The Impact of Virtual Learning on Students' Engagement in the Saudi EFL Context: A Connectivism-Theoretic Perspective

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Abstract

Drawing on the connectivism learning theory (CLT), this paper probes the extent to which virtual learning (VL) influences students' engagement (SE) in the Saudi EFL context. More specifically, this paper tests the hypothesis of whether or not VL improves SE in terms of eight learning variables: class attendance, class participation, the acquisition of the four language skills, learning anxiety, learning motivation, learning self-efficacy, willingness to communicate, and learning autonomy. This paper adopts a mixed-method approach, represented by both quantitative and qualitative methods of analysis and constituting two methodological instruments: a questionnaire and an interview. The sample consists of 256 EFL majors who are studying English at Prince Sattam bin Abdulaziz University, Saudi Arabia, and 14 EFL teachers who are teaching English at the same university. Three main findings are reported in this study: first, there is a positive attitudinal perception by the participants concerning the impact of VL on SE; second, VL increases students' attendance, enhances their class participation, learning motivation, learning self-efficacy, learning autonomy, and willingness to communicate, and it decreases students' learning anxiety; and third, SE is influenced by VL in terms of both productive and receptive language skills; positively, with regard to speaking and listening; and negatively, in terms of reading and writing. Pedagogically, the results of this paper necessitate reconsidering the efficiency with which new technologies are used in learning and teaching, and it is further anticipated to offer promising potential for the possibility of whether or not to completely depend on virtual learning in the near future.

Keywords: students' engagement, virtual learning, connectivism, academic performance, Saudi EFL context, motivation, anxiety, willingness to communicate

1. Introduction

In recent years, the integration of e-learning and e-teaching technology in teaching and learning foreign languages has become a necessity (Dayag, 2018; Hakim, 2020; Martin et al., 2020). Such an incorporation of modern technologies in the teaching and learning process accentuates the crucial role technology plays in changing the way students learn in and out of the classroom. Modern technology makes it easy for students to learn from smartphones and laptops rather than from teachers and textbooks (Vergara et al., 2022), which, in turn, sheds light on the efficacy of virtual learning (VL) in the learning and teaching of foreign languages as well as on any challenges that may emerge in such novel settings (Williams, 2016). Introducing technology into education has a number of benefits, including simple access to a variety of web materials, the ability to engage, and the ability to shift the learning environment from passive to active. Within the framework of EFL learning, there are three types of virtual learning environments. These are asynchronous learning, synchronous learning, and hybrid learning. Recently, mobile learning has been the subject of contemporary studies in education and technology. Schools and governments all over the world are promoting mobile learning initiatives such as laptops and tablets (Williams, 2016). These digital devices serve as hubs of information for today's students and have become very essential in maintaining a reasonable and normal learning process, particularly at the university level. This mirrors the fact that the world is on its way to a complete reallocation of the educational system, that is, an educational system that is virtually oriented.

Accordingly, the growing usage of technology in the teaching and learning process has shifted the landscape of education around the world. This, in turn, creates gaps in the concepts of traditional learning and necessitates the use and application of new approaches to stay relevant. The theory of connectivism, which was first introduced by Siemens (2005) and developed by Downes (2005, 2012), aims to fill in the gaps in the present day. According to Siemens (2005), connectivism constitutes the assumption that students should integrate ideas, theories, and general knowledge in an effective way. It acknowledges that technology plays a significant role in education and that staying connected all the time allows us to make decisions about how we learn. Additionally, it encourages group debate and participation, allowing for a variety of opinions and points of view when it comes to making decisions, solving problems, and interpreting data.

Crucially, the overwhelming outbreak and upsurge of the Coronavirus (Covid-19) pandemic have amplified the concentration on virtual learning, which necessitates a shift from traditional learning towards virtual learning. Such an educational shift is better investigated now,

particularly after the Saudi Ministry of Education has decided to return to traditional face-to-face instruction. Now, the whole process can be better evaluated and assessed to arrive at comprehensive and credible results concerning virtual learning. The transition to virtual learning has become a requirement rather than a choice for everyone, as it has become a popular method of instruction at all levels and in a variety of professions. Several platforms and apps, including Blackboard, Microsoft Teams, Zoom, and others, were adopted by universities. These virtual learning platforms offer a valuable substitute for traditional classrooms and create what comes to be termed 'virtual learning environments' (VLEs) that activate and motivate collaborative interaction in the learning and teaching process (Rudd & Rudd, 2014). Virtual learning, therefore, is the normal development of the use and application of computer-assisted language learning (CALL), adopting different practical orientations and targeting cognitive, behavioral, and emotional engagement pertaining to learners and teachers (Zhang et al., 2020). Consequently, approaching the perception of EFL learners and teachers concerning the impact of virtual learning on students' engagement requires exploring the attitudes of both learners and teachers undergoing such a digital type of learning/teaching.

Within the Saudi EFL context, virtual learning adopts various digital forms, including blackboard collaborate and mobile-based learning. These digital learning platforms dominate the educational environment. Both blackboard-based instruction and mobile learning are digital learning platforms through which learners and teachers are allowed to attend/present their virtual classes, download/upload their assignments, participate in an online discussion, and get/offer in-time feedback (Mohsen & Shafeeq, 2014). According to Khafaga (2021), blackboard-based instruction offers students greater flexibility and equal participation in the learning process. Unlike face-to-face instruction, the use of blackboard collaborate and mobile phones in the learning and teaching process allows for the amalgamation and participation of a greater number of students that can be easily controlled, directed, and summoned for virtual discussions (Herwiana & Laili, 2022).

According to Fredricks et al. (2004), students' engagement refers to their attendance, grades, overall wellbeing, discussion involvement, learning self-efficacy, motivation, and academic performance. Such an engagement takes place during the process of teaching and learning, whether this process is conducted face-to-face or online. Students' engagement is very crucial for the educational process as it signals and predicts students' academic performance (Montgomery et al., 2019). Academic performance refers to the students' ability to manage their learning and the way they cope with or achieve various tasks assigned by their instructors (Montgomery et al., 2019). Significantly, the degree of engagement within virtual classes varies from one student to another, from one educational context to another, and from one type of instruction to another (Lawson & Lawson, 2020). For Symonds et al. (2021), students' engagement refers to the learners' desire and excitement for learning, which affects both their conduct and academic achievement. Understanding student participation is made more challenging by the fact that it is a complicated phrase. In addition to positive behaviors like participation, attendance, and paying attention in class, student engagement also refers to the psychological experience of feeling respected, autonomous, and cared for (Skinner et al., 2008).

Much previous research has highlighted the challenges affecting students' engagement in traditional learning. According to Raes et al. (2020), the traditional classroom learning approach, which follows a predetermined curriculum and rigid timetables, is frequently constrictive and rigid. This prevents students from receiving specialized instruction or from having the chance to study areas outside of the required curriculum that interest them, which ultimately leads to a lack of engagement on the part of students. Some studies emphasized that the lack of engagement in face-to-face instruction is due to teacher attitudes and the classroom environment (e.g., Denessen et al., 2015). Denessen et al. (2015) postulated that students' attitudes about the courses they study are positively impacted by the enthusiasm of their teachers, and students feel better about the courses they study when their teachers are excited about them. Wang et al. (2020) also argued that classroom engagement and student achievement are positively connected with classroom quality. They, therefore, emphasized the idea that student perception of the instructor, instructional assistance, and the teacher's emotional support are the three factors that determine the quality of the classroom and closely correspond with engagement. According to Jang et al. (2010), the lack of autonomy in the process of learning is one of the reasons for a lack of engagement in the classroom. Such autonomy, for them, is much more representative in virtual learning than in traditional learning, which, in turn, highlights this paper's assumption that virtual learning fosters a more positive classroom engagement than is the case for face-to-face instruction.

