical evidence on whether virtual learning gives rise to long-term motivation while minimizing learning anxiety or rather intensifies issues for learners. This study seeks to fill this gap by examining the efficacy of virtual learning towards alleviating the sustainable development of Saudi EFL students' motivation and learning anxiety, thereby serving the broader aim of sustainable and inclusive education in Saudi Arabia.

The global tendency towards virtual learning instigated by the COVID-19 pandemic has redefined the manner in which teaching and learning are conducted, and specifically in language teaching and learning. Internet-based virtual learning environments like e-classrooms, smartphone apps, and computer-based collaboration platforms have become globally an integral part of education infrastructures. Learning has been embraced in Saudi Arabia as in line with the country's Vision 2030 plan advocating innovation and digital transformation in education (Ministry of Education, 2020). English as a Foreign Language (EFL) education is critical to academic success and global competitiveness and has been influenced by this revolution. As much as online education has afforded learners greater ease of access to course material and greater mobility to explore and discover at their convenience and pace, doubts regarding its potency to meet the emotional and psychological needs of EFL learners, in particular to sustain motivation and alleviate anxiety, are still very real.

Another significant predictor of how well someone will be able to acquire a language is motivation. Motivation determines how motivated and diligent and how successful learners are. For Saudi EFL students, motivation is produced by forces of culture and society and forces of teaching and instruction and may be affected by shifts to online learning (Alrabai, 2016). By some reports, computer-based education software has been shown to improve student motivation by allowing interactivity and choice and the potential for self-direction in education (Deci & Ryan, 2000). However, certain authorities suggest reduced face-to-face communication and less social presence in online courses may be negative in terms of motivation (Yanguas, 2020). Moreover, it is becoming increasingly important to ensure motivation over longer timescales, in particular in online or at-distance courses. For Saudi EFL classroom situations in which traditional approaches to teacher-centered teaching have long been preminent, shifts to individual online

learning may either mitigate or magnify preexisting challenges in maintaining motivation in foreign language acquisition.

Also of parallel importance in the virtual learning discussion is learning anxiety, which is the psychological tension that learners experience as they deal with a foreign language. Foreign Language Anxiety (FLA) has been shown to have a debilitating effect on students' performance, participation, and confidence, and it typically leads to withdrawal or avoidance behaviors (Horwitz et al., 1986). In online environments, students can be less anxious due to the privacy and flexibility of such environments, though other research indicates that technical problems, lack of immediate feedback, and less peer interaction can in fact heighten anxiety levels (Zheng & Li, 2020). For Saudi EFL learners, who often confront sociocultural and linguistic limitations, virtual learning can act either as a buffer against classroom-based stress or as a generator of novel forms of anxiety that detract from sustainable language learning. Understanding the multifaceted interaction between virtual learning and EFL anxiety is thus of paramount significance to the development of inclusive and successful pedagogic practice.

Despite the increasing use of virtual learning mechanisms within Saudi EFL education, there is a significant gap in the literature investigating the impact of these websites on the long-term development of student motivation and learning anxiety management. The majority of the literature has investigated short-term outcomes, technology adoption, or general academic achievement, with minimal attention to emotional and motivational sustainability (Al-Shehri, 2021). Furthermore, Saudi Arabia's unique cultural and learning context demands localized understanding of how EFL learners engage with virtual environments. The aim of this study is to examine the influence of virtual learning on promoting the sustainable growth of motivation and reducing learning anxiety among Saudi EFL students. By bridging this gap, the research seeks to guide future educational practice and policy, promoting student well-being and long-term language learning success.

A. Research Questions

The current study attempts to answer the following research questions:

1. How does virtual learning contribute to enhancing Saudi EFL students' motivation?
2. How does virtual learning contribute to reducing Saudi EFL students' learning anxiety?

B. Research Objectives

The study seeks to achieve the following objectives:

1. To explore the impact of virtual learning on the sustainable development of Saudi EFL students' learning motivation.
2. To show the impact of virtual learning on the sustainable development of Saudi EFL students' learning anxiety.
3. To shed light on the perception of Saudi EFL students in terms of the impact of virtual learning on improving their academic performance?

The rest of this study is structured as follows: Section 2 is the literature review of the study, wherein a theoretical background of the whole study is provided. Section 3 is the methodology, in which data description, design of the study, the participants, and the research procedures are offered. Section 4 presents the results of the study. Section 5 demonstrates the discussion of the results obtained from the analysis of the collected data. Section 6 concludes the study and provides some recommendations, pedagogical implications, and limitations of the study.

II. LITERATURE REVIEW

A. Sustainability in the Context of Education

Education for sustainable development 2030, according to UNESCO, is a response to the urgent problems facing the earth, namely ecological change that endangers life as we know it. The COVID-19 pandemic upset the educational system all across the world. Educational institutions swiftly went online to remain viable. As a result, educational institutions, especially those in higher education, introduced new, innovative technologies and technical tactics (Alotaibi, 2022). The emphasis switched to transformative and sustainable pedagogies. Even when the epidemic is gone, virtual learning usage might increase significantly, changing human behavior patterns (Michelsen & Fischer, 2017). The quality of education (Objective No. 4) is among the many areas that are significantly impacted by the change to virtual learning in the majority of Saudi Arabia's educational institutions. For instance, earlier research has demonstrated that virtual learning has a positive impact on a number of learning constructs, such as learners' autonomy, willingness to communicate, learning motivation, and learning anxiety (Glavič, 2020; Downes, 2023). Sustainable virtual learning is a popular issue in contemporary education because of its educational effectiveness, economic viability, and environmentally conscious methods. Gamble (2018) investigates the environmental impacts of virtual schools, emphasizing how fewer commutes and the requirement for physical infrastructure may lower carbon footprints. Virtual learning may save money for both students and institutions, which is important for the economy's continuing practicality. In virtual learning environments, pedagogical efficacy is crucial (Downes, 2023). Antón-Sancho et al. (2022) stress the need for inclusivity and accessibility in long-term virtual learning. Sustainable virtual courses offer a wide-ranging method to present-day learning that achieves efficiency by taking into consideration educational factors.

Sustainable education development is defined as instruction that respects cultural variety and gives students the tools they need to make wise decisions and take on responsibility for the environment, the economy, and a peaceful community for future generations (Kim & Ryu, 2023).

