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| RESEARCH ARTICLE

Investigating the Changing Role of Technology for EFL Teaching in Saudi Arabia Amidst Pandemic

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| ABSTRACT

The COVID pandemic has resulted in overwhelming consequences in all fields of education. This global crisis posed challenges to teachers as well as all educational policy makers to prove their adaptability and resilience to the effects of technology on teaching and learning. This study aimed to establish that digital technologies, by making use of storytelling techniques, developed learners' autonomy, creativity and thus led to learning effectiveness. The study also aimed to identify the extent to which technology made adverse effects on learners during the pandemic in an EFL environment in the Saudi Arabian context, and then endeavor to provide evidence of technology having made a big impact on teaching and learning. This qualitative study was carried out through a documentation survey and a revision of state-of-the-art literature comprising blind peer-reviewed empirical studies. Results reveal that, despite a common perception that technology made an adverse effect on teaching and learning, amidst pandemic, technology provided a large amount of learning opportunities in EFL teaching in the Saudi Arabian context. The implications of the study include providing insights about pedagogical adaptations and changing roles of teachers in an online learning environment.

| KEYWORDS

COVID-19; online teaching/learning; Zoom fatigue; technology in class; learner autonomy

| ARTICLE INFORMATION

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1. Introduction

Technology has always assisted in developing teaching methods, particularly learning English and making an impact on students' performance (Huang & Hong, 2016). Several studies have been carried out on technology transacted through the Internet and online education equating education with the fourth industrial revolution (IR 4.0), finding it ideal for student centered learning models (Tekos & Solomonidou, 2009), and translating into many versions like e-learning, online-distance learning, blended learning and hybrid learning (Greenberg, 1998). All these measures were adopted by universities in compliance with the UNESCO directives to offer education through online learning tools (Crawford et al., 2020). All these types of learning have made use of technology in a big spectrum and imparted a planned teaching/learning experience. Technology assisted online learning has benefited the learners in many ways: it is available at a distance, it encourages student for a better interaction and retention of learning, and it offers a personalized individual attention and accessibility to the digital content.

When COVID-19 pandemic interrupted education and learning world over, all educational activities moved towards online learning to ensure continuity of the learning process through remote sources, which was believed by most academicians to be a

strategy suitable to the changing situation (Khanfar, 2020). A major change was that face-to-face classes transformed into synchronous teaching. Technology assisted educational platforms such as Google Hangouts, Skype, Adobe Connect, Microsoft teams, ZOOM, and many more emerged. These online platforms not only ensured the continuity of learning but also instilled online etiquettes and e-learning protocols for teachers and students (Saxena & Saxena, 2020; Pelikan et al., 2021). Since many of the teachers and learners had never been exposed to such a pandemic-induced condition, educational institutions hurriedly introduced training sessions on online teaching strategies and e-learning methods to facilitate teaching and learning and to check any maladaptive learning that might occur due to lack of awareness and training (Saxena & Saxena, 2020, Dhawan, 2020). It was felt that while teachers customized their teaching procedures and processes as per the needs of the learners, the learners got the access to online tools, audios and videos, thus technology providing a unique learning opportunity to both. In other words, technology was providing a more effective and efficient learning environment than the conventional one. It was more collaborative, where students must interact for giving their immediate feedback, or respond to teachers' queries (Saxena & Saxena, 2020).

The Saudi Ministry of Education closed all educational institutions vide the Royal Decree No. (42874), March 2020 to manage the crisis of the pandemic. It was the endeavor of the Saudi government to keep learning in a continuous mode, despite all adverse circumstances. It took several initiatives to implement online and distance learning modes in all educational institutions. The areas in the southern border, for example, which were most affected by the crises, were provided educational alternatives through electronic programs broadcast through TV channels (Mahrous, 2020; Elangovan et al., 2020). This showed that the Saudi government took a leading initiative in exploiting technology and thus finding appropriate solutions to the issues caused by the pandemic. Through e-learning deanships and several educational electronic portals, e-learning was formally adopted in Saudi universities (Ammary,2020). All universities activated their E-Learning and Distance Learning ad IT deanships to ensure continuous development of education, a few of which even introduced new specializations at undergraduate levels using technology. Saudi Electronic University, which had already integrated technology with education, reinforced itself to make its curriculum and teaching compatible with the needs of the labor market to meet the post- pandemic requirements.