1.1 Research Questions

Two research questions are addressed in this paper:

RQ1. To what extent does VL affect SE in the Saudi EFL context?

RQ2. Does VL contribute to enhancing SE in terms of class attendance, class participation, learning anxiety, learning motivation, learning self-efficacy, willingness to communicate, learning autonomy, and the acquisition of the four language skills?

1.2 Research Objectives

The answer to the research questions constitutes the main objective of this study: to explore the extent to which VL influences SE in terms of eight learning variables: class attendance, class participation, learning anxiety, learning motivation, learning self-efficacy, willingness to communicate, learning autonomy, and the acquisition of the four language skills.

The remainder of this study is structured as follows: Section 2 reviews the literature pertinent to virtual learning, engagement, and virtual learning in light of connectivism. This section also presents some previous studies relevant to the topic under investigation. In Section 3, the

paper provides the methodology of the study, wherein data collection and description, the design of the study, the instruments, the participants, and the analytical procedures adopted in the data analysis are presented. Section 4 is confined to data analysis and results. Section 5 offers a discussion of the results obtained from the analysis of the data. Section 6 displays the conclusion of the study, its limitations, and recommends some studies for future research.

2. Literature Review

2.1 Virtual Learning

There are various overlapping definitions of virtual learning in the literature, as well as inconsistencies. Singh and Thurman (2019), for example, assume that technological advancements coincided with the rise and development of virtual learning, and to minimize overlapping, they argue that virtual learning should constitute the type of technological and digital platforms utilized in the learning process. Obviously, virtual learning is a type of learning that is entirely based on the internet. According to Singh and Thurman (2019), virtual learning provides various digital platforms through which learners can manage their learning, and it also functions to allow students to engage with the various participants in the learning process without having to be physically present in traditional classrooms. Furthermore, Schutt and Linger (2013) argue that virtual learning increases the potential for accessing, analyzing, creating, exchanging, and applying data, information, and knowledge in ways that were nearly unthinkable only a few years ago. These methods include employing internet facilities, digital platforms, and associated systems. It essentially involves the knowledge that students get from interacting with digitally transmitted content.

Virtual learning can be delivered in two different modes: asynchronous and synchronous. As Reese (2014) argues, asynchronous learning does not involve the actual contribution of teachers and students and is usually accompanied, reinforced, and motivated by some instructional aiding devices, such as discussion boards, wikis, e-mails, blogs, or audio/video recordings. This mode of online instruction (i.e., asynchronous) offers learners the opportunity to study the different courses beyond the limits of time and space (Reese, 2014) and can be delivered via blackboard collaborate and mobile telephony (Finkelstein, 2006). A synchronous mode of learning, on the other hand, requires the real-time participation of the course contents on the part of both learners and teachers. According to Ogbonna et al. (2019), synchronous learning allows students and teachers to use different interactional tools pertinent to the educational process, including oral discussions, surfing websites, exchanging messages, and uploading presentations. According to Khafaga (2021), a synchronous mode of learning contributes to the development of learning communities pertaining to e-learners. It activates interactional communication between learners and teachers via videoconferencing, whiteboards, and file sharing (Rudd & Rudd, 2014). It has further been claimed that synchronous learning helps students overcome their shyness as well as the sensation of solitude that the asynchronous form of learning may generate when used (Finkelstein, 2006).

Much research has been conducted on the effectiveness of using and applying virtual learning to EFL learning/teaching. According to Mroz (2014), virtual learning, which has many forms, including digital platforms, games, and social networks, has positively influenced the learning outcomes of EFL learners since it provides a space for collaborative learning that bears a resemblance to the culture of the target language and, therefore, develops the process of learning as a whole. Such a type of collaborative learning, according to Miyake and Kirschner (2014), constitutes a social process wherein learning knowledge is built and enhanced. This social process serves to offer learners a sense of integration and cooperation to work together when they come to complete their assigned learning tasks or solve any arising problems during the process of learning (Mroz, 2014), and further succeeds in fulfilling the needs of virtually digital learners (Gamble, 2018). Furthermore, some studies have investigated the advantages and challenges of virtual learning platforms as well as of the use of different digital platforms in learning and teaching from different perspectives, by highlighting the effective part played by blackboard-based instruction in fostering the active and equal participation between learners and teachers in asynchronous environments (e.g., Mohsen & Shafeeq, 2014), investigating the importance of asynchronous mode of learning as an interactional tool in the process of learning (e.g., Chen et al., 2020), and examining the challenges encounter learners who use virtual platforms and the extent to which non-verbal communication signals accompanying the synchronous mode of learning provides learners with more interactional flexibility with their teachers (e.g., Rudd & Rudd, 2014).

Some studies have examined the perceptions of students towards the use of virtual learning during Covid-19. Chen et al. (2020) explored the perception of blackboard-based instruction by learners at the Open University Australia amid Covid-19 and revealed that blackboard-based instruction fulfills in part the role conducted by face-to-face instruction. This study also revealed students' positive attitudes concerning the use of blackboard collaborate in virtual learning amid Covid-19, particularly its effective role in activating the learning environment on the part of learners by supporting real-time engagement, feedback exchange, and knowledge sharing. Elsamanoudy et al. (2020) investigated the significant role of blackboard-based instruction as a successful substitute for traditional instruction. Their study clarified that the success of the blackboard collaborate as a digital device of learning amid the Covid-19 pandemic lies in the possibility of learning this tool offers for students to attend their courses anytime and anywhere, as well as the availability of access from any technological device. In the same vein, Almekhlafy (2020) demonstrated the positive attitudes of students with regard to the utilization of blackboard-based instruction amid Covid-19. Almekhlafy's research based its results on the assumption that digital learning cannot be perceived as an appropriate substitute for face-to-face instruction due to the numerous challenges faced by students and teachers employing such a digital type of learning. Unlike Almekhlafy's (2020), Khafaga's (2021) study argued for the opposite, as it highlights the positive attitudes of students towards the use and application of blackboard-based instruction amid Covid-19. These studies exposed certain discrepancies in terms of the application of virtual learning and also refuted some reasons why such differences in the students' attitudes take place. The current study attempts to

explore the extent to which VL affects SE in the Saudi EFL context.

2.2 Classroom Engagement

According to Mahdikhani and Rezaei (2015), classroom engagement refers to the learners' desire, curiosity, and commitment to the perception and production of the various educational elements during the process of learning. It constitutes positive involvement in classroom tasks and activities, which is manifested in active participation and effective discussion with the teachers inside and outside the classroom. Fredricks et al. (2019) also argue that classroom engagement encompasses the different activities and components presented in the whole learning process, including students' participation, grades, attendance, well-being, etc. For Audas and Willms (2001), classroom engagement requires efforts on the part of learners in terms of activating class participation and value identification. Additionally, according to Skinner and Belmont (1993, p. 572), engaged students choose assignments that advance their knowledge, show initiative and focus, and put up a lot of effort in class activities. These behaviors are accompanied by "enthusiasm, optimism, curiosity, and interest." Disengagement, on the other hand, would seem like "not trying," passivity, and giving up in the face of difficulties, as well as emotions of boredom, despair, worry, rage, retreat, and disobedience.