B. Virtual Learning and Motivation

In the EFL context, learning motivation is the internal or external force that propels students to participate in and stick with language learning activities. It is frequently divided into two categories: extrinsic motivation, which is motivated by outside incentives like grades, professional progress, or social recognition, and intrinsic motivation, which results from a person's own interest or enjoyment in learning the language (Deci & Ryan, 2000). The classroom setting, instructional strategies, cultural background, and the learner's sense of advancement and self-efficacy are some of the factors that affect motivation in EFL instruction (Zhao et al., 2022). From a theoretical perspective, virtual learning and learner motivation alignment are best understood through theories such as self-determination theory (SDT) (Deci & Ryan, 2000) and constructivist learning theory, which all emphasize autonomy, interest, and value in the process of learning. In virtual learning environments, students are generally given greater autonomy over time, pace, and interaction, consistent with SDT's emphasis on autonomy, competence, and relatedness as sources of motivating energy (Deci & Ryan, 2000). Constructivist theory further fits with the concept that students construct meaning actively, particularly when they are learning content and others in collaborative, technology-mediated environments. In the Saudi EFL context, where traditional instruction is likely to center on teacher-dominated methods and rote memorization, virtual learning introduces a paradigm shift that could potentially make students more motivated through greater learner-centered practice and diversified participation strategies. Earlier studies in Saudi Arabia have confirmed that virtual learning facilitates self-regulation, greater levels of participation, and more intense tendencies to communicate, all of which are the keys to sustaining motivation in language learning (Almalki et al., 2023).

C. Virtual Learning and Learning Anxiety

Learning anxiety is the sensation of stress, uneasiness, or trepidation that students get when participating in language learning activities. Performance, involvement, and long-term language learning may all suffer as a result. Language anxiety can take many different forms, such as communication apprehension, which is the dread of speaking; test anxiety, which is the fear of assessments; and fear of negative evaluation (Horwitz et al., 1986). EFL students frequently suffer from anxiety as a result of things like poor language skills, insecurity, strange classroom dynamics, or a fear of making mistakes in front of their classmates. Among the important aspects of learning anxiety are avoiding speaking activities, experiencing bodily symptoms like sweating or shivering, and experiencing cognitive hindrance like blanking out during speech. A non-threatening classroom environment, opportunities for low-stakes communicative practice, and supportive teaching techniques are all necessary to reduce anxiety (Abdelwahed et al., 2022). In EFL contexts, virtual learning has the potential to have a big impact on learning anxiety, particularly in those where students frequently encounter psychological obstacles, including low confidence, fear of speaking, and fear of receiving a poor grade. By providing greater learner control, enhanced anonymity, and adjustable pacing, virtual learning environments can generally help students feel less anxious (Horwitz et al., 1986; Kruk, 2018). Studies have indicated that virtual learning can help reduce anxiety in the Saudi EFL environment. For instance, Almalki et al. (2023) found that Saudi EFL students who participated in virtual environments felt less learning anxiety. They attributed this shift to the flexibility and lower performance demands of online forms. In a similar vein, Khafaga (2021) and Alamry (2024) discovered that students may converse more openly and without fear of criticism in virtual classrooms, arguing that virtual learning can be a very effective way to lessen anxiety connected to EFL contexts.

D. Previous Studies

Much previous research has approached the impact of virtual learning on the various learning constructs of EFL students (e.g., Al-Jarf, 2020; Alrabai, 2016; Almalki et al., 2023; Alharbi, 2022; Alamry, 2024; Al-Qahtani & Higgins, 2013; Kim & Ryu, 2023; Michelsen & Fischer, 2017), among others. These studies emphasized that virtual learning has an effective influence on the different learning constructs. For example, Almalki et al. (2023) found that virtual learning decreases learning anxiety. The study reports that students held positive perceptions of virtual learning and that it decreased learning anxiety while enhancing motivation. Similarly, Alharbi (2022) shows that about 64% of female undergraduate Saudi students displayed high levels of autonomous learning in virtual EFL classes, autonomous learning being closely tied to intrinsic motivation, self-regulated learning, and willingness to learn. Further, studies on online learning applications among Saudi EFL learners (e.g., Al-Shehri, 2021; Alghofaili, 2022; Almalki et al., 2023) find strong positive correlations among these constructs, which supports the idea that virtual learning settings can scaffold and foster motivational processes. Thus, the evidence suggests that virtual learning contributes effectively to boosting both intrinsic and extrinsic motivational factors in Saudi EFL contexts, especially when learners are given autonomy, flexible access, and supportive digital environments. However, effectiveness is not universal or unqualified; several studies point to boundary conditions, challenges, and differential effects. For example, Alharbi's (2022) autonomous learning study noted that while a majority showed high autonomy, a substantial minority (36%) exhibited only average levels in domains such as self-motivation, acceleration of learning, and willingness to learn, indicating the motivational boost from virtual learning is uneven. Moreover, comparisons with blended learning (which combines virtual and

face-to-face) show that blended formats may do an even better job of augmenting self-motivation and reducing anxiety than pure virtual/e-learning modes (Alghofaili, 2022).

III. METHODOLOGY

A. Design of the Study

The methodology used in this study is based on a mixed-method approach that consists of two analytical tools. The questionnaire is the first tool, and the interview is the second. This means that the current study is a quantitative-qualitative one that is entirely based on the mixed-methods grounded theory (Creswell & Clark, 2011; Guetterman et al., 2019). The use of both methods of analysis functions to produce reliable, trustworthy, and credible results. The tools are used to produce trustworthy findings related to the primary goals of this investigation. As a result, the study is a quantitative-qualitative analysis of the data gathered for the intended analytical goals. Both the questionnaire and the interview were created and distributed to participants electronically. Potential participants had to complete an informed permission form before they could access the survey, saying that they were willing to engage in the study and that they agreed to the use of their data for research. The two instruments' main focus is to show how virtual learning contributes to the sustainable development of Saudi EFL students' motivation and learning anxiety.

B. Study Participants

The participants of this study are 165 EFL students and 16 EFL teachers, who are affiliated with Prince Sattam bin Abdulaziz University. All students are Saudi who are studying English as a foreign language, whereas teachers come from different nationalities. Table 1 shows the demographic data pertaining to the respondent students and teachers.