Alshorman and Bawaneh (2018) assert that the integration of technology with learning exerts a positive impact on education, paving the way to several elements like creativity, learners' effectiveness and learners' autonomy in the process of learning. The use of technology develops a positive attitude and prepares a good environment for blended learning or hybrid learning. Alokluk (2018), likewise, praises Blackboard (LMS) as a revolutionary e-learning system in higher education. Aljarrah (2011) finds teaching and learning through Blackboard "enjoyable" and interactive. Al-Mutairi and Elsawy (2022), in a more recent study, found out that technology has rightly been exploited in university education to improve teaching efficiency, learners' effectiveness and also a rich source of self-learning material.

Hence, most universities across the globe in general, and Saudi Arabia in particular, had already been exposed to the use of technology in education when the pandemic broke out. Liguori et al., (2020) rightly observe that the transition of teaching from offline learning to online learning was "overnight" when the pandemic broke out. This is further evident in the World Economic Forum (2020) report which stated that there was already high growth and adoption of education technology before COVID-19, with global *edtech* investments reaching US$18.66 billion in 2019 and the overall market for online education projected to reach $350 billion by 2025.

However, the real challenge during the pandemic was for the teaching staff of all disciplines and at all levels to prepare and deliver classes from home, often without proper technical support (Hodges et al. 2020). A few faculty members, who were competent in e-learning mode of education, took no time to acclimatize themselves with the new modes of learning. Such faculty members even motivated students to use different types of online platform e.g., WhatsApp, Zoom, e-mails, in addition to Blackboard (university level) and *madrasati platform* (at school level). In the past researches, little has been explored about the contribution of technology, its compatibility and flexibility as well, in impacting education in situations as adverse as that during a pandemic. The current study aimed to bridge this research gap.

1.1 Integration of technology with Education

Integration of Technology with education has become a strong determinant for successful teaching in recent times (Christensen, 2002). Several recent studies have investigated such integration including Wilson (2021), who studied the impact of integration of teachers' attitudes and beliefs; Bereczkiand Kárpáti (2021), who highlighted technology enhanced creativity and teachers beliefs and practices; Ifinedo, and Kankaanranta (2021), who studied teacher educators' perspectives for such an integration; and in the context of the pandemic, Rahmadi (2021), who had optimism in technology adoption; and Christopoulos and Sprangers, (2021), who studied teachers' and students' perception during the pandemic. One thing common in all these studies is showing how to simplify the acquisition of educational skills through technology. The availability of technology ensures that teaching and learning in classrooms can take place as the individual wants.

Ko and Rossen (2017) have rightly observed that adoption of technology in education is no longer a novelty, as it is already an integral part of teaching and learning. Both teachers and students have developed a positive attitude towards the use of technology (Beri & Sharma, 2019; Islahi & Nasrin, 2019; Mwila, 2018). While technology updates learners' knowledge and skills through MOOC learning mode and platforms like Coursera, Udemy and LinkedIn learning, educational institutions are motivated

to integrate technology through blended and flipped styles of teaching. Technology assists them in not only teaching, but also in testing and online assessment. Most importantly, integration of technology has increased digital literacy among teachers, which positively affected their attitude and beliefs towards technology (Sadaf &Johnson, 2017). Last, but not the least, online learning has now been accepted as a tool that makes teaching–learning process more student-centered, more innovative, and even more flexible (Singh, & Thurman, 2019), thus leading to enhancement of learner autonomy, creativity and learning effectiveness.

1.2 Students' use of technology and English language performance

Online learning technologies has made it convenient to teach the English language beyond the classroom through blended learning, interactive technology and multimedia, especially in non-native speaking countries (Muslem & Abbas, 2017). Technology assists students to acquire competencies required in the job market (Suárez, 2005), improve their prospects of job and career (Téllez & Mosqueda, 2015), and acquire general proficiency (McCoy, 2010). The adoption of information and communication technologies (ICT) has further provided a big support to language education and facilitated both teachers and learners in enhancing their performance (Huang et al., 2019).