Previous literature on classroom engagement has shown that it is very essential for a successful and positive learning process. In this regard, numerous studies have explored the significance of classroom engagement in learning (e.g., Henrie et al., 2015; Bond, 2020; Martin et al., 2020). Other studies approached classroom engagement in terms of its contribution to the development of curriculum (Christenson & Reschly, 2012), its role in measuring the quality of learning outcomes (Zhang et al., 2020), and its role in predicting and analyzing learners' success (Montgomery et al., 2019). According to Pan et al. (2023), classroom engagement serves to shape the whole process of classroom interaction as it operates as a guide for the various tasks delivered in the learning process. An active classroom engagement, therefore, necessitates an active student-teacher type of interaction, as it highlights the role of students in the learning process. In terms of the cognitive dimension that lies beyond classroom engagement, Philp and Duchesne (2016) argue that any type of classroom engagement has to be first stimulated by the cognitive unit pertaining to learners. Such a cognitive activity stimulates the learners' potential to participate in classroom activities in a way that serves to improve their academic performance. Consequently, classroom engagement is highly effective in realizing better learning outcomes and contributes significantly to the ultimate structure of the learner's competence (Sinatra et al., 2015).

According to Reeve (2013), there are four types of engagement represented in the classroom environment. First, cognitive engagement, which refers to the various mental endeavors learners conduct in order to implement the classroom activities and tasks assigned to them in a successful way. Second, behavioral engagement, which encompasses the execution of tasks and activities in classrooms and requires active participation and interaction between learners and teachers. Third, emotional engagement, which comprises the emotional state and reaction produced by learners in terms of their teachers' performance as well as the tasks and activities assigned to them. Fourth, agentic engagement, which involves learners' practical activities in classrooms that affect their learning process and academic performance positively. Consequently, such a multi-faceted essence pertaining to learners' engagement makes it logical that it can be influenced by various factors, including emotional, cognitive, and mental reasons (Wang et al., 2023).

Researchers have emphasized that, as education becomes more digitally oriented, using digital technologies varies from using them in class (Ma et al., 2018). This is because digital technologies alter the environment in which learning occurs (Halverson & Graham, 2019). Furthermore, students' in-class engagement is influenced by the way digital tools are arranged to promote learning, and this differs more across instructors than is believed (Bergdahl, 2022). In light of this, some researchers have suggested that qualitative indicators could be supplemented with quantitative indicators (such as time on task) (Henrie et al., 2015) or that the digital context could be included when students engage in online support, communication, orientation, self-direction, and a feeling of belonging (mediated through a digital learning environment) (Ma et al., 2018). While some studies (e.g., Barata et al., 2017; Gebhardt et al., 2014) have stated that digital technologies may increase student engagement, other studies have found risks associated with digital technology use, such as avoidance behavior triggers and distractions (Fox, 2018), the possibility of depression from using digital technologies (Salmela-Aro & Read, 2017), and the possibility of exhaustion for overly engaged students (Hietajarvi et al., 2019). These results suggest that online engagement is a complicated phenomenon. As previously said, instructors' perceptions of students' engagement are influenced by their responses. However, studies have indicated that teachers could find it difficult to decipher online engagement, i.e., to determine if a student's activity is continuous or not (Giovannella et al., 2020; Raes et al., 2020).

Within the scope of virtual learning, engagement has been approached from different perspectives, and nearly all studies have come to terms with the fact that engagement plays a crucial role in the process of digital learning and teaching (e.g., Martin et al., 2020; Zhang et al., 2020). In virtual learning environments, some studies have discussed the extent to which positive and/or negative engagement affects the performance of not only learners but also teachers. For example, Bergdahl and Bond (2022) argue that the perception of teachers toward their students' engagement in virtual classes affects their response to them; that is, teachers may lose acquaintance with and control over students if they are not able to perceive the way students engage in virtual class activities and tasks in the right way. The same point of view has been accentuated by Bergdahl (2022), who highlights the assumption that the way teachers perceive their learners' engagement serves to make them more controlling. Harshbarger and Kesehatan (2019) adopt an opposite viewpoint, arguing that in a virtual learning environment, instructors are very critical to the students' classroom engagement. Their perspective, therefore, highlights the role of teachers in measuring learners' engagement, whether this is presented in traditional or virtual classes.

Furthermore, whereas teachers are more in control in terms of measuring their students' engagement in traditional classrooms, as they can

frequently intervene to support disengaged students (Fredricks et al., 2019), they still face difficulty in managing, measuring, and encouraging the disengaged learners online (Grissom et al., 2017). Such a difficult task of engagement in virtual classes accentuates the assumption that there are some problems concerning classroom management in virtual learning environments. This is not only confined to the measurement of the learners' classroom performance in a specific learning domain, but it also includes the various language skills constituting the main components of an EFL course presented via virtual platforms. Despite the fact that some previous studies emphasized that teachers use information pertaining to their students' classroom engagement to design and modify their in-class practices in a way that guarantees better class engagement, the same studies came to terms with the fact that there are still some difficulties teachers face in virtual classes in terms of students' engagement, as instructors feel more embarrassed in an online setting because engagement in virtual learning environments is not perceived as naturally as it is in a traditional classroom (e.g., Martin et al., 2020; Zhang et al., 2020).

2.3 Virtual Learning and Connectivism

According to the connectivism learning theory (CLT), learning takes place inside individuals but is made easier by how learning is organized outside of them. In light of connectivism, effectively integrating information and learning can be facilitated by incorporating technology into the learning process (Siemens, 2005). Siemens (2005) maintains that, within the framework of connectivism, learning can be improved by the use of technology since it fosters collaborative learning. He also states that connectivism makes the assumption that the relationship that exists between learners and knowledge is found in external databases or repositories in a way that encourages internal learning from these external digital resources. In this regard, Downes (2023) argues that because the internet significantly changed our understanding of the nature of knowledge, connectivism opened the door for a new, knowledge-based model of learning that is appropriate for the modern world and views learning as the act of linking specialized nodes or information sources. Downes (2023) proceeds that connectivism is entirely based on the idea that digital technology brings people together and creates new learning opportunities, and it, therefore, encourages collaborative learning. Since connectivism theory clarifies how learning occurs in an environment that is digitally mediated, it has a favorable impact on virtual learning in education (Siemens, 2005).