TABLE 1
DEMOGRAPHIC DATA OF THE PARTICIPANTS

Participants	Variable	Classification	No.	%	Total
Students	gender	male	58	35.15	165
		female	107	64.85	
	age	18-20	124	75.15	
		21-23	41	24.85	
	nationality	Saudi	160	100.00	
Teachers	gender	male	9	56.25	16
		female	7	43.75	
	age	30-40	5	31.25	
		40-50	7	43.75	
		50-60	4	25.00	
	nationality	Saudi	3	18.75	
		Sudanese	2	12.50	
		Egyptian	4	25.00	
		Pakistani	4	25.00	
		Indian	2	12.50	
		Jordanian	1	6.25	
	rank	Professor	2	12.50	
		Associate professor	3	18.75	
		Assistant professor	9	56.25	
		Lecturer	2	12.50	
	experiences	less than 5 years	3	18.75	
5-10 years		11	68.75		
Above 10 years		2	12.50		

C. Instruments

Two instruments were employed in this study: a questionnaire and an interview. The questionnaire is dedicated to students, and the interview was confined to teachers. The questionnaire was divided into two major parts dealing with the two learning constructs discussed in this paper: motivation and learning anxiety. Each part was further divided into four subcategories, wherein each deals with a specific variable. Thus, the total number of statements in each part was 20 statements distributed to four variables, 5 statements each. Regarding learning motivation, the presented variables are learning motivation, engagement and interaction, effectiveness of virtual learning platforms, and sustainability and long-term motivation. In terms of the second part, i.e., learning anxiety, it presents four variables, including general language learning anxiety, the effect of virtual learning on reducing anxiety, instructor and peer support in virtual settings, and sustainability and coping with anxiety over time. As for the interview, it consists of six open-ended questions. Crucially, the questionnaire, with all its parts, and the interview were mainly designed to test the participants' attitudes concerning the impact of virtual learning on the sustainable development of Saudi EFL students' motivation and learning anxiety.

D. Research Procedures

The analytical procedures followed in this study constitute three stages: pre-analysis, main analysis, and post-analysis. In the pre-analysis stage, relevant data are collected using a combination of quantitative and qualitative instruments, typically through validated questionnaires measuring motivation and anxiety, along with semi-structured interviews or focus groups to capture in-depth student perceptions. During the main analysis stage, statistical methods such as descriptive statistics are employed to determine the significance and direction of changes in motivation and anxiety levels during the process of virtual learning. For qualitative data, thematic analysis is used to identify recurring patterns related to learner experiences and psychological responses. In the post-analysis stage, results are interpreted in relation to theoretical frameworks and the sustainability of observed effects over time. This stage also involves triangulation to validate results across data sources and drawing implications for pedagogical practice and policy in the Saudi EFL context.

IV. RESULTS

A. Results Related to the Perception of Saudi EFL Students of the Impact of Virtual Learning on Their Learning Motivation

This part demonstrates the results of the students' questionnaire concerning their attitudinal behavior of the impact of virtual learning on their learning motivation. These results are presented in terms of four variables, including learning motivation, engagement and interaction, effectiveness of virtual learning platforms, and sustainability and long-term motivation. These are shown in Tables 2, 3, 4, and 5, as follows:

TABLE 2
PERCEPTION OF SAUDI EFL STUDENTS OF THE IMPACT OF VIRTUAL LEARNING ON THEIR LEARNING MOTIVATION (N=165): VARIABLE 1. LEARNING MOTIVATION

	Statement	Response											
		SD		D		N		A		SA		M	SD
		N	%	N	%	N	%	N	%	N	%		
1	Virtual learning has increased my interest in learning English.	7	4.24	11	6.67	3	1.82	112	67.88	32	19.39	3.92	0.92
2	I feel more motivated to study English when using online learning platforms.	3	1.82	7	4.24	7	4.24	123	74.55	25	15.15	4.00	0.66
3	I set personal goals for improving my English through virtual learning.	3	1.82	9	5.45	3	1.82	104	63.03	46	27.88	4.10	0.71
4	I do not feel a sense of accomplishment when I complete virtual English learning tasks.	37	22.42	95	57.58	4	2.42	12	7.27	17	10.30	2.26	1.22
5	The flexibility of virtual learning helps me stay motivated to learn English regularly.	7	4.24	13	7.88	2	1.21	136	82.42	7	4.24	3.75	0.77

Table 2 highlights a strong positive perception among Saudi EFL students regarding the impact of virtual learning on their learning motivation, as reflected in both percentages and mean scores. Statements 1, 2, and 3 show high levels of agreement, with 87.27% of students agreeing or strongly agreeing that online platforms increase their motivation ($M=4.00$), and 90.91% affirming they set personal goals through virtual learning ($M=4.10$). The linguistic indicators such as "increased my interest," "feel more motivated," and "set personal goals" suggest internal motivation and active engagement. Notably, Item 4, which is negatively worded (I do not feel a sense of accomplishment...), had the lowest mean ($M=2.26$), with 80% of participants disagreeing, reinforcing that most students do feel a sense of achievement. Crucially, the consistently high mean scores (ranging from 3.75 to 4.10, except for the negative item) and the strong agreement percentages indicate that virtual learning effectively enhances EFL students' motivation through increased interest, goal-setting, and flexibility.

TABLE 3
PERCEPTION OF SAUDI EFL STUDENTS OF THE IMPACT OF VIRTUAL LEARNING ON THEIR LEARNING MOTIVATION (N=165): VARIABLE 2.
ENGAGEMENT AND INTERACTION

	Statement	Response											
		SD		D		N		A		SA		M	SD
		N	%	N	%	N	%	N	%	N	%		
1	I actively take part in online English classes.	5	3.03	12	7.27	3	1.81	133	80.60	12	7.27	3.82	0.79
2	Virtual learning does not motivate me to speak more English.	26	15.76	115	69.70	3	1.82	11	6.67	10	6.06	2.18	1.07
3	I am afraid to ask questions and express ideas in online English sessions.	21	12.73	119	72.12	4	2.42	8	4.85	13	7.88	2.22	1.06
4	Online features (e.g., quizzes, breakout rooms, chat features) do not make learning English more interesting.	33	20.00	116	70.30	3	1.82	4	2.42	9	5.45	2.04	0.96
5	I find it easier to concentrate in virtual English lessons than in face-to-face classes.	3	1.81	11	6.66	2	1.21	124	75.15	25	15.15	3.95	0.77

Table 3 reveals a traditionally positive perspective on the impact of online learning on Saudi EFL students' engagement and interaction, with evident patterns in both mean scores and percentage agreement. To illustrate, 87.87% of the students cited actively working in online English classes (Item 1, M=3.82), while 90.3% agreed that they could concentrate better in virtual settings (Item 5, M=3.95), with high levels of participation. On the other hand, the negative statements like Item 2 (Virtual learning doesn't make me want to talk more English) and Item 4 (Online features do not make learning English more enjoyable) received strong disagreement from 85.46% and 90.3% of the participants, respectively, with low mean scores (M=2.18 and M=2.04). Linguistic cues such as "actively take part," "afraid to ask questions," and "interesting to learn" reflect interactive and emotional aspects of interaction. The indication that there is more agreement with positive items and strong disagreement with negative ones suggests that online learning enhances students' participation in the classroom, interactive behaviors, and knowledge of learning tools.

