

Computer-Assisted Language Learning in Saudi Arabia: Past, Present, and Future

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Abstract

This study reviewed some of the research efforts exploring the use of technology in English as a foreign language (EFL) classroom in Saudi Arabia at different educational levels. The review aimed to examine the state of technology use in EFL classrooms and its potential. The findings showed that most studies were conducted by academic researchers and not classroom teachers. Additionally, the recommendations of the research conducted over the years concentrated on teacher training and building a reliable infrastructure. Moreover, the review showed that using technology in English classrooms could enhance language learning, and researchers encouraged teachers to explore technology use in their classrooms. The study concluded that using technology in EFL classrooms in Saudi Arabia is promising once the educational settings, including the technology infrastructure, are ready and reliable.

Keywords: CALL, EFL, educational technology, interactive whiteboard, language learning, MALL, mobile learning, Saudi Arabia, social media, WebQuest

1. Introduction

Computer-Assisted Language Learning (CALL) played a positive role in the development of language learning. CALL had seen the attempt to utilize technology for powerful and significant language gaining and educating researchers. Successful CALL implementation led to increased learning for both teachers and students (Han, 2020). CALL expanded in the multidisciplinary field, covering many tasks and activities. Due to the dynamic nature of CALL technology, it was aimed to integrate with and beyond classrooms (Beatty, 2010).

Nowadays, artificial intelligence (AI) technology has affected various aspects of people's daily lives and is expected to be widespread in education (Han, 2020). With the expansion of CALL, new terms and areas of research within CALL emerged, such as MALL (Mobile Assisted Language Learning), RALL (Robot-Assisted Language Learning), and ICALL (Intelligent CALL). Throughout the last few decades, we have seen a wide variety of technological methods and Web 2.0 tools used in EFL classrooms. Educational development has significantly benefited from using these digital learning techniques (Peeraer & Petegem, 2011). In Saudi Arabia, CALL saw several attempts to employ technology tools in schools and universities beginning in the early 2000s. This technology integration occurred at the institutional level, such as through the Ministry of Education and universities, and at the personal level by academic researchers and teachers.

In Saudi Arabia, English has been taught as a foreign language since the late 1920s (Alshumaimeri, 2019). Teaching the English language in public schools became a compulsory subject after introducing the first comprehensive school curriculum in 1959–1960 (Alshumaimeri, 2019; Wedell & Alshumaimeri, 2014). However, according to many studies, students graduated from secondary/high school with limited English language skills (Alresheed, Raiker, & Carmichael, 2017; Alseghayer, 2015; Alshumaimeri, 2011a; Alshumaimeri, 2019; Alswilem, 2019; Hannah, 2006; Rahman & Alhaisoni, 2013; Wedell & Alshumaimeri, 2014).

One of the solutions to address English language teaching deficiencies in Saudi schools was to employ technology in education (Alrasheed et al., 2017; Alshumaimeri & Alhassan, 2013; Alshumaimeri, 2008). Research suggests that technology in teaching is essential (Flemming, 2013). Teachers and instructors play a critical role in integrating technology into educational institutions, but they may encounter various challenges in the process (Marwan, 2008; Salehi & Salehi, 2012). In the last two decades, many research attempts have

examined the effects of various technology-related applications and tools on enhancing English language teaching in Saudi Arabia. This study aims to review some of the efforts of implementing CALL in Saudi Arabian educational institutions. The study also explores future areas of research regarding CALL in Saudi Arabia.

2. Use of Technology and English Language Teaching in Saudi Arabia

Internet access is necessary to implement Information and Communication Technology (ICT) in educational institutions. Before 1999, the internet was inaccessible in Saudi Arabia (Al-Maliki, 2013). The Saudi Government invested millions of dollars in implementing technology in education but faced different obstacles in integrating technology (Al-Maliki, 2013; Alshumaimeri, 2008).

These difficulties in technology integration in Saudi Arabia were due to a lack of proper technology infrastructure and limited research on the barriers hindering the implementation of information and communication technology (Al-Maliki, 2013; Almalki & Williams, 2012). The primary problem was keeping pace with advancing technology, which requires money, time, and other human resources (Alswilem, 2019). In 1990, the Saudi Ministry of Education introduced computer literacy in public secondary schools, established computer labs, and provided training courses to teachers in secondary schools (Alshumaimeri, 2008). Initially, the computer was just for administrative use or for processing and storing pieces of information related to teachers and student records. After some time, students started using technology in their assignments and homework (Alshumaimeri & Alhassan, 2013; Alshumaimeri, 2008). The government also established computer labs in primary schools, but this initiative failed due to a lack of trained staff and teachers (Al-Aqeely, 2001).

