




Vol. 14, No. 3
pp. 265-287
July &
August 2023

Received: 28 July 2022
Received in revised form: 1 December 2022
Accepted: 17 December 2022

Toward the Implications of Technology-Based Education and EFL Learners' Anxiety for Instructions

Ruohan Chen¹ , Boon Sim Ng^{2*} , & Shamala Paramasivam³ 

Abstract

Impressive speculation has been made to carry technology to schools and these ventures have for sure brought about a large number of “examples of overcoming adversity”. Nonetheless, there is one critical gap in the instructive purposes of technology that should be addressed. Research shows that although most teachers and students tend to use these tools in teaching language skills, they refuse to do so for fear of using technology tools in the classroom; therefore, to shed light on different aspects of this critical point, the present study reviewed the possible relationship between technology use and students' fear and anxiety in the literature. The findings of this study showed that teachers and students who have a high level of computer knowledge are less afraid of technology. The findings also showed that another factor of the language learners' reluctance of using technology is their teachers' beliefs about the effectiveness of these tools. The results of the present study provide suggestions for training language teachers to educational planners about a more efficient process of language teaching due to the new needs in the use of technology in English language teaching. A significant implication, thusly, is that the training and preparation of teachers and directors ought to turn into a need in creating technology-related proficient turn of events.

Keywords: educational technology, learners' anxiety, technology-based education, technology integration, technophobia

¹ Dept of English, Faculty of Modern Languages and Communication, Universiti Putra Malaysia, 43400, UPM, Serdang, Selangor, Malaysia; *E-mail:* gs62197@student.upm.edu.my;

ORCID ID: <https://orcid.org/00000-0002-4972-5585>

² Corresponding Author: Dept of Foreign Language, Faculty of Modern Languages and Communication, Universiti Putra Malaysia, 43400, UPM, Serdang, Selangor, Malaysia;

E-mail: ngboon@upm.edu.my; ORCID ID: <https://orcid.org/000-0002-1940-4801>

³ Dept of English, Faculty of Modern Languages and Communication, Universiti Putra Malaysia, 43400, UPM, Serdang, Selangor, Malaysia; *E-mail:* shamala@upm.edu.my;

ORCID ID: <https://orcid.org/0000-0002-7213-9445>

1. Introduction

The rapid growth of information and the evolution of new technologies in recent years have led to changes in various areas of societies, including their educational system, and with the advancement of technology and educational technology, tools, and methods of teaching and learning languages have also changed (Al-Obaydi, Shakki, et al., 2023; Barak et al., 2016; Sung et al., 2017). Resulting of applying different technologies such as productive, political, and civic technology, quick expansions have caused dramatic changes in societies' economic and industrial structures (Celce-Murcia et al., 2014; Gao et al., 2022; Wang, 2023; Wang, Pan, et al., 2023; Xie et al., 2021). These alterations have a considerable effect on the process of life and occupation of people throughout the world, and they have seriously confronted conventional methods of language teaching, learning, and education management (Alalwan et al., 2020; Chang, 2010).

Technology tools have become an integral part of teaching, and the range of teaching and learning tools is no longer limited to pens and boards (Akpan & Beard, 2013; Chen et al., 2020). The use of technology tools in education has become very important and necessary in today's world (Alraimi et al., 2015; Correa, 2015; Teo et al., 2022). The advancement of communication technology and interaction in education programs has been an effective and sustainable step that has been able to create a qualitative change in goals, programs, and methods, and as a result, it leads to the effectiveness of education (Chen, 2017; Green et al., 2020; Kessler et al., 2012). It is generally expected that by employing technologies in educational settings developing unsolvable problems such as applying education, focusing on learners' abilities and needs, institutionalizing the student-centered, changing the role of the teacher as a guide, and finally authenticating lifelong learning can be achieved (Galla, 2016; Gao et al., 2012; Pang et al., 2015; Teo et al., 2022). In other words, information and communication technology can be used today as a powerful tool to improve the quality and efficiency of education (Abeysekera & Dawson, 2015; Hockly, 2015; Viberg & Grönlund, 2017).