TABLE 4
PERCEPTION OF SAUDI EFL STUDENTS OF THE IMPACT OF VIRTUAL LEARNING ON THEIR LEARNING MOTIVATION (N=165): VARIABLE 3.
EFFECTIVENESS OF VIRTUAL LEARNING PLATFORMS

	Statement	Response											
		SD		D		N		A		SA		M	SD
		N	%	N	%	N	%	N	%	N	%		
1	The online learning platform offers adequate resources for learning English.	3	1.82	7	4.24	4	2.42	119	72.12	32	19.39	4.04	0.74
2	I believe the quality of English teaching online is effective.	2	1.21	11	6.67	2	1.21	134	81.21	16	9.70	3.92	0.57
3	Technical issues hardly get in the way of my online English learning.	5	3.03	13	7.88	7	4.24	116	70.30	24	14.55	3.86	0.84
4	I am not satisfied with the response of my English teacher in online classes.	25	15.15	114	69.09	6	3.64	3	1.82	17	10.30	2.24	1.21
5	I believe that virtual learning has improved my English language skills over time.	3	1.82	12	7.27	2	1.21	145	87.88	3	1.82	3.81	0.55

Table 4 demonstrates a predominantly positive perception among Saudi EFL students regarding the effectiveness of virtual learning platforms. High agreement percentages are evident in Items 1 and 2, where 91.51% of students agreed or strongly agreed that the platforms offer adequate resources (M=4.04) and 90.91% viewed the quality of online English teaching as effective (M=3.92). Similarly, 84.85% agreed that technical issues rarely hinder their learning (Item 3, M=3.86). Conversely, dissatisfaction with teacher responsiveness (Item 4) was low, with 84.24% disagreeing or strongly disagreeing (M=2.24), suggesting general contentment in this area despite some concerns. Importantly, 89.7% felt that virtual learning improved their English skills over time (Item 5, M=3.81). Linguistically, terms like "adequate resources," "quality," and "improved skills" indicate effectiveness and positive learning outcomes. These findings collectively indicate that students perceive virtual platforms as effective tools that support their language development, despite minor challenges with teacher interaction.

TABLE 5
PERCEPTION OF SAUDI EFL STUDENTS OF THE IMPACT OF VIRTUAL LEARNING ON THEIR LEARNING MOTIVATION (N=165): VARIABLE 4.
SUSTAINABLE MOTIVATION

	Statement	Response											
		SD		D		N		A		SA		M	SD
		N	%	N	%	N	%	N	%	N	%		
1	In the long run, I do not think virtual learning will allow me to continue studying English effectively.	32	19.39	117	70.91	5	3.03	7	4.24	4	2.42	2.18	1.03
2	My lifetime learning objectives in English and personal growth are supported by virtual learning.	4	2.42	8	4.85	3	1.82	139	84.24	11	6.67	3.89	0.63
3	A regular learning schedule is encouraged by the virtual learning environment.	4	2.42	11	6.67	5	3.03	128	77.58	17	10.30	3.85	0.69
4	After completing my university, I probably will keep using online resources to get better at English.	7	4.24	14	8.48	2	1.21	78	47.27	64	38.79	4.08	1.09
5	I've been able to form habits through virtual learning that keep me motivated to learn English.	5	3.03	9	5.45	3	1.82	114	69.09	34	20.61	4.00	0.84

Table 5 reveals a generally optimistic perception of the sustainability and long-term motivational impact of virtual learning among Saudi EFL students. Most students disagreed with the negative statement that virtual learning would not support their continued English study (Item 1), with 90.3% disagreeing or strongly disagreeing and a low mean of 2.18, indicating confidence in its long-term effectiveness. Positive statements received strong agreement, such as 90.91% endorsing that virtual learning supports their lifetime learning objectives and personal growth (Item 2, M=3.89), and 87.88% agreeing it encourages a regular learning schedule (Item 3, M=3.85). Notably, a substantial 86.06% expressed intention to continue using online resources post-university (Item 4, M=4.08), and 89.7% reported having formed motivating learning habits (Item 5, M=4.00). Linguistic indicators like "lifetime learning objectives," "regular schedule," and "habits" reflect sustained motivation and ongoing engagement, highlighting virtual learning's positive role in fostering durable learning practices.

B. Results Related to the Perception of Saudi EFL Students of the Impact of Virtual Learning on Their Learning Anxiety

This part shows the results of the students' questionnaire concerning their perception of the impact of virtual learning on their learning anxiety. These results are clarified with respect to four variables, including general language learning anxiety, the effect of virtual learning on reducing anxiety, instructor and peer support in virtual settings, and sustainability and coping with anxiety over time. These are shown in Tables 6, 7, 8, and 9, as follows:

TABLE 6
PERCEPTION OF SAUDI EFL STUDENTS OF THE IMPACT OF VIRTUAL LEARNING ON THEIR LEARNING ANXIETY (N=165): VARIABLE 1. GENERAL LANGUAGE LEARNING ANXIETY

	Statement	Response											
		SD		D		N		A		SA		M	SD
		N	%	N	%	N	%	N	%	N	%		
1	I do not feel nervous when speaking English during virtual classes.	6	3.64	11	6.67	4	2.42	141	85.45	3	1.82	3.59	0.74
2	I feel comfortable about making mistakes when participating in online English activities.	3	1.82	16	9.70	2	1.21	139	84.24	5	3.03	3.77	0.60
3	I do not feel anxious before attending virtual English classes.	6	3.64	9	5.45	7	4.24	131	79.39	12	7.27	3.81	0.77
4	I feel relaxed when I don't understand something in a virtual English lesson.	3	1.82	7	4.24	2	1.21	109	66.06	44	26.67	4.12	0.77
5	I get anxious when I have to answer questions in English during online sessions.	45	27.27	92	55.76	6	3.64	9	5.45	13	7.88	2.11	1.11