Miscellaneous studies have approached the use and application of connectivism as a learning theory in different learning settings. This includes the use of connectivism to investigate the role of digital communication in improving foreign language learning (Sozudogru et al., 2019); applying a connectivist framework to explore the benefits and challenges of online learning in Malysia (Herwiana & Laili, 2022); examining the impact of online learning on online engagement (Rahmat, 2022); and discussing the different types of engagement required for a successful online classroom, such as student-to-student engagement, student-to-teacher engagement, and student-to-content engagement (Martin & Bolliger, 2018). Bonk and Lee (2017), for example, discussed the application of connectivism principles in online learning settings. According to their study, connectivism contributes to raising students' motivation and engagement levels as well as encouraging the growth of critical thinking abilities. The study also highlighted the effective role of connectivism in assisting students in learning new information in domains that are complicated and undergoing rapid change. Siemens (2005) argues that connectivism enhances students' learning processes through the application of knowledge and insight obtained from incorporating a personal network. Only through these personal networks can the learner acquire the perspective and range of viewpoints required to cultivate the capacity to make significant decisions. Since it is impossible to experience everything, collaborative learning enables knowledge sharing and acquisition. As such, students are more motivated to pursue knowledge in a virtually-based learning setting. The literature review, therefore, highlights the tripartite connection between virtual learning, students' engagement, and connectivism. Based on this reciprocal relationship between these three variables, this study attempts to explore the extent to which VL influences SE in the Saudi EFL context concerning eight learning variables: class attendance, class participation, learning anxiety, learning motivation, learning self-efficacy, willingness to communicate, learning autonomy, and the acquisition of the four language skills.

3. Methodology

This part presents the methodology of the current study, which comprises the design of the study, the participants, the instruments used in data collection, the data collection and description procedures, as well as the procedural steps adopted in the analysis of the collected data.

3.1 Study Design

This study uses a mixed-methods approach (Creswell & Clark, 2011), derived from the mixed-methods grounded theory (MMGT) (Guetterman et al., 2019), and represented by the employment of aspects of both quantitative methods and qualitative procedures. The rationale for adopting the mixed-methods approach is that the amalgamation of both quantitative and qualitative data in the analysis might yield valid and vigorous results. The quantitative-qualitative methodological integration also helps achieve a comprehensive understanding of the way EFL learners/teachers perceive virtual learning in terms of classroom engagement and in comparison to face-to-face instruction. This is an empirical study with the following design: a questionnaire for students, a questionnaire for teachers, and an interview for teachers. The study is confined to EFL majors in the department of English at Prince Sattam bin Abdulaziz University, Saudi Arabia. The selection of only one Saudi university to represent the sampled population of this study, though it constitutes one of the limitations of this study, is intended for obtaining verifiable and credible results due to the availability of monitoring and observing the participants of the study on the part of the researchers.

3.2 Data Collection, Description, and Instruments

Two instruments were used in this study to collect data and obtain results: two questionnaires (one for students and another for teachers) and an interview (for teachers). The questionnaires were electronically designed and disseminated among students and teachers, whereas the

interview was confined to teachers. The questionnaires were designed using the Google Forms platform and distributed among participants via WhatsApp groups at the end of the second semester, 2023. The statements of the questionnaires pertaining to both students and teachers revolved around one basic purpose: the extent to which students' engagement is influenced, positively or negatively, by virtual learning in terms of eight learning variables, including class attendance, class participation, the acquisition of the four language skills, learning anxiety, learning motivation, learning self-efficacy, willingness to communicate, and learning autonomy. The interview, on the other hand, consisted of six open-ended questions designed to explore the attitudinal behavior of EFL teachers, their subjective experiences, and emotional reactions concerning the impact of virtual learning on students' engagement with respect to the eight aforementioned learning variables. The interview, therefore, was intended to provide complementary qualitative data to the quantitative data provided by the questionnaires. The interviews with the participant teachers were conducted individually, and the anonymity of the respondents and the confidentiality of the information provided were ensured. A three-item Likert scale: agree, disagree, and can't decide, was used to rate levels of agreement, disagreement, and/or inability to decide in the students' questionnaire; a two-item Likert scale: agree and disagree, was used to rate agreement and disagreement in the teachers' questionnaire; and another two-item Likert scale: positive and negative, was utilized to rate attitudinal positivity and/or negativity in the teachers' interview.

3.3 Validity and Reliability

The validity of the questionnaires and the interview was verified by three university English professors who specialize in teaching English as a foreign language. They reviewed and verified the accuracy of the items used in the questionnaires and the questions constituting the interview, the way they are worded and structured, their clarity, suitability, relevance, and objectivity. They recommended a number of changes and modifications, which were totally incorporated into the employed instruments. The internal consistency of the questionnaires' items was measured using Cronbach's alpha equation, which is a widely accepted test of the reliability and internal consistency of opinion surveys (Kane, 2013). The questionnaires of both students and teachers exhibit reliability values of 0.89 and 0.85, respectively. The researchers relied on a survey sample of 20 students and 7 teachers to verify stability through internal consistency. Statistically, the higher the Cronbach's alpha coefficient is, the higher the internal consistency among the items becomes (Tavakol & Dennick, 2011). Therefore, very good internal consistency was achieved, which indicates that the questionnaires are highly reliable. Survey analyses were conducted by the Statistical Package for Social Science (SPSS, version 25.0), whose software was also used to calculate the Cronbach's alpha coefficient for data analysis.

It was also found that the value of the corrected correlation coefficient for each statement with the total score was greater than 0.3. However, this value is not stable, as the value decreases with increasing sample size, which, in turn, indicates that there is no need to delete any statements.

Table 1. Scale mean, variance, corrected item-total correlation and Cronbach's alpha if item deleted (Students' questionnaire)

Statement No.	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Cronbach's alpha if item deleted
S1	36.7000	69.695	.619	.880
S2	36.8500	69.713	.619	.880
S3	36.3500	72.976	.406	.886
S4	36.8500	70.766	.678	.879
S5	36.9500	71.524	.457	.885
S6	36.9500	68.576	.756	.876
S7	37.0000	78.737	.63	.899
S8	36.8500	68.345	.731	.876
S9	36.2500	74.092	.297	.889
S10	36.5000	71.316	.380	.888
S11	36.5000	68.579	.649	.878
S12	36.2000	73.642	.373	.887
S13	36.6500	69.082	.583	.881
S14	36.5500	71.208	.586	.881
S15	36.5500	72.682	.362	.888
S16	36.8000	68.800	.795	.875
S17	36.8500	68.766	.696	.877
S18	36.8000	72.063	.403	.886
S19	36.3500	71.292	.449	.885
S20	36.9000	72.726	.416	.886

Table 2. Scale mean, variance, corrected item-total correlation and Cronbach's alpha if item deleted (Teachers' questionnaire)

Statement No.	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Cronbach's alpha if item deleted
S1	13.4286	8.952	.326	.856
S2	13.5714	8.619	.394	.852
S3	13.4286	7.952	.709	.822
S4	13.5714	8.619	.394	.852
S5	14.0000	8.667	.599	.834
S6	13.8571	8.476	.503	.841
S7	13.2857	8.571	.645	.831

S8	13.7143	7.905	.650	.827
S9	13.5714	7.619	.758	.816
S10	13.8571	8.143	.633	.829

Tables 1 and 2 indicate that there is no statement whose deletion would increase the alpha coefficient more than the total calculated value: 0.89 and 0.85, meaning that all statements in the two questionnaires exhibit a high degree of stability. Consequently, the questionnaires in their final forms have become applicable, which prompted the researchers to conduct the study on the selected sample.