The technology utilized in schools overall has expanded in excess of a hundredfold over the most recent twenty years. A lot of this speculation has been made in light of the suspicion that technology-interceded learning conditions give open doors to understudies to look for and dissect information, tackle issues, impart, and team up, consequently outfitting them with a bunch of skills to be serious in the commercial center. In any case, the historical backdrop of the utilization of

technology in schools has recommended that teachers would forsake technology that does not fit the social association of tutoring (Wang, Pan, et al., 2023). There have been a large number of "examples of overcoming adversity" to show that when utilized appropriately, technology prompts upgraded educating and learning results.

Educational technology and language learning are one of the achievements of information technology in the field of humanities, which has its own theoretical framework and principles (Huang et al., 2020). This technology has a multidimensional and interdisciplinary nature that has been created because of research in the theoretical and practical principles and intermediate fields of applied linguistics, computational linguistics, and the knowledge of the optimal use of technology (Hsu, 2017). The rapid development of devices has made it possible for teachers to present their content to students in a variety of ways. Technology and computer tools are expected to be widely used as a means of completing instruction in the classroom. The use of computers and technological tools in English language teaching is evolving and increasing, and this is also significant in the language teaching field of study (Imlawi et al., 2015).

Numerous specialists have shown that technology has been changing homeroom practices and educational experiences (Pérez-Escoda et al., 2019; Pratolo & Solikhati, 2020; Tamborg et al., 2018; Zimmer et al., 2021). These changes remember a shift in the job of the educator from being the sole wellspring of information to a more complicated job of arranging example targets with understudies, giving a fluctuating level of help for various understudies, observing understudies' advancement, and empowering reflection on study hall exercises (Shanshan & Wenfei, 2022). By using computers and other technology-related tools, the learning process can be targeted and language learners' progress can be achieved. In fact, teachers can improve the knowledge and skills of their learners and make the learning process more effective and engaging, which requires the presence of capable teachers and instructors in the subjects taught and the use of educational technology tools in the classroom (Alavi et al., 2022; Jensen & Konradsen, 2018). This breadth of technology tools and the benefits of using computers in education requires that teachers and learners be proficient in computer skills (Kashada et al., 2018). However, as technology has grown rapidly, teachers have generally been slow to adapt it to their teaching and use it efficiently, preventing them from doing well in the successful use of technology tools (Barrett

et al., 2023). Students have likewise taken on a more dynamic job in their own way of learning by utilizing technology to look for and examine information, and distribute and share their discoveries. They are currently more drawn in and can improve associations between their past growth opportunities and the new ideas or standards being educated (Palacios-Hidalgo & Huertas-Abril, 2022).

The usefulness of using technology tools in language teaching does not assure that language learners will be able to use technology tools in the classroom (Alraimi et al., 2015). Students are skeptical about the use of technological tools due to some factors. One of the most common factors is anxiety (Celce-Murcia et al., 2014; Hafner & Ho, 2020; Wang, 2023). This concern of students is mainly formed by encountering technological tools called technophobia or fear of computers or computer anxiety, which means that a person feels fear and panic when using a computer or thinking about using a computer in the future (Hartwick, 2018). Fear of technology is an influential factor that prevents its good and successful application in any field (Huang et al., 2020; Wang, 2023; Wang, Pan, et al., 2023).

Efforts to improve education through information and communication technology require a clear understanding of the role of language learners in education (Kim & Belcher, 2020). In any case, these "examples of overcoming adversity" are not boundless peculiarities in schools. In contrast to equipment, network, and programming, the practices and their sociocultural settings that have prompted these positive educating and learning results struggle with being maintained and spread across study halls and schools to prompt the guaranteed change in schools (Dashtestani & Hojatpanah, 2022; Eryansyah et al., 2019). Despite the fact that advances have not changed schools in that frame of mind as could have been anticipated, they have prompted irreversible changes in the way we work, live, convey, and play. This paper first expects to analyze the gap between technology patterns and the utilization of technology in schools, and afterward investigate options of how this gap might be addressed to change the educating and growing experiences in schools (Kaeophanuek et al., 2018). The accentuation of the conversation isn't on the utilization of technology in essence, yet rather on how technology might act as an establishment and middle person for the change of practices in schools. Such change is turning out to be particularly earnest given that the exercises our students participate in their day-to-day existences have become unmistakably disassociated from the educating and learning exercises in their schools. At the point when this occurs, students might track down homeroom

exercises aimlessly and become withdrawn in school (Mudra, 2020).