Table 6 shows that Saudi EFL students are not anxious about learning English online. The items with positive meanings towards comfort and less nervousness, i.e., feeling comfortable when one does not comprehend something (Item 4), were most agreed upon, with 92.73% agreeing and strongly agreeing, and a mean of 4.12. Similarly, 87.27%

felt comfortable making mistakes when doing things on the Internet (Item 2, $M=3.77$), and 87.27% reported not feeling nervous before classes (Item 3, $M=3.81$). The item "I do not feel nervous when speaking English" (Item 1) also garnered a high percentage of agreement at 87.27% ($M=3.59$). Conversely, anxiety item 5, addressing nervousness in answering questions, registered 83.03% disagreement (SD + D) with a low mean of 2.11, indicating that most students do not get anxious in this context. Linguistically, adjectives like "comfortable," "relaxed," and "not anxious" refer to the general positive emotional state. Collectively, these findings suggest that virtual learning significantly reduces general language learning anxiety among the students.

TABLE 7
PERCEPTION OF SAUDI EFL STUDENTS OF THE IMPACT OF VIRTUAL LEARNING ON THEIR LEARNING ANXIETY (N=165): VARIABLE 2. EFFECT OF VIRTUAL LEARNING ON REDUCING ANXIETY

	Statement	Response											
		SD		D		N		A		SA		M	SD
		N	%	N	%	N	%	N	%	N	%		
1	Virtual learning is easier for me to communicate in English than a regular class.	3	1.82	11	6.67	5	3.03	128	77.58	18	10.90	3.89	0.75
2	I feel more pressure to perform in English in online classes.	34	20.61	115	69.70	3	1.82	5	3.03	8	4.85	2.02	0.88
3	Being in the online community reduces my anxiety of making mistakes in English.	7	4.24	14	8.48	2	1.21	93	56.36	49	29.70	3.99	1.02
4	I feel more secure communicating in English when chatting or posting on discussion forums on the internet.	4	2.42	13	7.88	6	3.64	111	67.27	31	18.79	3.92	0.87
5	Having the capacity to learn at home reduces my fear of learning English.	3	1.82	7	4.24	2	1.21	131	79.39	22	13.33	3.98	0.84

Table 7 indicates that Saudi EFL students generally perceive virtual learning as effective in reducing their English learning anxiety. High mean scores across most items (ranging from 3.89 to 3.99) suggest positive attitudes, particularly toward the benefits of online learning in easing communication and reducing fear. For instance, 79.39% agreed and 13.33% strongly agreed that learning from home reduces their fear of learning English ($M=3.98$), while 56.36% agreed and 29.70% strongly agreed that online communities help reduce anxiety about making mistakes ($M=3.99$). Conversely, the statement "I feel more pressure to perform in English in online classes" had the lowest mean ($M=2.02$), with 69.70% disagreeing, suggesting that virtual learning generally alleviates rather than increases performance pressure. These findings collectively support the notion that virtual environments can significantly lower language learning anxiety.

TABLE 8
PERCEPTION OF SAUDI EFL STUDENTS OF THE IMPACT OF VIRTUAL LEARNING ON THEIR LEARNING ANXIETY (N=165): VARIABLE 3. INSTRUCTOR AND PEER SUPPORT IN VIRTUAL SETTINGS

	Statement	Response											
		SD		D		N		A		SA		M	SD
		N	%	N	%	N	%	N	%	N	%		
1	My internet-based English instructor provides guidance that relaxes my nervousness.	7	4.24	11	6.67	4	2.42	136	82.42	7	4.24	3.75	0.71
2	I often receive feedback on my performance in online English classes.	4	2.42	6	3.64	2	1.21	141	85.45	12	7.27	3.92	0.58
3	I do not receive adequate emotional support from my teacher during online learning.	35	21.21	111	67.27	4	2.42	7	4.24	8	4.85	2.06	0.89
4	Virtual class group activities reduce my stress level regarding speaking English.	2	1.21	13	7.88	2	1.21	129	78.18	19	11.52	3.85	0.62
5	I feel more confident about my English after the feedback I receive in online classes.	2	1.21	11	6.67	3	1.82	118	71.52	31	18.79	3.96	0.70

Table 8 reveals that Saudi EFL students generally perceive strong instructor and peer support in virtual learning environments, which helps reduce their learning anxiety. The mean scores are consistently high (ranging from 3.75 to 3.96, except for the reverse-coded item 3), indicating positive perceptions. Notably, 85.45% agreed and 7.27% strongly agreed that they often receive feedback in online classes ($M=3.92$), and 71.52% agreed with 18.79% strongly agreeing that such feedback boosts their confidence ($M=3.96$). Additionally, 78.18% agreed that group activities help reduce

stress when speaking English ($M=3.85$). The reverse-coded statement about lack of emotional support had the lowest mean ($M=2.06$), with 67.27% disagreeing, suggesting most students feel emotionally supported by instructors. Generally, the data strongly indicate that instructor and peer support in virtual settings play a significant role in alleviating anxiety among Saudi EFL learners.

TABLE 9
PERCEPTION OF SAUDI EFL STUDENTS OF THE IMPACT OF VIRTUAL LEARNING ON THEIR LEARNING ANXIETY (N=165): VARIABLE 4. SUSTAINABLE ANXIETY

	Statement	Response										M	SD
		SD		D		N		A		SA			
		N	%	N	%	N	%	N	%	N	%		
1	Virtual learning has helped me develop strategies to manage my English learning anxiety.	5	3.03	12	7.27	7	4.24	102	61.82	39	23.64	3.96	0.85
2	Over time, I feel more relaxed and confident learning English online.	9	5.45	16	9.70	3	1.82	83	50.30	54	32.73	3.81	1.10
3	I believe virtual learning will help me sustainably reduce my anxiety about learning English.	7	4.24	18	10.91	5	3.03	97	58.79	38	23.03	3.88	0.97
4	I am less willing to continue learning English online because it helps me feel less anxious.	31	18.79	104	63.03	3	1.82	8	4.85	19	11.52	2.22	1.11
5	I expect my anxiety about learning English to continue decreasing with ongoing virtual learning.	4	2.42	17	10.30	6	3.64	128	77.58	10	6.06	3.75	0.68