Technology assisted language learning software such as Hot potatoes, and other platforms like Wikis, blogs, chatrooms and podcasting can stimulate students' thinking and help them concretize their ideas and externalize their thoughts in multimedia. Tanggaard (2020) observes that the use of technology solves linguistic challenges "co-creatively" addressing students' creativity despite culturally diverse L2 environment. This is also evident in a few studies such as Lee (2009), which describes how university students in America and Spain used collaborative blogging and collaborative podcasting to improve their knowledge of the English language, much of which contained offering and receiving feedback for language correctness. Ntelioglou et al. (2014) report how creative digital tools, such as iMovie and iPhoto, are used by L2 learners in a multi-lingual environment. With the help of technology tools, the students thus learnt new dynamics of language learning, through a more participatory approach which enhanced their creativity, self-identity and emotional intelligence. This is consistent with similar studies (Glăveanu2018; Glăveanu et al. 2016).), which believed that computer technology and artificial intelligence improve functional thinking skills such as logical thinking and analytical decision making and promote creativity (Sastre et al, 2022). In a more recent study, Tyrou (2021), recommends the use of Web 2.0 assisted Wikis to learn a foreign language. Other studies like Mellati and Khademi (2015) have suggested Online Mobile English Language Learning Course through WhatsApp; Yang and Yeh (2021) have proposed the use of YouTube to teach and learn the English language, along with its socio-cultural component; Olivier (2019) recommends videos and animations to learn a language; Anderson et al. (2018); Mercer et al. (2019); Andayani (2019; Tyrou (2021); Yandell (2020) have based their arguments of language learning on digital storytelling and interactive technologies using instructional design platforms. Last, but not the least, Imtiaz et al. (2021) find internet as a virtual story telling which makes authentic language material globally available to all language learners All these studies hint at integration of technology with language learning using an inclusive approach. The inclusive approach refers to a technology that helps someone to adapt to his or her environment. In the context of language learning, being inclusive is to ensure learners' adaptation and accessibility to technology while learning.

1.3 English Language Teaching (ELT) and technology adoption in Saudi Arabia during Covid-19

Al-Samiri (2021), in a recent study on English as a foreign language (EFL) teaching and learning at the tertiary level in Saudi Arabia finds that students faced both positive and negative consequences as they adopted technology during the pandemic. The biggest challenge faced by most Saudi students was the use of online platforms like Telegram, Zoom, Teams. WebEx, and Blackboard due to the lack of readiness and poor internet bandwidth (Khafaga, 2021). Oraif and Elyas (2021), however, praise the use of *Madrasati*, a national Digital Teaching Platform, which caters to the online learning needs of over six million students in Saudi public schools. Interestingly, a study by ur Rahman (2020) on English language instructors, reveals that a majority of students are less motivated to attend online classes, which is not due to the technical concerns, but due to being socially isolated, disconnected from their peers, and distractions at home from siblings and parents while attending online classes.

Bin Dahmash (2020) conducted a study of 12 EFL university students at King Saud University and found out that the biggest obstacle in technology adoption were incompatible devices and gadgets and weak internet speed, which might be due to excessive internet traffic. In a Cambridge Online Saudi Conference, Wright (2021) revealed interesting statistics showing how prior to pandemic, only 10% of ELT teachers used online platforms, which increased to 55% of ELT teachers spending 100% of their teaching time online, since they spent time online to prepare the content as well. A large majority (85.7%) claimed that they spent more time to prepare for online lectures than face-to-face classes. Wiederhold (2020) reported how users felt exhausted as a result of long hours before the screen time and called it "Zoom Fatigue," which is consistent with Shaibani (2020), who feared such long hours spent online specially on mobile phones would result in distraction from serious academic work and result in social media addiction. Although Alfadda and Mahdi (2021) have asserted a positive perceived usefulness and a significant correlation between Saudi EFL university students' use of Zoom as well as other platforms, despite the fear of social media addiction, they also pointed out the "security vulnerabilities" as impersonation cases were reported during Zoom and Webex sessions. The universities had to

warn against using Zoom and other web conferencing applications and suggested using instead Blackboard LMS, a much secure alternative and firewall protected tool, and monitored by the concerned IT deanships in every university.