3.4 Participants

To report authentic, ample, and wide-ranging results on the impact of virtual learning on students' engagement, both students and teachers were involved in this study. The participants were randomly selected to ensure the credibility of the obtained results, and they were informed that their participation in the surveys was entirely voluntary before embarking on the study. All participants were enrolled in courses that were delivered virtually. All participant students were Saudi EFL undergraduates studying in the department of English at the College of Science and Humanities, Prince Sattam bin Abdulaziz University, Saudi Arabia. They covered various academic levels, varying from level three to level eight. The sample consisted of 256 students (n = 256) and 14 teachers (staff members) (n = 14). 134 of the participant students are males, whereas 122 are females. Also, the teachers' sample comprised 9 male and 5 female participants. As mentioned before, the students' attitudinal perception of the impact of virtual learning on their engagement was tested by means of a questionnaire, whereas the teachers' attitudes were tested by both a questionnaire and an interview.

3.5 Procedures

The procedural steps adopted in this study incorporated five phases: instrumental method preparation, circulating questionnaires and conducting interviews, obtaining results from the collected data, discussing the obtained results, and providing pedagogical implications. As discussed earlier, two electronic questionnaires were designed for both students and teachers, and a six-question interview was also prepared for teachers. Results were obtained to be ready for discussion. After the aforementioned procedural steps, some specific themes pertinent to the impact of virtual learning on students' engagement were highlighted. These themes were discussed for obtaining particular linguistic indications as well as offering pedagogical implications pertaining to the main objectives of the current study. Significantly, before embarking on this study, the participants' informed consents to participate in the questionnaires and the interview were obtained. Also, the objectives of the study, the intended use of the obtained information, and the respondents' ability to revoke consent were all explained to the respondents.

4. Analysis and Results

This part presents the results pertaining to the demographic data of the participants, the results pertaining to the students' questionnaire, and the results pertaining to the teachers' questionnaire and interview.

4.1 Results Pertaining to the Demographic Data of Participants

The demographic data pertaining to the participants, either students or teachers, are entirely based on various variables, including gender, age, academic level, number of virtual classes taken, and nationality, for students; and gender, age, academic rank, teaching experiences, number of virtual courses assigned, and nationality, for teachers. Tables 3 and 4 add more clarification in terms of the demographic data of the participants.

Table 3. Demographic characteristics of respondent students (n = 256)

Variable	Classification	No.	%
Gender	Male	134	52.34
	Female	122	47.66
Age	17 years	53	20.70
	18 years	71	27.73
	19 years	90	35.15
	<19	42	16.40
Academic level	Level three	23	8.98
	Level four	18	7.03
	Level five	41	16.01
	Level six	39	15.23
	Level seven	61	23.82
	Level eight	74	28.90
No. of virtual courses	1	32	12.5
	2	71	27.73
	3	98	38.28
	<3	55	21.48
Nationality	Saudi	256	100%

Table 4. Demographic characteristics of respondent teachers (n = 14)

Variable	Classification	No.	%
Gender	Male	9	64.28
	Female	5	35.72
Age	35-40 years	3	21.42
	40-50 years	7	50.00
	50-55 years	2	14.28
	<55	2	14.28
Academic rank	Professor	1	7.14
	Associate professor	4	28.57
	Assistant professor	5	35.72
	Lecturer	4	28.57
Teaching experience	>5 years	1	7.14
	5-10 years	3	21.42
	10-15	7	50.00
	<15	3	21.42
No. of virtual courses	1	2	14.28
	2	2	14.28
	3	7	50.00
	<3	3	21.42
Nationality	Saudi	3	21.42
	Egyptian	3	21.42
	Sudanese	3	21.42
	Jordanian	2	14.28
	Indian	1	7.14
	Moroccan	1	7.14
	Algerian	1	7.14

As indicated in Tables 3 and 4, the participants have various demographic characteristics. Regarding respondent students, Table 3 demonstrates that they represent both genders, with a percentage of 52.34% for males and 47.66% for females. The variable of gender mirrors a balanced distribution among students, which, in turn, helps arrive at credible and comprehensive results, particularly in terms of gender equality. Table 3 further clarifies that respondent students represent various academic levels, varying from level three to level eight. This also indicates that the sample results cover students from different academic levels, whose academic perspectives and performance also vary in terms of virtual learning perception. Respondent students undergo virtual learning in a minimum of one virtual class per semester. Table 4 also shows that respondent teachers come from diverse cultural and international origins, hold a range of academic positions, and exhibit a diversity of virtual teaching experiences. Crucially, the various variables representing both types of participants (i.e., students and teachers) support a verifiable type of results that contributes to the main objective of the current study: probing the extent to which virtual learning influences students' engagement in the Saudi EFL context, either positively or negatively.

4.2 Results Pertaining to Students' Questionnaire

To answer the two research questions of the current study, quantitative data, represented by the students' and teachers' questionnaires, were analyzed using SPSS to identify the impact of VL on SE in terms of class attendance, class participation, the acquisition of the four language skills, learning anxiety, learning motivation, learning self-efficacy, willingness to communicate, and learning autonomy in the Saudi EFL context.

Table 5. Descriptive analysis of students' attitudes towards the impact of VL on their engagement

No	Statement	Response						Mean	SD
		Agree		Disagree		Can't decide			
		No	%	No	%	No	%		
1	I attend all my virtual classes.	213	83.20	43	16.79	0	0.00	2.83	0.37
2	I feel motivated when I am taught virtually.	187	73.04	53	20.70	16	6.25	2.67	0.59
3	I feel free to participate with my teachers in virtual classes.	223	87.10	24	9.37	9	3.51	2.84	0.46
4	I feel ashamed to communicate virtually with my teachers.	23	8.98	219	85.54	14	5.46	2.04	0.37
5	I don't feel motivated to enroll in virtual courses.	19	7.42	189	73.82	48	18.75	1.89	0.50
6	I feel my listening skill has improved through virtual classes.	203	79.29	51	19.92	2	0.78	2.79	0.44
7	I feel my speaking skill has improved through virtual classes.	212	82.81	43	16.79	1	0.39	2.82	0.39
8	I don't feel my reading skill has improved through virtual classes.	164	64.06	57	22.26	35	13.67	2.50	0.73
9	I don't feel my writing skill has improved through virtual classes.	177	69.14	37	14.45	42	16.40	2.53	0.76
10	I don't feel anxious when I take virtual classes.	205	80.07	42	16.40	9	3.51	2.77	0.50
11	I feel bored when I take virtual classes.	36	14.06	196	76.56	24	9.37	2.05	0.48
12	I don't get faster feedback for my errors when I attend virtual classes	26	10.15	229	89.45	1	39	2.10	0.32

	than in-class instruction.								
13	Virtual learning is more engaging, interactive, and dynamic than in-class learning.	198	77.34	32	12.5	26	10.15	2.67	0.66
14	I face technical problems when I attend my virtual classes.	74	28.90	182	71.09	0	0.00	2.29	0.46
15	Virtual learning encourages me to participate actively in class discussions.	214	83.59	27	10.54	15	5.85	2.78	0.54
16	I feel anxious during my virtual classes.	31	12.10	220	85.93	5	1.95	2.10	0.36
17	Virtual learning has boosted my self-efficacy in learning.	241	94.14	13	5.07	2	0.78	2.93	0.28
18	Virtual learning enables me to be involved in more than one learning task at the same time.	176	68.75	79	30.85	1	0.39	2.68	0.47
19	I feel independent when I attend my virtual classes.	237	92.57	19	7.42	0	0.00	2.93	0.26
20	Virtual learning impedes my academic performance.	7	2.73	219	85.54	30	11.71	1.91	0.37

Table 5 displays the students' perceptions in terms of the impact of virtual learning on their engagement. As indicated from the table, respondents' attitudes are categorized into eight learning variables, all of which revolve around their attitudes concerning the extent to which their engagement is influenced, positively and/or negatively, by virtual learning. These variables include class attendance, class participation, the acquisition of the four language skills, learning anxiety, learning motivation, learning self-efficacy, willingness to communicate, and learning autonomy. In terms of virtual class attendance, the majority of students (83.20%; M= 2.83) expressed their agreement that they attend all their virtual classes, which indicates the flexibility of virtual learning in terms of the time and place of attending classes. Virtual learning, unlike traditional learning, facilitates attendance regardless of time and place, which usually stand as obstacles, particularly with respect to students' attendance in traditional learning.