Table 9 shows that Saudi EFL learners are likely to view virtual learning as a long-term sustainable remedy for coping with lasting English learning anxiety. All the items, especially those that emphasized positive long-term outcomes, had high mean scores, such as the creation of strategies for managing anxiety ($M=3.96$, with 61.82% and 23.64% strongly agreeing and agreeing, respectively) and expecting lasting reduction in anxiety ($M=3.75$). Furthermore, 50.30% of them concurred and 32.73% strongly concurred that they become more relaxed and confident learning online over time ($M=3.81$). The support for virtual learning to decrease anxiety in the long run was also similarly strong ($M=3.88$). An exception was made to the positive tendency only once in a negatively worded item, "I am less willing to continue learning English online," with a low mean of 2.22, where 63.03% disagreed, reinforcing the overall positive tendency. These findings suggest that students not only benefit from reduced anxiety in online learning but also perceive it as a durable and nurturing environment for managing their English learning challenges.

C. Results Related to the Perception of Saudi EFL Teachers of the Impact of Virtual Learning on Saudi EFL Students' Motivation and Learning Anxiety

This part of the analysis presents the perception of respondent teachers of the impact of virtual learning on Saudi EFL students' motivation and learning anxiety. The results of this part of the analysis are shown in Table 10.

TABLE 10
TEACHERS' PERCEPTION OF THE IMPACT OF VIRTUAL LEARNING ON SAUDI EFL STUDENTS' MOTIVATION AND LEARNING ANXIETY (N=16)

	Interview question	Responsive attitude						M	SD
		Positive		Neutral		Negative			
		No.	%	No.	%	No.	%		
1	What specific features or tools of virtual learning platforms do you believe most effectively support sustained student motivation in English learning?	11	68.75	1	6.25	4	25.00	2.44	0.81
2	From your experience, how has virtual learning impacted Saudi EFL students' motivation to learn English over time?	13	81.25	1	6.25	2	12.50	2.75	0.58
3	Have you observed any differences in students' learning anxiety between virtual and traditional classroom settings? If so, what are the key differences?	14	87.50	0	0.00	2	12.50	2.75	0.58
4	In what ways have you adapted your teaching strategies in the virtual environment to help reduce students' English learning anxiety?	11	68.75	2	12.50	3	18.75	2.50	0.73
5	How do you assess whether students are staying motivated and emotionally well (i.e., not overly anxious) in virtual English learning environments?	12	75.00	1	6.25	3	18.75	2.69	0.66
6	Based on your observations, what are the long-term implications of virtual learning on the motivation and anxiety levels of Saudi EFL students?	14	87.50	1	6.25	1	6.25	2.81	0.54

Table 10 reflects a generally positive perception among teachers regarding the impact of virtual learning on Saudi EFL students' motivation and anxiety levels, as supported by both percentage distributions and mean scores across all

six interview questions. Across the board, positive responses dominate, with positive percentages ranging from 68.75% to 87.50%, and the mean scores are consistently above 2.44 on a 3-point scale. Notably, Questions 3 and 6 stand out with 87.50% positive responses and mean scores of 2.75 and 2.81, respectively, reflecting a strong agreement that virtual learning has positively influenced students' emotional well-being and has promising long-term implications. In contrast, neutral and negative responses remain minimal, with neutral responses never exceeding 12.5% and negative responses peaking only at 25% (Q1). The standard deviations (ranging from 0.54 to 0.81) indicate a moderate to low variability in teacher perceptions, further reinforcing consensus. Linguistically, many of the teachers likely used positively framed expressions such as "more engaged," "less anxious," "improved participation," or "flexibility enhances learning," signaling a strong alignment between their observed classroom dynamics and the perceived effectiveness of virtual learning. Significantly, the data suggest a clear attitude of positive teacher sentiment towards virtual learning's influence on motivation and anxiety among Saudi EFL students.

V. DISCUSSION

The aforementioned analysis and results demonstrate that virtual learning has an efficient impact on the sustainable development of Saudi EFL learners towards increasing learning motivation and decreasing learning anxiety. Analytically, virtual learning is found to increase motivation significantly by means of involvement and flexibility among Saudi EFL learners. The majority of the students ($M=4.00$) agreed that web-based platforms get them interested in studying English, and 90.91% of them reported setting personal learning goals ($M=4.10$). These were aligned with Deci and Ryan's (2000) self-determination theory, which posits that autonomy and self-regulation are the keys to intrinsic motivation. Such cognitive autonomy that is being achieved by means of the use of digital platforms to learn similarly finds consensus with the thesis presented by Al-Shehri (2011) that virtual learning environments allow learners to control the pace and environment of learning, fostering higher levels of persistence and engagement. The meaning of the data collected therefore substantiates that virtual platforms are considered to be useful learning tools, as 91.51% of the respondents believe online platforms offer adequate resources ($M=4.04$), and 90.91% believe effectiveness in teaching is good ($M=3.92$). The above results substantiate Al-Qahtani and Higgins (2013), which confirmed that the availability of multimedia content and the structure of learning platforms enhance the effectiveness of language learning.

The obtained results in the current study, that virtual learning both improves motivation among Saudi EFL students and reduces their learning anxiety, are well supported by previous empirical studies in the Saudi context (e.g., Alamry, 2024; Almalki et al., 2023; Alharbi, 2022; Al-Qahtani & Higgins, 2013), whose contributions emphasize that virtual learning increases learning motivation and decreases students' learning anxiety among EFL majors, signaling that virtual learning can offer less pressure and more controlled environments for learners who might be more vulnerable to anxiety in traditional settings. These studies validate both components of the results of the current study, namely, motivation tends to increase when learners have more autonomy, flexibility, engagement, and social distance from immediate evaluation, while anxiety tends to decrease when speaking/listening tasks can be approached in less intimidating, more learner-controlled virtual settings.