Following this, the Saudi Ministry of Education launched the Ten Year (2004-2014) Educational Plan in 2005. This project, called “Tatweer,” was aimed to provide a significant reform in education. The plan included policy amendments, educating teachers, curriculum development, and providing schools with technological devices like projectors, laptops, and smartboards. The Ministry of Education in Saudi Arabia distributed laptops among teachers and aimed to provide IT training to 400,000 educators (Alshumaimeri & Alhassan, 2013; Alshumaimeri, 2008). English language as an educational subject was a major element of the reform project “Tatweer,” including curriculum development by well-known international publishers and technology integration in English language teaching (Alshumaimeri, 2008; Wedell & Alshumaimeri, 2014). The project was named the English language development project (ELDP). The international publishers worked on producing custom learning materials that fit the Saudi context. The learning materials included textbooks, teacher’s books, workbooks, visual and audio aids, and e-learning materials, such as CD-ROMs, web portals for e-books, additional activities, and video and audio resources (Alshumaimeri, 2019).

At the higher education level, the Saudi government established the National Center for e-Learning and Distance Learning (NCeL) in 2005 to promote e-learning in universities and higher education institutions (Hussein, 2016). Universities have gradually implemented more web-based systems. Saudi universities, such as King Abdul-Aziz University, King Khalid University, King Saud University, and King Faisal University, are the pioneers in establishing the Deanship of Distance Learning as a part of their education program (Alasmari & Khan, 2014). All higher education institutions created their Learning Management Systems (LMS), such as Blackboard and Moodle, from 2009 onwards. Establishing e-learning in Saudi universities was done to eliminate issues concerning large populations, financial costs, and remote areas (Alasmari & Khan, 2014).

Rajab (2018) identified one of the main advantages of e-learning as its ability to serve as an alternative model to traditional education during crises and in conflict areas. For instance, the conflict in Yemen led to the closure of schools and universities near the southern borders of Saudi Arabia for a short period. Therefore, e-learning was an alternative in some educational institutions, such as Najran University (Rajab, 2018). More recently, the spread of COVID-19 has led to the suspension of face-to-face education worldwide. Schools and universities in Saudi Arabia were closed on the 9th of March, 2020. According to the Strategic Gears report (2020), the Ministry of Education insisted on continuing education by switching to online learning during the early stages of the pandemic. The Saudi Ministry of Education has exerted great effort to make this experience as successful as possible during the pandemic. The transformation to complete online schooling was a paradigm shift in learning and teaching (Alshumaimeri & Alhumud, 2021). Approximately six million students were studying online at once. This urgent utilization of online learning has met many difficulties. The challenges observed were related to students’ acceptance and suitability of online learning. The most significant difficulties were the lack of real interaction, technical issues, changes in teaching methodologies, family issues, and time management (Khalil et al., 2020).

With the launch of Saudi Vision 2030 in 2016, there was a focus on improving education through technology (Saudi Vision, 2016, 36). As a part of the Vision, the Saudi Government has insisted on the effective integration of

technology to enhance the learning and teaching process (Rajab, 2018). One of the primary goals of improving ICT integration is to equip students and teachers with ICT skills through training and curriculum development (Alghamdi & Holland, 2020). The English language received more attention and use in Saudi Arabia as the country became a tourism destination and an important contributor to the world economy through the G20 and as the host of international events related to the economy, sports, and medicine (Alshumaimeri, 2019). Hence, after implementing educational reforms specifically for English, technology integration in educational institutions has considerably increased in the last decade. Students and teachers were provided with e-learning material. Saudi Arabia has made every effort to implement technology into the educational system to get better student results and keep up with global trends (Alswilem, 2019). The following sections review research efforts utilizing technology to enhance English language learning and teaching in Saudi Arabia.

2.1 Interactive Whiteboard (IWB) and EFL

Interactive whiteboards (IWBs) are smartboards with a touch-sensitive board attached to the projector and computer. The projector shows the whole screen of the laptop on the whiteboard. Teachers can use an IWB to increase the potency of their lectures (Wallace, 2007) and provides an opportunity for students and teachers to write directly on the board (Yáñez & Coyle, 2011).