Many factors are effective in the integration of educational technologies by language learners in language teaching processes and one of these factors is language learners' beliefs (Pun & Curle, 2022). A review of the research background in teacher education shows that teachers' teaching methods and their beliefs about the integration of educational technologies have already been studied separately in different studies. However, studies have rarely been conducted to investigate language learners' beliefs about technology integration in language classrooms. Undoubtedly, the lack of research in this area is a logical reason to examine language learners' beliefs about technology. Therefore, it is required to pay special attention to this phenomenon with the need to increase the use of technology and computer tools to target language teaching and learning. In the current study, the researchers intend to review the use of technology and the anxiety of English language students.

2. Review of the Literature

2.1. Theoretical Framework

2.1.1. *The Integration of Information and Communication Technology in Society and Education*

The spread of technology has prompted another climate that requires the need to place at the top of the priority list the nature and wellsprings of technology uneasiness. Late examinations have handled this issue in a restricted manner, which doesn't mirror the boundless thoughtfulness regarding involving information and communication technology in different settings. Thus, the earlier investigations zeroed in on the wellsprings of uneasiness and characterize it on various levels. They have proposed different components of information and communication technology relying upon the hypothetical model (Pun & Curle, 2022). Moreover, the oddity of technology uneasiness drives scientists to handle its idea by zeroing in on fostering a normalized device to gauge this peculiarity by characterizing the build of technology nervousness. In previous years, engineers have begun creating information and communication technology instruments that can improve the mental parts of regular classes. As of late, scientists are quicker to embrace information and communication technology that can help students during the time in class by creating a sort of worldwide homeroom that can be shared by

understudies from different spots to share their perspectives utilizing imaginative educating styles. What's more, they endeavor to address the "at home" instructing issue that shows up during oneself review strategy. Virtual worldwide conferencing is another model that shows how information and communication technology applications might be helpful for educators and the future advancement of shrewd substance and self-improvement. To have the option to research students' mentalities and goals to utilize technology, the three highlights are incorporated and coordinated with information and communication technology (Abe, 2021). Drenching is an emotional mental reaction, not a dispassionately quantifiable property of a framework. Another complex development, collaboration, portrays parts of human-PC connection as well as PC-interceded communication between people. By the goodness of the substance of virtual climate applications, the creative mind is invigorated by the limit of the client's brain to see non-existent items. It is the consequence of the blend of earlier information and as of late familiar information. The examination model filled in as a rule for forming surveys and deliberately performing factual examinations to test the speculations. The three fundamental elements were inspected to see whether they impact the expectation to utilize technology (Bustamante, 2020).

Today, information and communication technology, as a powerful and influential phenomenon in society, has a special and important place in education. With the advent of new communication technologies and the penetration of computers in various areas of human social life, one of the most important innovations in language learning, computer-assisted language learning (CALL), emerged. Williams et al. (2014) define CALL as "processes in which language learners improve their language skills through computer and technology".

There are many benefits to using computers and technology tools in teaching, learning, and practicing a foreign/second language (Barak et al., 2016). Bozkurt and Keefer (2018) believed that the use of technology tools plays an important role in involving language learners in language learning. Chang (2016) described ICT tools as an important and necessary tool in any educational system, in which case it is possible to upgrade educational materials and provide high-quality teaching materials, as well as provide independence for students to learn and learn better. The use of computers and technological tools in language teaching has created new stages in modern language teaching and learning. Garrido-Iñigo and Rodríguez-Moreno (2015) argued that using technology tools and knowing how to

use them to support and improve student learning is essential for professional teachers in today's world. This knowledge and application of technological tools in teaching by teachers facilitate the process of teaching and learning in this modern and information-rich age. In fact, the main purpose of using technology tools in teaching is to facilitate learning and faster comprehension (Imlawi et al., 2015). This is reflected in the results of numerous studies, including Gao et al. (2012) and Kashada et al. (2018) who believed that the use of technology tools in education provides opportunities for language learners to engage in real-world learning and, in general, to learn a foreign language.

The traditional classroom environment for teaching and learning a language is very dry and unnatural (Chen, 2016; Derakhshan & Shakki, 2020a; Kent et al., 2016; Pun & Curle, 2022). In their study, Kent et al. (2016) evaluated the use of computers in teaching and learning English in high schools, they concluded that by using computers in language teaching, students learn to spell words faster, and 95% of teachers in their research agreed that teaching English through computers would be easier. Li et al. (2020) in their research on using computer-assisted learning in EFL classrooms concluded that the use of computers and technology tools in the classroom strengthens and improves language skills in language learners. Lander (2015) also believed that teaching language through technology is considered as a complementary role, as a teaching aid tool for teachers in teaching.