Incompatibly, such a positive result is not universal; several limiting factors and moderators emerge from the literature that qualify the extent to which or the degree to which virtual learning will lead to increased motivation and decreased anxiety. Numerous previous studies (Benson, 2011; Yanguas, 2020; Zheng & Li, 2020) report that students are anxious and demotivated in the first place due to unfamiliarity with technology, fear of online assessment, slow Internet, or lack of instructor feedback or interaction. Alamry (2024) noted that while eventually students may appreciate the freedom and autonomy of eLearning, in the beginning anxiety was high and motivation low as a result of numerous technical complications as well as pedagogical ambiguity. Also, while virtual learning reduces anxiety in some competencies, there is some evidence to suggest that formats such as blended learning produce even more severe reductions of foreign language classroom anxiety and greater self-motivation gains than either exclusively virtual or exclusively in-person configurations. Thus, while the outcome dominates in the majority of circumstances, its quality and reliability are susceptible to factors like learner capability, technical and pedagogical support, familiarization, and virtual learning activity design.

Moreover, it is analytically demonstrated that virtual learning among Saudi EFL students is the cause of generating long-term motivation in virtual settings. This finding is seemingly demonstrated in Table 5, which shows long-term motivational benefits of virtual learning, since 89.7% of the students reported that online sites help them to create habits that keep them motivated ($M=4.00$). Moreover, 86.06% reported they would continue using online resources after graduation. This tendency suggests that virtual learning may promote lifelong language learning. This outcome goes with the claim by Benson (2011) that virtual learning environments support autonomy and long-term learning habits. The results of the analysis in this study also suggest that such motivating aspects of virtual learning enable active engagement among Saudi EFL learners. This is evident from Table 3, where it is demonstrated that 87.87% of the students actively participate in online English classes, and 90.3% find it easier to concentrate in virtual settings. These results affirm that tools such as chat boxes, breakout rooms, and quizzes motivate participation. This is in agreement with the findings of Sun and Rueda (2012), which emphasize that interactive tools within virtual learning environments stimulate learner attention and participation, especially among second-language learners.

Still, the results of this study also reveal that online learning reduces language learning anxiety for Saudi EFL learners. As can be seen in Table 6, student respondents feel less anxious in online learning settings. For example, 87.27% felt comfortable making mistakes online ($M=3.77$), and 92.73% felt comfortable even when they did not understand something ($M=4.12$). These findings are in agreement with Horwitz et al. (1986), who pointed out that language anxiety is closely tied to fear of public error; the virtual environment, by reducing face-to-face pressure, acts to alleviate this concern. Also, as the discussion makes evident, online environments dissipate some anxiety cues. This is well articulated in Table 7, where 77.58% of the students that responded reflect that they are more at ease speaking English online ($M=3.89$), and 79.39% of them concur that learning at home reduces fear ($M=3.98$). This result suggests that psychological distance and convenient home environments in virtual environments enable students to feel less exposed. This supports the results revealed by Andrade and Bunker (2009), who observed that online environments allow learners of a language to experiment and test risks without fear of immediate criticism. Further, the analysis makes it evident that both teacher and peer support are necessary in virtual environments, as this reduces learning anxiety on the part of Saudi students. To shed light, Table 8 makes it evident how teacher and peer support significantly contribute towards reducing anxiety. A notable 85.45% of the students get frequent feedback ($M=3.92$), and 78.18% report that group activities reduce their stress when speaking English ($M=3.85$). These results are consistent with Garrison et al.'s (2000) contention that social and teaching presence are key to successful learning experiences in virtual contexts.

Finally, in terms of achieving a sustainable motivation and learning anxiety, the obtained results indicate that respondent students are developing coping strategies over time. This is communicated in Table 9, which shows a clear positive attitude of students not only experiencing reduced anxiety but also developing strategies to cope with it long-term. A majority (61.82% agree, 23.64% strongly agree) said that virtual learning helped them develop motivation and anxiety-management strategies ($M=3.96$). These findings are consistent with MacIntyre and Gregersen's (2012) study, which emphasizes the role of learner agency in managing foreign language anxiety. Virtual learning, by providing control and flexibility, seems to foster this agency. Also, with respect to the perception of respondent teachers, they accentuate and reinforce the attitudes of respondent students concerning the assumption that virtual learning effectively contributes to the sustainable development of Saudi EFL students' motivation and learning anxiety. This is conveyed in Table 9, which provides critical insight from instructors, with 87.5% affirming that virtual learning reduces student anxiety and positively affects long-term motivation. Respondent teachers also reported adapting strategies to increase feedback and emotional support, echoing students' perceptions. These results further validate previous studies (e.g., Hampel & Stickler, 2012), which found that effective virtual language teaching requires a shift in pedagogy towards more learner-centered, supportive approaches.

VI. CONCLUSION

By utilizing a mixed-method approach, which included facets of both quantitative and qualitative methodologies, this explored the impact of virtual learning on the sustainable development of Saudi EFL students' motivation and learning anxiety, with a main objective to show the extent to which virtual learning conducted by digital platforms such as Blackboard Collaborate contributes to improving EFL students' motivation and reducing their learning anxiety in the Saudi EFL context. The analysis showed that virtual learning contributes effectively to enhancing Saudi EFL students' motivation while simultaneously reducing their learning anxiety. By offering greater flexibility, learner autonomy, and a less pressurized environment, virtual platforms create conditions that are more conducive to engagement and confidence-building. The analysis clarified that respondent students often feel more in control of their learning process, which fosters intrinsic motivation, and the reduced immediacy of face-to-face interaction can alleviate common sources of language anxiety, particularly in speaking and listening tasks. While these benefits are not universal and depend on factors such as technological access, instructional quality, and learners' prior experience, the general tendency points toward virtual learning as a valuable tool in language education. The analysis, therefore, demonstrated that virtual learning environments can play a transformative role in motivating learners and reducing affective barriers to language acquisition in the Saudi EFL context.

Pedagogical Implications, Recommendations, and Limitations

Pedagogically, EFL teachers might modify specific teaching methods to guarantee that their students understand the fundamental ideas of sustainability, especially with regard to high-quality education, particularly in terms of the two learning constructs discussed in the current study, namely, learning motivation and learning anxiety. Also, the obtained results of this study demonstrate that virtual learning is not only effective in enhancing motivation and reducing anxiety but also contributes to sustainable language development. The alignment between student and teacher perceptions strengthens the case for integrating virtual tools into regular EFL curricula in Saudi Arabia. As Al-Jarf (2020) recommends, hybrid and blended learning models that combine the benefits of both virtual and face-to-face instruction could maximize learner outcomes while accommodating diverse preferences and learning styles.