EFL teachers can take advantage of this technology by integrating it into the learning process. Researchers claimed that students are more motivated and interested in language learning when using IWBs (Durán, 2011). Studies also showed that IWBs increased the effectiveness of delivering PowerPoint presentations (Shelly & Vermaat, 2009).

Isman et al. (2012) investigated Saudi teachers' attitudes towards using IWBs in their classrooms. The study showed that secondary school teachers in Saudi Arabia are more inclined to use an interactive whiteboard in their classrooms than a traditional whiteboard. Students were interviewed, and data were gathered through an IWB-based survey, observational skills cards, and IWB use in the lecture hall. Another study (Bakadam & Asiri, 2012) investigated the perceptions of intermediate teachers regarding the use of IWBs in their courses. This study showed that most teachers believe that IWBs can be a green teaching tool that improves classroom interaction. Results highlighted the critical role of instructional technology in the training and mastering process (Bakadam & Asiri, 2012).

Ghashan and Alshumaimeri (2015) conducted a study among forty-three Saudi female teachers of various girls' schools in Riyadh. The survey participants illustrated positive attitudes toward the use of IWBs in EFL teaching. They considered IWBs valuable tools for enhancing the teaching and learning processes. The study suggested all supplements of IWBs must be present in EFL classrooms. Moreover, teacher preparation is vital; EFL teachers need training for solving technical problems and knowing how to use different features of IWBs (Ghashan & Alshumaimeri, 2015).

Researchers believe the integration of interactive whiteboards depends on teachers' perceptions; if they believe it can improve EFL instruction, the result will be positive outcomes in terms of learning (Ghashan & Alshumaimeri, 2015; Isman et al., 2012).

2.2 E-Portfolios and EFL Student-Teacher Relationship

An e-portfolio is a digital collection that illustrates an individual, institution, or group. E-portfolios can be displayed through audio, videos, or on the web. E-portfolios are a promising technology in teachers' education (Rahmann & Al-Haisoni, 2013). In a study conducted on 30 EFL female student teachers at Princess Nourah bint Abdulrahman University in Saudi Arabia, the results demonstrated a high proficiency level of the EFL student teachers' e-portfolios and a positive outlook concerning using e-portfolios. (Alshawi & Alshumaimeri, 2017). Moreover, the results illustrated a statistically remarkable positive relationship between the quality of EFL student teachers' e-portfolios and their teaching performance. The results of this study may stimulate the Saudi Ministry of Education to integrate the ideas of e-portfolios and reflections as effective components in teacher education and development (Alshawi & Alshumaimeri, 2017).

The studies proved that implementing e-portfolios among students and teachers plays a positive role in teachers' knowledge and development (Alshawi & Alshumaimeri, 2017; Rahmann & Al-Haisoni, 2013). The challenge of teaching a foreign language means that simply being qualified is not enough for a language teacher.

2.3 WebQuest

WebQuest is an inquiry-oriented learning tool where students discover different online lessons created by teachers (Dodge, 1997). WebQuest provides teachers with well-structured web-based activities that they can adapt to suit their students' needs. WebQuest allows students to use authentic content that increases students'

thinking processes. Samuda and Bygate (2008) considered WebQuest a web-based task. They linked it to task-based learning and teaching, demonstrating that it helped students engage in methods of constructing meaning needed in digital education. Studies showed that WebQuest plays an essential role in promoting English speaking, reading, writing, and listening skills and enhancing students' motivation (Gaskill, McNulty, & Brooks, 2006; Laborda, 2009; Noordin, Samad, & Razali, 2008; Torres, 2007; Tsai, 2006).

In Saudi Arabia, researchers investigated the use of WebQuest on different language skills (Alshumaimeri & Almasri, 2012; Alshumaimeri & Bamanger, 2013). In a study examining WebQuest's effects on developing reading comprehension performance, Alshumaimeri and Almasri (2015) executed a quasi-experimental design to explore the impact of WebQuest on Saudi male EFL students. The experimental group received conventional teaching and WebQuest, while the control group received only conventional instruction. The results showed that WebQuest could be used to assist reading comprehension. However, teachers and students must be trained on using WebQuest more effectively (Alshumaimeri & Almasri, 2012).