Concerning the extent to which students' class participation is influenced by virtual learning, 87.10% (M= 2.84) of the respondent students agreed that virtual learning increases their class participation. 85.54% (M= 2.4) of the students disagreed that they feel ashamed to communicate with their teachers virtually. This indicates that the desire to communicate serves to increase engagement. Also, 83.59% (M= 2.78) of respondent students agreed that virtual learning encourages them to participate actively in class discussions, and 68.75% (M= 2.68) of the respondents agreed that virtual learning enables them to be involved in more than one learning task at the same time. As for the extent to which students' language skills (i.e., reading, writing, speaking, and listening) are influenced by virtual learning, the results obtained from the questionnaire showed that the majority of students agreed that their speaking and listening skills have improved during virtual classes, with an agreement percentage of 82.81% (M= 2.82) and 79.29% (M= 2.79), respectively. On the other hand, students agreed that their reading and writing skills have not been enhanced through virtual classes, with an agreement percentage of 64.06% (M= 2.50) and 69.14% (M= 2.53), respectively. This, in turn, accentuates the fact that the respondents expressed a willingness to use virtual learning to improve their speaking and listening abilities. It can be inferred, therefore, that most of the respondents expressed a positive attitude concerning the skills of listening and speaking, whereas they communicated a negative attitude in terms of the skills of reading and writing. This can be further attributed to the fact that both listening and speaking are the most representative skills employed during virtual classes due to the presentation nature of this digital type of learning.

With regard to learning motivation, 73.04% (M= 2.67) of the respondents agreed that they feel motivated when they are taught virtually. They also disagreed that they feel bored when they attend virtual classes and that they get faster feedback for their errors when they attend virtual classes than in in-class instruction, with a disagreement percentage of 76.56% (M= 2.05) and 89.45% (M= 2.10), respectively. As for students' learning anxiety, 85.93% (M= 2.10) of the respondents disagreed that they experience any anxiety when they attend virtual classes. Such a low degree of anxiety during the virtual learning process, in turn, enhances the degree of engagement on the part of students and increases their self-efficacy and independence. This is clearly shown by the results, indicating that 94.14% (M= 2.93) of students agreed that virtual classes have boosted their self-efficacy in learning and that they feel independent when they attend their virtual classes (92.57%; M= 2.93). The majority of participants (85.54%; M= 1.91) disagreed that virtual learning impedes their academic performance, whereas 77.34% (M= 2.67) of the respondents agreed that virtual learning is more engaging, interactive, and dynamic than traditional learning.

4.3 Results Pertaining to Teachers' Questionnaire

Proceeding to offer answers to the two research questions of this study, this section presents the responses of teachers to the questionnaire in terms of the impact of virtual learning on students' engagement in the Saudi EFL context.

Table 6. Descriptive analysis of teachers' attitudes towards the impact of VL on SE (the questionnaire)

No.	Statement	Response				Mean	SD
		Agree		Disagree			
		No	%	No	%		
1	Students' classroom participation increased when I taught them virtually.	11	78.57	3	21.42	1.79	0.43
2	Students' language skills have been enhanced when they attend virtual classes.	10	71.42	4	28.57	1.71	0.47
3	Virtual classes are not taken seriously by students.	3	21.42	11	78.57	1.21	0.43
4	Students' attendance is decreased when I teach virtually rather than in face-to-face instruction.	2	14.28	12	85.71	1.14	0.36
5	Students' willingness to communicate has been increased during virtual classes.	10	71.42	4	28.57	1.71	0.47
6	Students don't seem engaged or interested in attending virtual classes.	2	14.28	12	85.71	1.14	0.36
7	Virtual learning does not foster a better teacher-student contact.	5	35.71	9	64.28	1.36	0.50
8	During virtual classes, students pay less attention to my discussion than is the case with face-to-face instruction.	4	28.57	10	71.42	1.29	0.47
9	Students' learning motivation is more representative in virtual learning than in face-to-face instruction.	9	64.28	5	35.71	1.64	0.50
10	Students' learning anxiety is less representative in virtual learning than in face-to-face instruction.	13	92.85	1	7.14	1.93	0.27

Table 6 demonstrates a positive attitude on the part of the respondent teachers concerning the impact of virtual learning on students' engagement. The questionnaire of the respondent teachers covered various elements revolving around the extent to which virtual learning affects students' engagement in terms of class attendance, class participation, the acquisition of the four language skills, learning anxiety, learning motivation, learning self-efficacy, willingness to communicate, and learning autonomy. Results show that 78.57% (M= 1.79) of respondent teachers agreed that virtual learning affects students' participation positively. They also agreed (71.42%; M= 1.71) that students' language skills have been enhanced when they attend virtual classes, particularly in terms of the skills of speaking and listening. In terms of attending virtual classes, 85.71% (M= 1.14) of respondent teachers disagreed with the statement that students' attendance is decreased when they deliver their courses virtually compared to the in-class instruction method, which is also reinforced by their disagreement with the idea that virtual classes are not taken seriously by students (78.57%; M= 1.21). Regarding the students' willingness to communicate, 71.42% (M= 1.71) of respondent teachers agreed with the statement that their students are willing to communicate during virtual classes. This result is further supported by the teachers' disagreement with the idea that virtual learning does not foster better teacher-student contact (64.28%; M=1.36). Concerning students' learning motivation, 64.28% (M= 1.64) of teachers agreed that students' learning motivation is more representative in virtual learning than in face-to-face instruction, which is also emphasized by the teachers' disagreement that their students pay less attention to discussions than is the case with traditional instruction and that students do not seem engaged or interested in attending virtual classes, with a disagreement percentage of 71.42% (M= 1.29) and 85.71% (M= 1.14), respectively. As for students' learning anxiety, 92.85% (M= 1.93) of the respondent teachers agreed with the idea that students' learning anxiety is less representative in virtual learning than in face-to-face instruction.

4.4 Results Pertaining to Teachers' Interview

The second instrument used to test the attitudes of teachers concerning the impact of virtual learning on students' engagement is the interview. Six open-ended questions have been formulated for this purpose, as well as to offer a further complementary answer to the two research questions of the current study. These are demonstrated in Table 7.