Second-language teachers use new technology tools in teaching because the use of these tools in teaching motivates learners and makes learning interesting and exciting for them, as well as provides them with real and authentic texts (Chen, 2016; Lander, 2015). The Internet can be used to present language in a natural, realistic environment and in live communication with other learners. IT tools can also be used to teach language skills, such as tapes and videos to complement listening skills or to teach culture (Bustamante, 2020). The Internet is a source of up-to-date information on second language teaching. In their research, Li et al. (2020) concluded that the use of teaching materials and computer-aided teaching is useful in learning to read and write in a second language and promotes language learning. According to Özyurt and Özyurt (2015) study about the effect of computer-based learning on the development of pronunciation in English as a foreign language class, the use of computers increases the motivation and interest of language learners and affects their progress in pronunciation (Bozkurt & Keefer, 2018; Edwards et al., 2017; Xie et al., 2021). In addition, in Viberg and Grönlund

(2017) study on the difference between the two types of teaching through textbooks and webcasts and their impact on learning the grammatical rules of English as a foreign language, they stated that the use of Website texts for teaching grammar rules help language learners master grammar rules.

Littlejohn et al. (2016) also investigated the effect of computer-assisted education on the comprehensibility of students' English pronunciation. They have concluded in a study that the use of computers in teaching reading skills promotes language learners in this skill. Also, in the field of language teaching, Makransky et al. (2019) evaluated the effect of computer-based education in comparison with the conventional method on the learning rate of 30 language learners in two control groups who had traditional education and the experimental group who received computer-assisted education. The results of this study showed that there was a significant difference between the mean scores of the two groups and the success rate of the computer-assisted education group. Considering that in second language teaching, conditions should be provided to make language learning easier, faster, and more stable and provide the ground for continuous learning, the use of computers and other technological tools in language teaching is of special importance and learning to work with tools for teachers (Littlejohn et al., 2016; Viberg & Grönlund, 2017). To use a computer in language learning, teachers and learners must have the knowledge and skills to use it and be able to strengthen and improve their ability to use those tools (Li & Tsai, 2017; Makransky et al., 2019; Zhou, 2016).

2.2. Teachers' and Students' Computer Knowledge

As technology and computer tools become more widely available, the increasing use of electronic textures has developed the meaning of the word literacy and created new literacy such as computer knowledge (Al-Obaydi, Pikhart et al., 2023; Chen, 2016; Greene et al., 2014; Mellati & Khademi, 2020; Wang, 2017; Yuditseva, 2023). Therefore, in order to use technology and computer tools in language teaching, it is essential that language teachers and students have a minimum of computer skills and knowledge. Computer or technology literacy is the knowledge and ability to use computers effectively and efficiently and is related to technological tools (Yuditseva, 2023). A person who is able to run a computer and understand the language required to work with a particular system is computer literate (Zhou, 2016).

Alraimi et al. (2015) tried to examine the level of computer knowledge of teachers and to examine the internal and external factors that affect their use of technology tools in the classroom. According to them, computer knowledge is as appropriate as the ability to use or use a computer. Chen (2016) in an article examined the relationship between the level of computer literacy and the effectiveness of the teaching profession. The results showed that there is a significant relationship between the level of computer knowledge and the effectiveness of their jobs. In another study, (Hartwick, 2018) assessed teachers' and learners' computer skills and technology tools. The purpose of this study was to understand the extent to which these teachers are literate in computer science and technology tools, and to what extent they use computers in their teaching. The findings show that teachers and learners are aware that the use of computers and technological tools in the classrooms and their knowledge and literacy are very important in this area. Despite having computer skills and adequate computer knowledge in the application of new technology tools and computers in the classroom, the findings showed that language teachers and learners face problems in using technology in their classrooms (Hsu, 2017). They argued that for some reasons they could not use computers and technology tools successfully in the classroom (Kashada et al., 2018).