Another study by Alshumaimeri & Bamanger (2013) investigated whether there were notable differences between EFL students taught using WebQuest writing instruction and those instructed using conventional methods. The participants were randomly designated into experimental and control groups. The results reported that the writing performance of students taught using WebQuest (the experimental group) was better than that of students taught using conventional methods (the control group) in terms of length, vocabulary, and grammar. This study recommended using WebQuest writing instruction to improve students' writing skills (Alshumaimeri & Bamanger, 2013). It is suggested that using a motivating tool such as WebQuest could be helpful to enhance language learning and boost student engagement in the classroom.

2.4 Wikis

As a Web 2.0 technology, wikis are collaborative tools allowing pre-defined groups to edit each other's work (Alshumaimeri, 2011b). The research found that wikis, which are student-centered, have encouraged learners to work collaboratively without the presence of teachers, facilitating interaction between peers in an autonomous environment (Cowan, Herring, Rich, & Wilkes, 2009; Kessler, 2009; Packalén, Patokorpi, & Tétard, 2008; Reo, 2006). In EFL, research shows that wikis helped improve language ability and that students using wikis performed better in listening, reading, and writing skills (Chang, 2010; Chen, 2008; Kuteeva, 2011; Miyazoe & Anderson, 2009).

In the Saudi context, Alshalan (2010) employed a quasi-experimental design to investigate the use of wikis in improving writing abilities among secondary female students. The results showed improvement in structure and overall quality. However, there were no significant differences between the control and experimental groups regarding writing skills. In a similar study, Alshumaimeri (2011b) investigated the effects of using wikis in enhancing writing skills among 42 male students at the university level. The results demonstrated that the experimental group performed significantly better in accuracy and writing quality than the control group. The results indicated that wikis could benefit teachers and students by improving the precision and quality of their writing skills in a collaborative environment (Alshumaimeri, 2011b). The study suggested that future research using wikis with students at higher proficiency levels would be useful in developing a more comprehensive understanding of the benefits of such a Web 2.0 tool.

It is suggested that Web 2.0 technology in English as foreign language classrooms would enhance student satisfaction, motivation, and confidence (Alshumaimeri, 2011b; Chang, 2010; Pop, 2010). Teachers worldwide are encouraged to use Web 2.0 technologies, such as wikis, to create collaborative learning environments for learners that will hopefully help students and teachers grow in their abilities and accept creativity in learning (Alshumaimeri, 2011b).

2.5 Flipped Classrooms and EFL

In flipped classrooms, students were provided learning materials to complete at home with the help of technology, followed by classroom time (Education Learning Initiative, 2012). The flipped classroom approach was first used in Colorado in 2006 to teach learners at home using technology (Bergmann & Sams, 2012). In Saudi Arabia, students and teachers played a positive role in integrating technology in EFL learning despite specific barriers. According to Saudi teachers, students have shown more interest in education when learning involves short movies and PowerPoint presentations (Aljumah, 2012; Al-Kathiri, 2015).

Al-Harbi and Alshumaimeri (2016) conducted a study among EFL secondary school Saudi students in Riyadh to examine the impact of the flipped classroom on students' performance and attitudes. The statistical data of the post-test results showed that implementing the flipped classroom appeared to increase the students' grammar

performances, as the mean score of the experimental group was higher than that of the control group, but this variability was not statistically significant. Students suggested the need for using the flipped classroom for other subjects (Al-Harbi & Alshumaimeri, 2016).

Flipped classrooms have played a significant role in EFL and have contributed to solving many problems involved in English learning, such as communication, participation, feedback, and low proficiency level (Basal, 2015).

2.6 Social Media Applications and EFL

Social media applications have gained massive popularity in recent years and have become an important part of people's daily life, especially young people. Amin, Rafiq, and Mehmood (2020) indicated that social media consists of several applications and websites where the users share content and participate in networking. The scope of social media is not limited to pictures and videos. The credibility of social media has risen over the years. Presently, it is considered one of the fastest means to obtain or provide information. Similarly, the use of social media in education has also increased significantly, as it helps teachers, students, and parents. It also makes education convenient for the students and teachers. Similarly, social media also contributes to EFL learners' understanding since the vast majority of the media is in the English language. Various studies indicated that using social media such as Facebook, YouTube, Twitter, and WhatsApp had a potential impact on EFL learning and teaching (Alshumaimeri, Gashan, & Bamanger, 2019; Amin et al., 2020).