English is a foreign language in Saudi Arabia, which means that it is not commonly used in daily communication in business and offices, and its learning is therefore confined only to classroom teaching. Keeping this factor in mind, it is necessary to provide a conducive environment for learners to practice English which takes into account attitudinal, social, cultural and economic factors, which are proven positive correlational factors to enhance learners' performance in English as a foreign language (Alrabai, 2018; Sun and Wang, 2020). A good example could be cited from a recent study (Fatani,2020), which found how students at King Abdulaziz University used Video conferencing facilities in a technologically dynamic environment, equally intellectually challenging, and where instructors motivated students to participate followed by a suitable reward system.

The aforementioned studies offer an integrative literature review which synthesizes the issues of integration of technology with education, students' use of technology and English Language performance, and English Language Teaching (ELT) in Saudi Arabia during COVID-19. These studies reveal that both teachers and students had felt the global impact of the pandemic on language teaching. This might indicate that the pandemic provided critical insights into the pedagogical or techno-pedagogical aspects of learning. This study therefore raised the issue of technology adoption and technology acceptance in education in general and English language teaching, in particular, which became the major component of the theoretical framework designed for this study.

2. Theoretical Framework and Problem Statement

The current study utilized a theoretical framework which was built upon the premise that the adoption of technology during the COVID-19 period would be the most reliable choice to resolve the pandemic issues (Köprülü, 2021). The technology adoption requires two things: one, teacher should be equipped with the necessary skills and the capacity to understand how their students learn; second, the teacher should be capable of making informed decisions about which technology can ensure learning effectiveness in the classroom. This premise was studied in the light of Technology Acceptance Model (TAM), postulated by Davis (1989) and later evolved by (Davis et al. 1989; 1992; Venkatesh & Davis 2000) making it one of the most robust models in understanding the technology adoption. The TAM was built upon two factors: perceived ease of use and perceived usefulness. It means that in an e-learning environment, a teacher or a learner, who perceives learning management systems (LMSs) such as Blackboard or applications like Zoom, Webex, etc. as too difficult to use and willfully rejects it, is unlikely to adopt technology, while a teacher or a learner, who perceives these LMSs and applications as a source of mental stimulation, motivation and a convenient platform to teach or learn, is likely to adopt technology.

While TAM has not been experimented so far for novice online learners nor to evaluate the success of LMSs (Arbaugh, 2000; Arbaugh & Duray, 2002), it has facilitated a number of studies which have predicted the behavioral intention behind the use of technology (Marchewka & Kostiwa 2007; Venkatesh et al. 2016); or have explained how to make use of this model as an educational delivery medium to teach selective courses (Arbaugh, 2000; Arbaugh & Duray, 2002), and how to improve learning effectiveness by increasing learner autonomy and creativity (Davis & Wong,2007). However, there is a prerequisite prior to the adoption of technology. It is important to make informed choices about technology, to know whether it promises higher quality of learning, easier access to education, less cost, and learning effectiveness (Gilbert & Gale, 2007).

Prior to the outbreak of the pandemic, there was not much doubt about the success of technology as it was already being implemented in Information Communication Technology (ICT) platforms and to teach courses like Computer Assisted Language Learning (CALL). Emphasis was given only to functional understanding and technical skills. Being a techno-savvy required the knowledge of only such determinants which ensured the successful blending of e-learning (technology) with conventional learning (Klasnic et al. 2008). However, with the outbreak of the COVID-19, E-learning transformed from being complementary to compulsive, a necessity. Questions were raised about its impact and applicability, reliability, response time, compatibility of software applications with the users' operating system (Almaiah et al. 2020), and availability of uninterrupted Internet services and connectivity in remote areas, which were the determinants of learning effectiveness. In the very first months of the pandemic, students had started complaining about poor streaming of the online content (Siriwardhana et al. 2020; Wu et al. 2020; Ye 2020), incompatibility of applications such as Zoom, WebEx, and Microsoft Teams (Dwivedi et al. 2020), and above all, the cybersecurity issues and how to prevent hacking and hosting of the malware (Dwivedi et al. 2020), which obstructed the smooth functioning of e-learning. Hence, being techno-savvy was not enough for a teacher; there were other determinants like infrastructure, financial resources, socio- economic, cybersecurity and community needs that were the prerequisites of the successful adoption of technology in the pandemic times (Kaden 2020).