Factors such as their negative attitudes towards computers and technology (Bozkurt & Keefer, 2018), lack of access to computers and modern educational software (Chen & Hsu, 2020), low teaching experience (Gregersen et al., 2014), lack of sufficient time (Chen & Hsu, 2020), lack of confidence in their skills in working with computers and technology tools (Viberg & Grönlund, 2017) and fear Technology and computer cause language teachers and instructors (Greene et al., 2014; Zhou, 2016). Despite their familiarity with technology, they refuse to use these tools in education (Derakhshan & Shakki, 2020b; Gregersen et al., 2014; Huang et al., 2020). In fact, they are not prepared to use it in the teaching process or cannot use it in education. One of the most common factors that make teachers uncomfortable when using technology tools in teaching is computer anxiety or fear of technology (Park et al., 2015).

2.3. Fear of Technology and Learners' Anxiety

Fear of technology and computers is an important issue in many societies, because there are many people who have a negative feeling about computers and that

computers have become more and more involved in all aspects of life (Tekinarslan, 2008). Fear of technology actually goes back to negative attitudes about using them (Al-Obaydi, Pikhart, et al., 2023; Garrido-Iñigo & Rodríguez-Moreno, 2015). Many people have a negative emotional response, such as worry and stress, which is associated with failure to use new technological tools (Hsu, 2017). Fear and anxiety are the main factors in resisting the use of computers for educational purposes. Fear of technology in any field is an effective factor that prevents the good and successful use of technological tools (Ayuningtyas et al., 2022; Chen & Hsu, 2020). Sung et al. (2017) define fear of technology or technophobia as follows: Concerns about working with computers or technology tools now or in the future; All-negative attitudes toward working with computers, certain negative emotions, or self-critical inner conversations while working with computers or when thinking about using computers in the future.

In their study on students' fear of technology, Li and Tsai (2017) believed that anxiety and fear of computers is a frustrating factor and prevents the successful use of technology tools among students. They examined the factors that are the source of this fear and anxiety. It can be said that despite the computer anxiety in language students, they are reluctant to use computers and technological tools, and this has a negative effect on their education. As Greene et al. (2014) believed that students who are afraid of technology avoid using computers in the classrooms. As Parsazadeh et al. (2018) stated, students avoid interaction and work with computers for some reason. These individuals appear to have significant levels of computer anxiety and avoid dealing with such situations when the conditions for working with them or providing basic skills training are provided. They are not comfortable using these tools and do not want to use the computer seriously. Fear of working with technological tools and consequently not using computers and technological tools in learning also depends on the personality of individuals (Gregersen et al., 2014).

Makransky et al. (2019) examined the nature of the relationship between fear of technology and the types of personalities and their attitudes toward computers, and concluded that this anxiety and fear are associated with some dimensions of personality traits such as neurotic, extroverted, and introverted. The results indicated a positive relationship between technophobia and neurotic personality and an inverse relationship between technophobia and a free and open personality trait. In another study on the same subject, which examined the role of personality as an individual-level variable in relation to their fear of technology, Revesz (2011) found

the same results. The results of this study suggested that personality dimensions play an important role in technophobia; psychotic personality in particular has a positive relationship with the fear of technology. In addition, Hsu (2017) has examined the use of information and communication technology in learning and its relationship with the level of computer skills and anxiety of English language students. They concluded that there was a significant and negative relationship between the use of technological tools with computer anxiety and the age of participants.

In this regard, the present study reviewed the relationship between computer knowledge and the level of fear of technology or technophobia in language students. The previous studies have shown that various factors of psychological structure and psychological characteristics of learners affect their use of technological tools and their academic performance in technology-based learning environments (Park et al., 2015). However, conflict occurs when a person is faced with a new and challenging learning situation based on their previous experiences and knowledge, and with high learning motivation as a result of interaction with the environment, forms their new knowledge and tries to achieve results directly (Parsazadeh et al., 2018). Accordingly, academic conflict is one of the key psychological factors in the study of learners' educational issues and one of the key factors affecting academic performance in technology-based learning environments. Conflict as a relatively new and multidimensional term has three dimensions: behavioral conflict, cognitive conflict and motivational conflict. Cognitive conflict involves the individual trying to select and apply a variety of cognitive and metacognitive processes and strategies that are useful for learning (Chen et al., 2020). Motivational or emotional conflict can be seen as a positive or negative emotional response to teachers, classmates, and learning activities. Finally, behavioral conflict is a description of a student's effort and persistence in learning activities (Gregersen et al., 2014; Xie et al., 2021).