2.6.1 Facebook

Alhabash and Ma (2017) indicated that Facebook has been identified as the prime social media app since its launch in 2004. Users can connect with people by sending them friend requests. Moreover, Facebook also plays a vital role in the field of education. It provides informal learning for students, and they can learn languages in various ways. Students can communicate with each other by creating certain groups and Facebook pages. Consequently, this will enable them to learn languages more productively (Alhabash & Ma, 2017). Alhomod and Shafi (2012) conducted a study proposing that Facebook can be used in team-based learning in Saudi Arabian classrooms. University students and instructors formed teams and were used as a sample. The study results suggested the ways of using Facebook at every phase of team-based learning. It was further recommended that new ways to use Facebook in the classroom scenario be explored (Alhomod & Shafi, 2012). AlHebaishi (2015) investigated the use of Facebook in teaching English as a foreign language among female graduate students studying for a master's degree in Saudi Arabia. The study focused on investigating the students' course engagement and satisfaction. The results concluded that Facebook is a valuable source for students to engage with the teaching material, and it also produced satisfaction for the students (AlHebaishi, 2015).

2.6.2 YouTube

YouTube, created in 2005, is one of the oldest social media platforms for videos. In addition, YouTube is ranked as the second most visited website after Google. On this platform, people can watch, like, and share videos. The option to upload is also open for everyone, and the only requirement is an account. Educators have created their channels on YouTube, and students can reach them without paying a single penny (Nasution, 2019). It's worth highlighting that the world's best educators have made channels on YouTube. In Saudi Arabia, researchers investigated the potential influence of YouTube in EFL classes. Alwehaibi (2015) conducted a study investigating the effect of using YouTube to enhance EFL students' content learning. Using a quasi-experimental design, he examined 96 female student teachers studying a course on developing observation skills for teaching English in elementary schools. The study showed that integrating YouTube in the instructions resulted in a better gain of observation skills and content learning. The study recommended that YouTube be considered an effective tool to enhance classroom instruction and content learning (Alwehaibi, 2015). Alahmadi, Mahrous, and Alhebaishi (2018) researched the perceptions of university instructors regarding the use of YouTube in EFL. They found that YouTube is beneficial for language students' learning and enhances the students' satisfaction. Subsequently, it also positively impacts the classroom environment and makes it interactive (Alahmadi et al., 2018). Hence, it was recommended that the option of YouTube for EFL classrooms be explored further to investigate in depth its potential.

2.6.3 WhatsApp

WhatsApp is an instant messaging platform and the most popular app in the world, with mesmerizing attributes (Kartal, 2019). After connecting the phone with the internet, users can send messages to share photos, videos, files, and audio. The app can also be used for free voice messages, voice calls, and video calls. The importance of WhatsApp in education has risen over the past few years. Communication has become easy, and people can

practice all four skills of English on WhatsApp (Kartal, 2019). In the Saudi context, researchers investigated the potential of WhatsApp to enhance language learning. A study conducted by Alsaleem (2013) conducted a survey of the impact of WhatsApp electronic journaling on Saudi students' vocabulary. A sample of 30 female undergraduate EFL students' writing was gathered using a pretest and post-test design. The results indicated an improvement in the students' vocabulary word choice and voice as writing skills. It further concluded that teachers needed to explore the potential impact of using WhatsApp in teaching writing skills to their students. Alshammari, Parkes, and Adlington (2017) studied the usage of WhatsApp while teaching English to undergraduate students. The study's sample contained preparatory year students and faculty members. Thematic analysis was conducted during the study, and the results concluded that there were compelling and affordance outcomes of WhatsApp in the context of learning. The attitudes of teachers and students were positive toward the use of WhatsApp, but few teachers demonstrated reservations about the app's use. It was recommended that students allot specific periods to contact the instructors for learning EFL (Alshammari et al., 2017). Another study conducted by Almogheerah (2020) investigated the impacts of WhatsApp-based learning activities on the English idiom knowledge of Saudi university students. The study also examined the students' perception of using WhatsApp in learning idioms. In a quasi-experimental design, seventy female students of EFL were included as the study's sample. The investigation concluded that those who studied English idioms using WhatsApp outperformed their counterparts in the post-test achievement test. They also held a very positive perception toward learning English idioms via WhatsApp. It was recommended that messaging tools, such as WhatsApp and other applications, should be explored further in the teaching and learning of English as a foreign language.