The study aimed to examine this flexibility and resilience of technology in changing times, particularly to find out how digital technologies developed learners' autonomy, creativity and learning effectiveness. The objective was to examine whether technology, during the COVID-19 period, had ideally contributed to development of learners' autonomy, creativity and thus led to learning effectiveness. It is a common perception that technology affects teaching and learning adversely, particularly in a situation

of pandemic, since most teachers and students are not techno savvy, nor can they cope up with the stress, fatigue and monotony resulting out of the e-learning methods.

In order to understand whether technology made any adverse effects on teachers and learners during the pandemic in an EFL environment in the Saudi Arabian context, the study attempted to find answers to questions whether any pedagogical adaptations were made to manage the challenges of the online environment; whether teachers changed their roles in an online learning environment during the pandemic; and how technology was used as a pedagogical tool to cope us with the challenges of online education during the pandemic. The study also tried to find out how the technology acceptance model worked to enhance student's creativity in language education during the pandemic.

3. Method

3.1 Research Design

A descriptive and explorative research design with a qualitative approach based on a systematic integrative document survey was chosen for this study, to interpret the research phenomena laid down in the studies (Denzin & Lincoln, 2005). The current study needed to review, synthesize and interpret the previous studies, so the integrative document survey ideally suited this study. Technology Acceptance Model (TAM), originally postulated by Davis (1989), and later expanded by others (Venkatesh & Davis 2000; Venkatesh 2000; Venkatesh et al. 2003; Venkatesh & Bala 2008), was the underlying theoretical framework that helped understand the role of technology and the impact that it made in the pandemic times.

3.2 Data Collection

An integrative document survey also involves a literature review to help unearth new information by reviewing, synthesizing, and evaluating a specific topic (Torraco, 2005). Bowen (2009) considers document survey an extensive research method that reviews and evaluates documents to interpret and understand the embedded data empirically. Russell (2005) regards that integrative literature review offers an opportunity to researchers to synthesize the existing research knowledge and identify gaps in the current research. Creswell and Clark (2004) opine that a descriptive approach in qualitative research helps to concretize conclusions.

3.3 Data Analysis

The data collected through state-of-the-art literature comprising mainly blind peer-reviewed empirical studies were analyzed through content analysis of each article within the context of the current research. The selection criteria of these studies included the use of technology as a pedagogical tool, the role technology played in imparting education, and the impact that technology made on learners and teachers. It was also kept in mind to select studies that examined the extent to which technology made an impact on teachers and learners during the pandemic in an EFL environment in the Saudi Arabian context. The content analyses focused on the more complex issues such as pedagogical adaptations and changing roles of teachers which were directly customized due to online learning environment during the pandemic.

3.4 Rigor and Trustworthiness

The data collected for this study underwent a review of the previous studies and it was found that most of the previous studies had also adopted a qualitative analysis method. Additionally, it was felt that previous studies discussed the role of technology in imparting language education with the same rigor and robustness as Davis (1989), using both synchronous and asynchronous learning measures, as was done in this study.

4. Results and Discussion

The ELT scenario in Saudi Arabia underwent a sea change during the pandemic. While universities and other educational institutions maximized resource utilization to accommodate a wider learner base, the students prepared themselves gradually to bear the pressure and develop the required competence and skills. The integrative document survey gave us the opportunity to analyze how technology acceptance model can work to enhance student's creativity in language education. The survey also gave the opportunity to conceptualize the relationship between technology and ELT in the studies published during the pandemic. Table 1 presents a purview of a few of these studies, particularly those which highlighted the use of technology as a pedagogical tool, and summarizes what role technology played in imparting education, the context in which technology was used, and the impact that it made.