Table 7. Descriptive analysis of teachers' attitudes towards the impact of VL on SE (the interview)

No	Question	Positive attitude		Negative attitude		Total	
		No.	%	No.	%	No.	%
1	To what extent do you think that virtual learning affects your students' engagement positively?	11	78.57	3	21.43	14	100
2	To what extent do you think that virtual learning affects your students' engagement negatively?	3	21.43	11	78.57	14	100
3	Do you think that the impact of virtual learning on students' engagement varies from one class aspect to another and from one skill to another?	14	100	0	0	14	100
4	Do you think that students' academic performance is better in virtual classes than is the case in face-to-face instruction?	10	71.43	4	28.57	14	100
5	Do you think that virtual learning can keep the student-teacher rapport strong?	12	85.71	2	14.23	14	100
6	Do you think that students' engagement can be improved if virtual learning is totally adopted in teaching?	9	64.28	5	35.71	14	100

Table 7 clarifies that the interview of respondent teachers deals with certain issues pertinent to the main objective of this study. These issues revolve around the extent to which virtual learning affects students' engagement positively and/or negatively, the way virtual learning influences students' language skills and academic performance, their attendance, and their willingness to communicate. The results obtained from the interview indicate that respondent teachers expressed positive attitudes concerning the impact of virtual learning on students'

engagement. This positive attitude manifested itself in their agreement (78.57%) that virtual learning has affected students' engagement positively. They also emphasized unanimously (100%) that the impact of virtual learning on students' engagement varies from one class aspect to another and from one skill to another. Furthermore, 71.43% of the teachers agreed that students' academic performance is better in virtual classes than is the case in face-to-face instruction. When asked about the way in which students' engagement can be enhanced, 64.28% of the respondent teachers expressed a positive attitude that students' engagement can be improved if virtual learning is totally adopted in teaching. This, in turn, accentuates the fact that using virtual learning serves to influence students' engagement positively and, thus, can be totally adopted as a method of learning and teaching in the various EFL contexts.

5. Discussion

The above analysis and results demonstrate the fact that virtual learning fosters an interactive process of teaching and learning, in which the teaching and learning practices are much more student-centered and activate students' engagement and motivation towards complete, virtually digital learning. This, in turn, serves to reveal the importance of having virtual learning, not only to expand learning opportunities but also to serve as an unavoidable and dependable instrument in the educational process. The analysis shows that students' engagement is positively influenced by virtual learning. The positive impact has been manifested in many potential components constituting the whole concept of engagement. These include students' attendance, classroom participation, learning motivation, learning anxiety, students' self-efficacy, the acquisition of language skills, and students' willingness to communicate. The positive attitudes reported by both students and teachers involved in this study emphasize that the use and application of virtual learning serve to produce better learning outcomes than those achieved by traditional learning. These results are in consonance with some previous studies (e.g., Bond, 2020; Zhang et al., 2020; Vergara et al., 2022), which highlighted the positive role of digital learning platforms in fostering students' engagement.

It is analytically demonstrated that the positive impact of VL on SE indicates that such a digital type of learning serves to enhance the process of learning a foreign language as a whole. Many learning variables are improved by the application of virtual learning. Not only this, but VL promotes mutual discussion and communication. Furthermore, this study, in accordance with Altinay et al. (2017), shows that virtual learning boosts learners' self-esteem, enhances their critical thinking and motivation, and aids in their construction of connectivist knowledge through social connections. This, in turn, accentuates the relevance of connectivism to virtual learning settings in general and EFL learning in particular. Since this theory highlights the usefulness of using and applying technology to learning, it is highly recommended that it be perceived as a learning theory whose theoretical framework is appropriate for virtual learning. This reconciles with Vesela's (2013) argument that connectivism is highly recommended as a theoretical framework for studying foreign languages because it helps learners recognize language learning as a network within which each learning construct is linked to another.

The obtained results clarify that the attitudinal positivity of the participants concerning the eight learning variables (i.e., class attendance, class participation, learning anxiety, learning motivation, learning self-efficacy, willingness to communicate, learning autonomy, and the acquisition of language skills) representing engagement in this study is entirely aligned with the principles of connectivism. To clarify, in light of connectivism, learning is a process distributed across networks of people and resources, and therefore learners should collaboratively work to engage with others and to create new knowledge and understanding. Such a collaborative learning environment serves to increase participation, improve learning motivation, and decrease learning anxiety. Connectivism also helps learners and teachers adapt to changing circumstances and unremittingly look for new knowledge and experiences, which, in turn, prepares them to attend their classes virtually, particularly in times of emergency, as was the case with the Covid-19 pandemic. According to Kop and Hill (2008), connectivism proves useful in promoting the acquisition of new knowledge and skills for EFL learners and helps them overcome the barriers of time and space in the learning process. This correlates with the results obtained in this study concerning the positive attitudes of both students and teachers concerning virtual classes' attendance and the acquisition of language skills. Applying a connectivist approach to learning further enhances learners' autonomy and self-efficacy (Mackness et al., 2010). Given the fact that the results of the current study demonstrate a positive attitude of participants towards the impact of virtual learning on students' engagement, which is consistent with the main principles of connectivism, it follows that there is a harmonious connection between connectivism and virtual learning, as both of them function to improve learners' motivation and engagement in a way that achieves better learning outcomes than is the case with traditional learning.

Despite the fact that the different variables of engagement discussed in this study have been positively influenced by virtual learning, some engagement variables are ranked higher than others in terms of the extent to which they are influenced. To clarify, the analysis shows that students' attendance at virtual classes is the most representative component that reflects a high degree of influence. The majority of participants (students and teachers) agree with the idea that students' attendance increases during virtual classes more than is the case in traditional learning. This can be attributed to the fact that using digital platforms in educational settings allows learners more freedom to attend all their classes regardless of time and space. This also correlates with some previous studies (e.g., Parker & Oyarzun, 2013; Khafaga, 2021), who accentuated the fact that online education provides students much flexibility in terms of time and place to attend their virtual classes. This finding further sheds light on the significance of using and applying virtual learning to all educational contexts, particularly in times of emergencies, as was the case with the pandemic. Because attendance is one of the main elements constituting engagement, its high degree of representativeness as being increased in virtual classes is an indicator that students are highly engaged by virtual learning, a finding that has also been reported by previous studies, such as Robinson and Hullinger (2008), Oraif and Elyas (2021), and Baloran and Hernan (2021), who highlighted the positive role of virtual learning in activating students' engagement.

Further, the results obtained from the analysis clarify that students' academic performance has been positively affected by virtual learning.

This finding reconciles with Vu and Fadde's (2013) argument that students prefer to be involved in class discussions when they are taught virtually more than in traditional instruction. In this study, such academic performance is manifested in the four language skills, classroom participation, and willingness to communicate. Concerning the four language skills, i.e., reading, writing, speaking, and listening, it is analytically demonstrated that the respondents have positive attitudes regarding the impact of VL on their speaking and listening skills and negative attitudes concerning reading and writing skills. This may be attributed to the fact that both speaking and listening are the most representative skills in virtual classes (Vu & Fadde, 2013).This finding is in conformity with Castelli and Sarvary's (2021) argument that students' discussions are facilitated and enhanced by virtual learning, particularly for those students who may not have the chance to speak in traditional learning. Such an improved performance in the skills of speaking and listening is entirely consistent with one of the principles of connectivism, which proposes that there must be a profusion of opportunities for students to develop and share course material, engage in conversation and negotiation, and broaden their experience through dialogue as a result of sharing and interacting with the network of connections (Bell, 2011).