Technology has been innovating rapidly, and including social media in education might produce fruitful results. Therefore, it was recommended that teachers and educators focus on this aspect and use social media as a source of communication to enhance the English learning skills of the students. It is necessary to create a collaborative learning environment for learners, and the current generation is team-oriented. Many reports illustrate the trend of teens socializing in groups of more than two, which explain their passion for and attraction to different social network media, such as YouTube, Facebook, or Twitter (Alshumaimeri et al., 2019).

2.7 Mobile Learning and EFL

Convergence of mobile technologies and e-learning is a term that has been used to describe the merging of mobile technologies and current educational techniques. Using mobile technology, students can access educational content on their mobile devices outside the classroom (Alhassan, 2016). Mobile education is expected to proliferate in the near future. Alhassan (2016) conducted a study among 1,000 college students that showed that students had a highly positive outlook concerning mobile learning, and they had the essential technical knowledge to integrate mobile learning. Moreover, students were found to have minimal encounters with electronic and mobile learning. Students indicated some pros of mobile learning, such as that they can learn outside their classroom at any time. They reported some cons, including that students might become irritated with receiving too many text messages each day (Alhassan, 2016). It is more likely that students' level of acceptance of new technologies will be revealed by examining their attitudes toward mobile mastery. The findings of this study could assist decision-makers in making well-informed choices, in accordance with data gathered from the industry, about the anticipated benefits of funding this type of instructional strategy (Alhassan, 2016; Kim & Ong, 2005).

Mobile-Assisted Language Learning (MALL) is an emerging field of technology utilization in language learning bringing enormous expectations (Stockwell, 2016). The use of smartphones in language learning has become easy due to the ability to access language learning input anywhere and anytime. Research of MALL potential has become a trend in language learning and teaching (Chang et al., 2012; Pollara & Broussard, 2011; Zaki & Yunus, 2015). Alkhudair (2020) reported positive attitudes toward MALL among Saudi university students. The students perceived mobile learning as a beneficial tool in learning a foreign language, and they held positive attitudes toward its implementation in EFL classrooms (Alkhudair, 2020).

Podcasts are a form of mobile learning technology that has been widely used in news networks and programs worldwide since 2005. The name *podcast*—a combination of the words *iPod* and *broadcast*—was coined by Adam Curry, the former MTV VJ (Chan et al., 2007). Podcasts are audio or video files posted on the web via the assistance of a Rapid Simple Syndication feed (RSS feed). Teachers upload lectures on their classroom website in the form of a podcast, which students can listen to or watch.

Al Qasim and Al Fadda conducted a study to investigate the effects of podcasting on the listening comprehension performance of Saudi female undergraduate students. The study used a quasi-experimental design involving 46 students in two groups. The experimental group created their own podcasts. The results showed that the students

who received podcasts outperformed the control group in their listening comprehension test (Al Qasim & Al Fadda, 2013). Similarly, Shahid and Ali (2017) conducted a study among 120 Saudi male undergraduate students majoring in the English language. The study focused on the effects of video podcasts on the students' listening comprehension. The results showed that the students who received podcasts performed better in their listening comprehension tests than those who did not. They suggested that teacher assistance could improve video podcasts' effectiveness (Shahid & Ali, 2017).

Bamanger and Alhassan (2015) conducted a study among fifty-five level two male students at the first year's scientific section at King Saud University. The results illustrated that students who had been given the podcast lectures and the in-classroom lectures get better writing performance than those who received only classroom lectures. Participating learners showed positive attitudes concerning podcast lectures. Results also demonstrated that podcasts help learn English grammar and vocabulary. The study recommended that EFL teachers implement podcasting lectures into their EFL writing instruction (Bamanger & Alhassan, 2015). Al-Ahdal and Alkhalaf (2020) investigated the effectiveness of podcasts in teaching speech communication skills among 28 Saudi EFL university students. The study showed that the students' listening and speaking abilities improved significantly.

However, it should be noted that all of the studies reported were in a university context, and some involved English-major students. Therefore, the researchers suggested that teachers in general education receive training and support to utilize podcasts to their full potential (Bamanger & Alhassan, 2015).