Table 1 Summary of documentation research on role of technology

Author/ Study	Technology role	Technology context	Impact of technology
Anderson et al., 2018	Asynchronous; Accepted	Multilingual Digital Storytelling	Integrated and inclusive approach to languages in the framework of multilingualism
Andayani, 2019	Asynchronous; Accepted	Digital Storytelling	Integration of technology, new pedagogical theories, motivation enhancement, anxiety control, and enhanced creativity
Chubko et al., 2020	Asynchronous; Accepted	Digital Storytelling (DST)	Familiarity with the scientific content, building collaborative and creative environments to learn L2
Fatani(2020),	Asynchronous; Accepted	Video conferencing	Building a technologically dynamic environment through Video conferencing, intellectual growth, motivation and reward.
Imtiaz et al., 2021)	Synchronous and Asynchronous; Accepted	Virtual story telling	Constructing authentic language material and making it globally available to all language learners
Olivier, 2019	Asynchronous; Accepted	Short videos with content related to language learning	Students learn to create short videos (content) through interaction and collaboration with new technologies to learn the English language
Schmoelz, 2018	Asynchronous; Accepted	Digital Storytelling	Building creativity and greater emotional involvement of students, higher commitment and better grades
Sun et al., 2022).	Synchronous and Asynchronous; Accepted	Process learning	Technology enhanced learning processes, aimed at building creativity, and generation of new ideas.
Tanggaard, 2020	Synchronous and Asynchronous; Accepted	Stakeholders support	Technology resolves linguistic challenges through co-creativity, when diverse groups and stakeholders are involved in the learning process
Tyrou, 2021	Asynchronous; Accepted	Wiki-mediated L2 collaborative writing	Technology assisted Wikis nurture collaborative writing, revision of texts and awareness of foreign languages
Sun and Wang, 2020).	Asynchronous; Accepted	Learning environment	Technology provides conducive environment to practice English, free from attitudinal, social, cultural and economic inhibitions
Yang and Yeh, 2021	Asynchronous; Accepted	Short videos	Technology assisted promotional videos to learn English as a foreign language and introduce local culture globally.

Most of the studies shown in Table 1 are qualitative analyses of the role of technology in imparting language education, using both synchronous and asynchronous learning measures. Synchronous learning, as the name suggests, requires both teachers and students to be present at the same time (sync) and interact in "real-time". Asynchronous learning, on the other hand, allows students to access learning material multiple times, and interact with teachers and peers at their own pace and convenience. Additionally, synchronous learning is a temporal arrangement between instructors and students, with fixed time slots and stretched over weeks, but asynchronous leaning is independent of fixed time and offers flexibility to both the instructor and the students.

During the pandemic and as narrated by most studies in our documentation research, asynchronous learning was much preferred and was also suitable due to frequent technical outrages and issues of incompatible technology. This flexibility, however, allowed the instructors to teach at any time and through any learning application, and students to choose the device most suitable to the e-learning environments, which was a mobile phone in maximum cases.

Anderson et al. (2018) report how digital storytelling proved a very popular methodology, with the use of collaborative and dialogic learning. The study cites examples of an integrated and inclusive approach to teach the English language. The higher the inclusive

storytelling that engages learners, the greater is their creativity and dialogic thinking. Likewise, Andayani (2019), too, finds digital storytelling as a technological tool to promote collaborative learning skills when learning English as a second language. The study exemplifies how the integration of technology and adoption of innovative pedagogical models during the pandemic motivate the learners to develop autonomy and get rid of anxiety. The study also produces evidence how the integration of technology enhances learners' creativity and develops in them an understanding of the technology assisted language products laid down in texts, videos and podcasts. The study by Chubko et al. (2020) also shows how technology assists in reducing the gap between native and non-native English students. The study rightly equates digital story telling as a technology tool which promotes creativity and learners' autonomy.

Olivier's (2019) study finds the use of audio-visual material as a big incentive and a motivating factor for students to interact and participate collaboratively using new technologies in learning the English language. The instructor led teaching and learning process exploits technology as a tool to enhance students' creativity, breaking away from conventional face to face language teaching and learning. Schmoelz (2018), too, recommends the use of technology enhanced texts to encourage students to participate with a greater commitment, learning effectiveness and resolution. Sun et al., (2022) emphasize upon devising new strategies to use technology in the learning process. The study claims that technology can enhance creative processes in individuals, help emerging new ideas, and identify a relationship between a collaborative approach and language learning.