Another important finding reported by respondents is the tangible improvement in class interaction and willingness to communicate. The analysis shows that the majority of respondents agree with the idea that students are more willing to communicate with their peers than is the case with traditional learning. This goes in the opposite direction with Linton et al.'s (2014) argument that students' interaction with their teachers is decreased during virtual learning, whereas peer connection in the traditional classroom facilitates the best kind of active learning. In light of this study, virtual learning fosters classroom participation and motivates student-teacher interactions, which has been highlighted by Antón-Sancho et al.'s (2022) postulation that virtual learning can keep the student-teacher rapport strong. This finding has previously been accentuated by some studies (e.g., Warschauer, 1997; Hobbs, 2002), proposing that the less confrontational and more intimate aspect of virtual learning could motivate students to participate more or experience less pressure than in in-person encounters. Such a strong desire to participate in virtual classes and the students' willingness to communicate with their teachers during virtual classes have also been highlighted by the results of the questionnaires for both teachers and students, who emphasized that virtual learning is more engaging, interactive, and dynamic than traditional learning.

A further significant finding in this study is that virtual learning supports students' learning self-efficacy, learning autonomy, and motivation, on the one hand, and decreases the degree of learning anxiety, on the other. This reconciles with many previous studies, including Halverson and Graham (2019), Lawson and Lawson (2020), and Symonds et al. (2021), who emphasized the effective role of virtual learning in increasing students' self-efficacy and motivation. The same studies also highlighted the assumption that during virtual classes, students' learning anxiety decreases. The results of this study indicate that students' learning anxiety is less representative in virtual learning than in face-to-face learning. Students feel less anxious during the process of learning, particularly those who are ashamed of face-to-face interaction. The respondent students also accentuated the fact that they feel more independent when they are taught via digital platforms than through traditional instruction. Such learning independence serves to reinforce students' academic performance, improve their ultimate learning outcomes, and promote their self-learning. Significantly, it can be claimed that while students enjoy having the freedom to choose the time and location for some activities, they also seem to prefer the increased involvement that occurs during virtual learning conversations as opposed to those that occur in traditional classes.

Additionally, both students and teachers agreed that virtual learning helps students improve their academic performance in an engaged learning environment. Both respondent students and teachers agreed that virtual learning could spark and maintain their intrinsic motivation. As a result, they perceived virtual learning as an engaging, self-paced, and stimulating platform for controlled learning. Respondent students also expressed a desire to stick with virtual learning as a substitute for traditional learning. This, in turn, sheds light on the fact that virtual learning's augmented reality features turn it into an interactive environment that improves learning outcomes, attitudes towards learning environments, and interest in and motivation for technology-driven e-learning. This finding is consistent with many previous studies, such as Reeve (2013), Reese (2014), Williams (2016), Zhang et al. (2020), Vergara et al. (2022), and Wang et al. (2023). Interestingly, the attitudes survey results from students commensurate with the views of the teachers concerning the effectiveness of virtual learning as a motivator for an engaged learning environment; that is, virtual learning has the potential to facilitate effective communication between teachers and students and offers an effective, interactive, and engaging learning environment that serves to achieve better learning outcomes.

Consequently, the quantitative and qualitative analyses in this study report a positive attitudinal perception of the participants concerning the impact of VL on SE in terms of the four main categories of engagement: cognitive, behavioral, emotional, and agentic (Reeve, 2013). These four categories are represented by the eight variables examined in this paper: class attendance, class participation (behavioral, agentic), the acquisition of the four language skills (cognitive), learning anxiety, learning motivation, learning self-efficacy, willingness to communicate, and learning autonomy (emotional). According to Archambault et al. (2009), the successful realization of these categories guarantees a successful engagement in virtual classes, and the realization of one category significantly influences the rest of the learning variables. This correlates with Wang and Peck's (2013) argument that the four categories have a significant impact on students' attitudes towards the learning environment, which, in turn, affects their desire for academic performance, and also reconciles with the main principles of connectivism, which advocate for collaborative learning to take precedence over individualized learning (Downes, 2023). Within connectivist learning, learners achieve a high level of academic performance. This is because connectivist learning serves to create reciprocal engagement among learners in a synchronized endeavor to solve a problem together (Downes, 2023).

To recap, this study shows that the idea of student engagement is complex and nuanced, with students' levels of engagement changing as they go through the educational system. The questionnaires of students and teachers and the interview with teachers revealed positive

attitudes regarding the impact of virtual learning on students' engagement in terms of the eight learning variables discussed here. This study, therefore, emphasizes the positive impact of virtual learning on students' engagement and highlights the assumption that students' engagement can be improved if virtual learning is totally adopted in the process of EFL teaching and learning. In light of the results reported in this study, virtual learning within the framework of connectivism has the potential to transform the way learning is delivered and assessed.

6. Conclusion

By employing both quantitative and qualitative methods of analysis, this paper explored the extent to which virtual learning influences students' engagement in the Saudi EFL context. The analysis demonstrated that virtual learning has positively impacted students' engagement. The results of this study showed that Saudi EFL students and instructors generally had positive perceptions of the effect of virtual learning on students' engagement. Such a positive attitudinal perception is representative in the various potential components that constitute engagement in this study, including classroom attendance, classroom participation, learning motivation, learning anxiety, students' self-efficacy, the acquisition of the four language skills, learners' autonomy, and students' willingness to communicate. The obtained results revealed that virtual learning contributes to effective communication between students and teachers, improves student comprehension, increases instrumental motivation, engages students in active and interactive learning, enhances students' language skills of listening and speaking, decreases student learning anxiety, develops their learning self-efficacy, and builds rapport between teachers and students. The analysis further clarified that the participants' positive attitudes towards the eight learning variables constituting engagement in this study are entirely consistent with connectivism principles, which accentuates the assumption that virtual learning can be perceived as an appropriate substitute for traditional learning in the Saudi EFL context.

6.1 Limitations, Implications, and Recommendations for Further Research

The limitations pertaining to this study lie in the fact that its data were gathered from a particular setting, i.e., one Saudi university. Also, the sample size was unpretentious, particularly in terms of respondent teachers. Consequently, it is not possible to definitively generalize the findings to other EFL settings, and, thus, more research involving a larger sample size from various educational settings would be beneficial in determining whether or not the findings reported in the current study are generally applicable.

The current study sheds light on the necessity of incorporating recent technological tools into the teaching and learning process, which paves the way for a fully virtual learning environment. Here, further pedagogical procedures are needed on the part of the educational institutions to be ready to perceive such a shift towards virtual learning. These, of course, should include the reconsideration of course designations in a way that copes with the new digital learning era that is about to dominantly cast a shadow over the educational system all over the world.

Finally, the research on the effectiveness of virtual learning is not conclusive, as there will be constant changes due to the unremitting advancement in digital technology. This study, therefore, recommends more updated studies to investigate and re-assess the impact of virtual learning on students' engagement in terms of other learning variables and in other EFL contexts than those approached here. These studies might yield similar and/or different findings than those revealed in this study.

Abbreviations

AP: Academic performance

CALL: Computer-assisted language learning

CE: Classroom engagement

CLT: Connectivism learning theory

EFL: English as a foreign language

MMGT: Mixed methods grounded theory

SE: Student engagement

SPSS: Statistical package for social science

VL: Virtual learning

VLEs: Virtual learning environments

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Authors' contributions

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