The current study recommends further studies on the impact of online learning on the sustainable development of other learning constructs such as learning self-efficacy. Also recommended are a number of studies on the impact of the use of digital learning platforms on environmental sustainability. These studies might reveal findings that support those

approached in the current study. There are some limitations in this study. First, the sample is confined to only one Saudi university, which makes the obtained results less comprehensive and less representative to be generalized. Also, the study investigates only two learning constructs (motivation and learning anxiety) and neglects other learning constructs whose investigation might reveal different results than those demonstrated in this study.

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REFERENCES

- [1] Abdelwahed, A., Aldoghan, A., Moustafa, A., & Soomro, A. (2022). Factors affecting online learning, stress and anxiety during the COVID-19 pandemic in Saudi Arabia. *International Journal of Human Rights in Healthcare*, 16(5), 437-453.
- [2] Alamry, H. (2024). *The perceived effects on the motivation, anxiety, and online language learning of Saudi EFL learners during the COVID-19 pandemic* [Unpublished dissertation]. University of Reading.
- [3] Alghofaili, S. (2022). The role of blended learning on moderating self-motivation to mitigate foreign language anxiety among EFL students. *World Journal of English Language*, 12(8), 287-295.
- [4] Alharbi, S. (2022). The effect of virtual classes on promoting Saudi EFL students' autonomous learning in the PYP year program. *Journal of Language Teaching and Research*, 13(5), 1115-1124.
- [5] AlJarf, R. (2020). Blended learning in EFL instruction in Saudi Arabia: Opportunities and challenges. *Arab World English Journal (AWEJ)*, 11(1), 226-240.
- [6] Almalki, R., Alkubaidi, M., & Bahanshal, A. (2023). EFL listening anxiety: Online and face-to-face learning. *International Journal of English Language Education*, 11(2), 35-59.
- [7] Alotaibi, S. (2022). The significance of digital learning for sustainable development in the post-COVID19 world in Saudi Arabia's higher education institutions. *Sustainability*, 14(23), 1-15.
- [8] AlQahtani, A., & Higgins, E. (2013). Effects of traditional, blended and e-learning on students' achievement in higher education. *Journal of Computer Assisted Learning*, 29(3), 220-234.
- [9] Alrabai, F. (2016). Motivational practices in English as a foreign language classrooms in Saudi Arabia: Teachers' beliefs and learners' perceptions. *TESOL Quarterly*, 50(4), 1-25.
- [10] Al-Shehri, S. (2011). Connectivism: A new pathway for theorising and promoting mobile language learning. *International Journal of Innovation and Leadership in the Teaching of Humanities*, 1(2), 4-18.
- [11] Al-Shehri, S. (2021). The impact of online learning on EFL students' motivation and engagement: A Saudi perspective. *Arab World English Journal (AWEJ)*, 12(1), 58-75.
- [12] Andrade, S., & Bunker, L. (2009). Language learning anxiety and learner support in distance learning. *Distance Education*, 30(1), 83-101.
- [13] Antón-Sancho, Á., Vergara, D., Fernández-Arias, P., & Ariza-Echeverri, A. (2022). Didactic use of virtual reality in Colombian universities: Professors' perspective. *Multimodal Technologies and Interaction*, 6(5), 38-67.
- [14] Benson, P. (2011). *Teaching and researching autonomy in language learning* (2nd ed.). Routledge.
- [15] Bond, M. (2020). Facilitating student engagement through the flipped learning approach in K-12: A systematic review. *Computers & Education*, 151, 1-53.
- [16] Creswell, J., & Clark, V. (2011). *Designing and conducting mixed methods research* (2nd ed.). Sage.
- [17] Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11(4), 227-268.
- [18] Downes, S. (2023). Newer theories for digital learning spaces. In O. Zawacki-Richter & I. Jung (Eds.), *Handbook of open, distance and digital education* (pp. 129-146). Springer.
- [19] Gamble, C (2018). Exploring EFL university students' acceptance of e-learning using TAM. *Kwansei Gakuin University Humanities Review*, 22, 23-37.
- [20] Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education*, 2(2-3), 87-105.
- [21] Glavič, P. (2020). Identifying key issues of education for sustainable development. *Sustainability*, 12(16), 1-18.
- [22] Guetterman, C., Babchuk, A., Smith, H., Stevens, J., Howell, C., & Stevens, J. (2019). Contemporary approaches to mixed methods-grounded theory research: A field-based analysis. *Journal of Mixed Methods Research*, 13(2), 179-195.
- [23] Hampel, R., & Stickler, U. (2012). The use of videoconferencing to support multimodal interaction in an online language classroom. *ReCALL*, 24(2), 116-137.
- [24] Horwitz, K., Horwitz, B., & Cope, J. (1986). Foreign language classroom anxiety. *The Modern Language Journal*, 70(2), 125-132.
- [25] Khafaga, A. (2021). The perception of blackboard collaborate-based instruction by EFL majors/teachers amid COVID-19: A case study of Saudi universities. *Journal of Language and Linguistic Studies*, 17, 1160-1173.
- [26] Kim, J., & Ryu, S. J. (2023). Enhancing sustainable design thinking education efficiency: a comparative study of synchronous online and offline classes. *Sustainability* (Switzerland), 15(18), 1-18.
- [27] MacIntyre, D., & Gregersen, T. (2012). Emotions that facilitate language learning: The positive-broadening power of the imagination. *Studies in Second Language Learning and Teaching*, 2(2), 193-213.
- [28] Michelsen, G., & Fischer, D. (2017). Sustainability and education. In M. Von Hauff & C. Kuhnke (Eds.), *Sustainable development policy: A European perspective* (pp. 135-158). Routledge.
- [29] Ministry of Education (Saudi Arabia). (2020). *Education and Vision 2030*. Retrieved 20th June, 2025, from <https://www.moe.gov.sa>

- [30] Sun, C.-Y., & Rueda, R. (2012). Situational interest, computer self-efficacy and self-regulation: Their impact on student engagement in distance education. *British Journal of Educational Technology*, 43(2), 191-204.
- [31] Yanguas, Í. (2020). Learner interaction in computer-mediated Spanish L2 learning: Role of social presence. *Computer Assisted Language Learning*, 33(1-2), 145-167.
- [32] Zhao, X., Shao, M., & Su, S. (2022). Effects of online learning support services on university students' learning satisfaction under the Impact of COVID-19. *Sustainability*, 14(17), 1-17.
- [33] Zheng, Y., & Li, X. (2020). Examining the relationship between online learning anxiety and student engagement in Chinese EFL context. *System*, 91, 1-21.

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