Tanggaard (2020) claims that technology can resolve linguistic challenges and providing socio-cultural factors that can offer a viable support. In other words, technology adoption requires involvement of all diverse social groups and stakeholders to develop co-creativity. Tyrou's (2021) study looks forward to creating a Wiki environment, supported by activities that are technology driven, and followed by writing feedback collaboratively. Thus, collaborative writing skills could be developed by using Wiki tools in L2 teaching. The study also examined students' perceptions of web 2.0 technologies for English language learning. Last, but not the least, Yang and Yeh (2021) believe YouTube could be a good application for teaching and learning the English language, due to its socio-cultural impact. This process requires making videos and posting them on YouTube, followed by critical and constructive feedback on their contents, and reflecting with the whole class on the socio-cultural context that they transmitted.

These studies have aided to find the answers to the research questions of the study, first, the Technology Acceptance Model (TAM) provided an ideal technology acceptance scenario, making both teachers and learners comfortable as they find online tools easy to use, flexible and interactive, except when a teacher or learner perceives technology too difficult to use and adopt. Through pedagogical adaptations and change of roles, both teachers and learners could easily cope with the challenges of online education. Secondly, the technology factor also offered more mental stimulation and motivation to both teachers and learners, because they find online tools proving effective in teaching and learning which also enable them to structure their teaching and learning. This factor was also very helpful in enhancing students' creativity in language education during the pandemic.

Conclusion

This study aimed to examine whether technology adoption provided a suitable platform and opportunities for ELT teaching. It is a common assumption that e-learning or the use of technology is suitable only for theoretical courses, and not for the courses that require practice and interaction. The COVID-19 pandemic, however, proved these notions incorrect, as many educational institutions successfully offered language learning programs online. Both instructors and learners tried hard to improve their preparedness level. Through collaborating and enhancement of co-creativity, and with the support of technology, the digital deficit was bridged. The technology adoption, which was a forced necessity, soon made a positive impact on teachers' and students' perception and attitude. Moreover, the integrative document review and literature survey revealed that adoption and integration of technology with education also enhanced learning outcomes.

It can therefore, be concluded that when technology becomes an integral part of learning, it facilitates instructors in choosing the right pedagogical tools, enhances students' learning experience, and in turn makes the whole learning process enjoyable. The pandemic proved that it was not a time of freeze, fright, or flight but of transition, a time to bring up a change in teaching and learning methods. In the real sense, teachers faced a paradigm shift in their role of information-providers to facilitators of learning resources. Instead of delivering teaching content with a teacher centered approach in conventional classroom teaching, the teaching inputs were now through the online platforms. The teachers, while integrating with technology, devised new pedagogical tools which helped them to switch to a more student-centered teaching and ensure greater learning effectiveness. Hence, while the teachers acquire new teaching skills as facilitators, students become more independent learners, self-motivated and creative, finding more opportunities to show their autonomy.

Recommendations

Based on these findings, there are a few recommendations. A big digital deficit or technophobia has been reported in most studies. It is therefore recommended that instructors should undergo relevant professional training in the latest technology. Similar technical training and online exposure should be provided to students to enable them to acquire knowledge and skills with more confidence and autonomy. It is impractical to think of transition to online teaching without creating a conducive climate and environment for both teachers and students. Hence, it is important for educational institutions to provide uninterrupted internet connectivity with high-speed and low-cost, Internet guides, IT support services and assessment rubrics, all which would ensure a unified and consistent switchover to online teaching.

Limitations

The study faced a few limitations as well, which need to be addressed in future research studies. First, this study was mainly based on document survey and studies that made qualitative assessment of the technology adoption. Though this study benefited itself greatly in the form of interesting patterns and interpretations from the data collected, it is essential to expand this search of technology adoption on studies comprising quantitative data and empirical research. Second, the current study focused only on ways and means to improve creativity, learner autonomy and learning effectiveness, but did not make any efforts to measure these variables quantitatively. Hence, it is difficult to predict their generalizability and wider application. Future studies should statistically measure their outreach and impact on the students. The TAM may also be linked with attitudinal and perception measuring scales to achieve quantitative results.

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