Besides, academic engagement is a suitable structure for understanding student participation in the online learning environment (Al-Obaydi, Shakki, et al., 2023; Shakki, 2022; Pan et al., 2023). Academic engagement is an adaptive model based on the students' strengths against stress, anxiety, fatigue, and burnout, which is characterized by characteristics such as strength, high energy, persistence and effort, sacrifice, and immersion in a certain educational task and commitment to it (Barrett et al., 2023). On the other hand, interpersonal relationships can facilitate the speed of active learning and engagement and play a crucial role in engagement and

participation. Language learners who feel insignificant or rejected are stressful (Hartwick, 2018).

3. Concluding Remarks

The speed with which the insurgency of technology has occurred is sensational. As expressed previously, educators in numerous nations of the world are working with 'computerized locals' who are growing up with technology as a nonremarkable component of their reality, similar to a prior age underestimated radio or TV. Inside these turns of events, technology brings another arrangement of difficulties and tensions for instructive foundations. Numerous educators, schools, instructive specialists, and scientists are thinking about a scope of inquiries regarding how to utilize technology inside homeroom rehearses: What instructive objectives and realizing targets will be achieved by involving technology in schools? Is there a requirement for a particular course in computerized proficiency? How might technology be incorporated successfully into existing subjects? Large numbers of these inquiries are as yet unanswered, and endeavors to address them have created broad discussions.

Studies have shown that students with more computer skills have less fear and anxiety about using technology in their classrooms. In other words, students who are more afraid of technology have less computer knowledge. Explaining these findings, the researchers stated that the higher the literacy and level of computer knowledge of language students, the less they are afraid of technology and the less they face anxiety when using it in the classroom. The less worried they are, the more confident they will be in their computer skills and the more positive they will feel about using the computer. If they have little computer literacy and knowledge, they will be more afraid of technology and use fewer technology tools in language learning.

However, some studies have contradicted these findings, citing other reasons for teachers and learners' failure to employ educational technology in the classroom (Imlawi et al., 2015). Some of them believe that language teaching should not be negative in dealing with teachers and students, and the main cause of failure should be fear of technology, low level of computer knowledge or unwillingness to use technology tools in teaching, and this is the educational system that should be criticized (Lander, 2015; Makransky et al., 2019; Sung et al., 2017). These studies have tried to show that teachers' fear of technology is a misunderstanding and their

decision to consider using technology and computer tools is not based on resistance to these tools, but on their beliefs that they are useless for language learners. In fact, these teachers are not convinced of the reasons for its usefulness and use (Yudintseva, 2023).

Obviously, successfully coordinating technology into learning frameworks is considerably more confounded than for instance giving PCs and tying down an association with the Web. PCs are just an instrument; no technology can fix a lacking instructive way of thinking or make up for deficient practices. Along these lines, decisions must be made regarding instructive goals. In this regard, the course of technology joining is a powerful one including connecting factors after some time. Additionally, no single arrangement exists to address the huge difficulties of technology joining on the grounds that alternate points of view of incorporating technology can be picked. A few examinations have highlighted the basic significance of public strategies in advancing the capability of technology in growing experiences. In any case, the meaning of a public educational program all alone ensures no informative utilization of technology. An intriguing issue with regard to the setting of this conversation is the harmony between the extraneous and natural powers that drive the incorporated utilization of ICT by educators. Forcing strategy choices is frequently less receptive to instructor viewpoints and frequently ignores working environment imperatives. A way forward is focusing on the obligations of neighborhood schools to foster a school-based technology plan. In a most ideal situation, such an arrangement will animate discourse among school chiefs, educators, and guardians about technology use in the educational plan. Also, captivating educators in the advancement of strategy arranging offers them the chance to think about their specific instructive utilization of technology. It cultivates the emotional importance-making cycle of individual educators with regard to how and why they will answer technology use in class.

As technology keeps on driving changes in the public arena and in training, we fight that such arrangements need to characterize their authoritative vision and activities all the more obviously considering arranged change. Obviously, technology joining isn't yet accomplished in a foundational or precise way in many schools. Not very many schools can be marked as "learning associations" with a common obligation to technology in training. In this regard, the writing about school improvement focuses on the significance of administration in fostering a pledge to change (Wang, Derakhshan, et al., 2023). Their ability to create and lucid, in close

cooperation with different entertainers from the school's local area, a common vision about technology use is viewed as a basic structure block in this cycle. A significant implication, thusly, is that the preparation of chiefs ought to turn into a need in creating technology-related proficient turn of events. The more expert improvement chiefs get and the more drawn in they are in the expert advancement of their educators, the more the technology mix at the school level is noticed. The discoveries recommend that without thoroughly prepared, technology-fit directors, the reconciliation of current technology into school educational plans will stay inadequate. This point of view adds to the comprehensive methodology while investigating the hole between technology patterns and the utilization of technology in schools since educators are not viewed as totally autonomous but share their unique situations.