2.8 EFL Students and Virtual Classrooms

Virtual classrooms are online classrooms using audio and video conferences that students and teachers can access through different applications, like Microsoft Teams, Google Meet, Zoom, and Skype. These applications can be downloaded on mobile phones or a computer, where millions of participants can interact at a time (Parker & Martin, 2010). Virtual classrooms are flexible, affordable, practical, and easy to access from long distances, removing geographical barriers (Alshumaimeri & Alhumud, 2021; Danesh et al., 2015; Yadav, 2016). Virtual education also helps in reducing anxiety, enhancing motivation among students, and increasing their engagement and sense of community (Berry, 2019; Yadav, 2016). Researchers in Saudi Arabia investigated the effects of virtual classrooms in enhancing language learning and teaching (AlQahtani, 2019; Alshahrani, 2013; Alshumaimeri & Alhumud, 2021; Hamouda, 2020). A study by Alshahrani (2013) investigated the effects of video conferencing on students' speaking skills. The results revealed that video conferencing positively affected students' speaking skills and confidence in speaking English. The students also held positive attitudes toward online classes. Similarly, AlQahtani (2019) indicated that both instructors and students in a Saudi university positively perceived learning via virtual classrooms, as they felt more confident when speaking. Both instructors and students preferred virtual classrooms over traditional classes with few reservations (AlQahtani, 2019).

Hamouda (2020) examined the effects of virtual classrooms on improving speaking skills among 35 English-major university students. The study used qualitative and quantitative data collection methods to conclude that virtual classrooms had a positive impact on enhancing speaking skills. The students' feedback showed that they perceived the virtual classroom positively as a relaxing environment. Alshumaimeri and Alhumud (2021) studied 43 female English majors at the College of Education at a Saudi Arabian university. Their study revealed that virtual classrooms could play a crucial role in improving students' communication skills. Moreover, regardless of the generally positive attitudes toward virtual classrooms, students agreed that the lack of face-to-face communication was a major hurdle in online learning (Alshumaimeri & Alhumud, 2021).

Researchers in Saudi Arabia reported that students and instructors held generally positive attitudes toward virtual classrooms and online learning (AlQahtani, 2019; Alshahrani, 2013; Alshumaimeri & Alhumud, 2021; Hamouda, 2020). The results reported that virtual classrooms enhanced students' participation and interactions in online classes. The virtual classrooms provided a relaxing environment that boosted students' confidence to engage in classroom activities; hence, virtual instruction would also improve their oral and communication skills. Researchers suggested that virtual classrooms be employed in language learning courses across the educational levels in Saudi Arabia, including general education. Researching the impact of virtual classrooms in general education settings is much needed (AlQahtani, 2019; Alshahrani, 2013; Alshumaimeri & Alhumud, 2021; Hamouda, 2020).

3. Conclusion and Recommendations

Integrating technology in education was an important research topic for several decades before this study. The advantages of using technology in teaching and learning are notable. This study reviewed examples of research that investigated the potential of CALL in enhancing EFL in Saudi schools. The studies showed that different technology applications had positive effects on enhancing language learning skills. However, one could not make

a generalization from such a small number of studies on each class of application. More in-depth studies are required to draw generalizations on the effects of technology use on language learning development in the Saudi environment. Most of the studies were conducted among English-major university students, and the researchers also were experts in their field. Moreover, university settings and environments are different from those at public schools, and universities are much better equipped with technological resources. Therefore, more research is needed to investigate the potential impact of CALL in general education with teachers in school settings.

Furthermore, creating a suitable environment for technology has been challenging for teachers, students, and administrative authorities. The teachers' attitudes towards technology usage showed that teachers view technology in teaching positively, and they also recognized several obstacles to practical use. External factors were the significant barriers demonstrated in this review, and the top three obstacles were teacher training, inadequate infrastructure, and the lack of technology resources.

In conclusion, educational authorities should address the recognized external barriers and take teachers' suggestions into account to improve the use of technology in teaching. This is particularly important in Saudi Arabia since a target of the Saudi 2030 vision is the development of education through technology. Improving technology's use in teaching will further increase the positive outlook of the teachers. In addition, decision-makers and educational authorities should have clear plans and procedures to enable teachers and students to achieve technology implementation. Technology training courses for facilitating technology integration are fundamental; training will enhance the teachers' confidence and proficiency levels and raise awareness of the benefits of technology and the skills needed for its integration. Improving teachers' technology skills as 21st-century skills requirements will positively affect future technology use in the classroom.

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