Finally, based on the research findings, it is suggested that considering that technological tools have become a central part of our daily lives and also considering the importance of computers and related technologies, such as websites, Internet and its effects on teaching and learning methods, computer training workshops should be included in in-service training programs for language teachers to raise the level of computer knowledge and reduce their computer anxiety. Technology literate teachers can reduce language learners' anxiety in using technology-supported activities in their classrooms (Jensen & Konradsen, 2018; Zhou, 2016).

This shows that in order to increase the computer literacy of language teachers, they also need computer-based training courses and skills in using computers and technology tools in teaching, because the fear of technology prevents them from being used by teachers (Fu & Wang, 2022). They should also be made aware of the usefulness of employing educational technology in teaching and be offered many opportunities to use different types of classroom activities. In order to enjoy the many benefits of using computers and technology in the classroom, teachers should be trained in the use of new technologies in teaching so that they can strengthen their knowledge and information in this field and make the best use of it in the classroom. Because, as many researchers believe, technology and technology tools can have dual faces (Abeysekera & Dawson, 2015; Bozkurt & Keefer, 2018; Chen et al., 2020; Chen & Hsu, 2020; Gregersen et al., 2014; Jensen & Konradsen, 2018; Li et al., 2020; Viberg & Grönlund, 2017; Wang & Hemchua, 2022); this means that if they are used by creating a culture and creating the necessary skills in users, they can improve the level of education and can play a valuable role, especially in

language learning. Otherwise, they can be a passive factor or sometimes have negative faces.

References

- Abe, M. (2021). L2 interactional competence in asynchronous multiparty text-based communication: study of online collaborative writing. *Computer Assisted Language Learning*, 34(4), 409–433. <https://doi.org/10.1080/09588221.2019.1614070>
- Abeyssekera, L., & Dawson, P. (2015). Motivation and cognitive load in the flipped classroom: definition, rationale and a call for research. *Higher Education Research & Development*, 34(1), 1–14. <https://doi.org/10.1080/07294360.2014.934336>
- Al-Obaydi, L. H., & Pikhart, M., Shakki, F. (2023). Digital gaming as a panacea for incidental L2 acquisition in an EFL context. *Applied Research on English Language*, 12(1), 73-94. <https://doi: 10.22108/are.2022.135344.2001>
- Al-Obaydi, L. H., Shakki, F., Tawafak, R. M., Pikhart, M., & Ugla, R. L. (2023). What I know, what I want to know, what I learned: Activating EFL college students' cognitive, behavioral, and emotional engagement through structured feedback in an online environment [Original Research]. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.1083673>
- Alalwan, N., Cheng, L., Al-Samarraie, H., Yousef, R., Ibrahim Alzahrani, A., & Sarsam, S. M. (2020). Challenges and Prospects of Virtual Reality and Augmented Reality Utilization among Primary School Teachers: A Developing Country Perspective. *Studies in Educational Evaluation*, 66, 100876.
- Alavi, S. M., Dashtestani, R., & Mellati, M. (2022). Crisis and changes in learning behaviours: Technology-enhanced assessment in language learning contexts. *Journal of Further and Higher Education*, 46(4), 461–474. <https://doi.org/10.1080/0309877X.2021.1985977>
- Alraimi, K. M., Zo, H., & Ciganek, A. P. (2015). Understanding the MOOCs continuance: The role of openness and reputation. *Computers & Education*, 80, 28–38. <https://doi.org/10.1016/j.compedu.2014.08.006>
- Ayuningtyas, P., Mauludin, L. A., & Prasetyo, G. (2022). Investigating the Anxiety Factors among English for Specific Purposes Students in a Vocational Education setting. *Language Related Research*, 13(3), 31–54. <https://doi.org/10.52547/>

LRR.13.3.3

- Barak, M., Watted, A., & Haick, H. (2016). Motivation to learn in massive open online courses: Examining aspects of language and social engagement. *Computers & Education*, 94, 49–60. <https://doi.org/10.1016/j.compedu.2015.11.010>
- Barrett, A., Pack, A., Guo, Y., & Wang, N. (2023). Technology acceptance model and multi-user virtual reality learning environments for Chinese language education. *Interactive Learning Environments*, 31(3), 1665–1682. <https://doi.org/10.1080/10494820.2020.1855209>
- Bozkurt, A., & Keefer, J. (2018). Participatory learning culture and community formation in connectivist MOOCs. *Interactive Learning Environments*, 26(6), 776–788. <https://doi.org/10.1080/10494820.2017.1412988>
- Bustamante, C. (2020). TPACK-based professional development on web 2.0 for Spanish teachers: a case study. *Computer Assisted Language Learning*, 33(4), 327–352. <https://doi.org/10.1080/09588221.2018.1564333>
- Celce-Murcia, M., Brinton, D. M., & Snow, A. S. (2014). *Teaching English as a second or foreign language*. Heinle & Heinle, Thomson Learning.
- Chang, C.-K. (2010). Acceptability of an asynchronous learning forum on mobile devices. *Behaviour & Information Technology*, 29(1), 23–33. <https://doi.org/10.1080/01449290701806337>
- Chang, V. (2016). Review and discussion: E-learning for academia and industry. *International Journal of Information Management*, 36(3), 476–485. <https://doi.org/https://doi.org/10.1016/j.ijinfomgt.2015.12.007>
- Chen, I. S. (2017). Work engagement and its antecedents and consequences: A case of lecturers teaching synchronous distance education courses. *Computers in Human Behavior*, 72, 655–663. <https://doi.org/https://doi.org/10.1016/j.chb.2016.10.002>
- Chen, X., Zou, D., Cheng, G., & Xie, H. (2020). Detecting latent topics and trends in educational technologies over four decades using structural topic modeling: A retrospective of all volumes of *Computers & Education*. *Computers & Education*, 151, 103855. <https://doi.org/https://doi.org/10.1016/j.compedu.2020.103855>

- Chen, Y.-L. (2016). The effects of virtual reality learning environment on student cognitive and linguistic development. *The Asia-Pacific Education Researcher*, 25(4), 637–646. <https://doi.org/10.1007/s40299-016-0293-2>
- Chen, Y.-L., & Hsu, C.-C. (2020). Self-regulated mobile game-based English learning in a virtual reality environment. *Computers & Education*, 154, 103910. <https://doi.org/https://doi.org/10.1016/j.compedu.2020.103910>
- Correa, M. (2015). Flipping the foreign language classroom and critical pedagogies: A (New) old trend. *Higher Education for the Future*, 2(2), 114–125. <https://doi.org/10.1177/2347631115584122>
- Dashtestani, R., & Hojatpanah, S. (2022). Digital literacy of EFL students in a junior high school in Iran: voices of teachers, students and Ministry Directors. *Computer Assisted Language Learning*, 35(4), 635–665. <https://doi.org/10.1080/09588221.2020.1744664>
- Derakhshan, A., & Shakki, F. (2020a). [Review of the book *Doing SLA research with implications for the classroom: Reconciling methodological demands and pedagogical applicability*, by R. M. DeKeyser & G. Prieto Botana]. *International Journal of Applied Linguistics*, 30(3), 576–579. <https://doi.org/10.1111/ijal.12290>.
- Derakhshan, A., & Shakki, F. (2020b). [Review of the book *Worldwide English Language Education Today: Ideologies, Policies, and Practices*, by A. Al-Issa & S. A. Mirhosseini]. *System*, 90. <https://doi.org/10.1016/j.system.2020.102224>
- Edwards, S., Henderson, M., Gronn, D., Scott, A., & Mirkhil, M. (2017). Digital disconnect or digital difference? A socio-ecological perspective on young children's technology use in the home and the early childhood centre. *Technology, Pedagogy and Education*, 26(1), 1–17. <https://doi.org/10.1080/1475939X.2016.1152291>
- Eryansyah, E., Erlina, E., Fiftinova, F., & NURWENI, A. (2019). EFL students' needs of digital literacy to meet the demands of 21st century skills. *Indonesian Research Journal in Education/ IRJE*, 442–460. <https://doi.org/10.22437/irje.v3i2.8297>
- Fu, J., & Wang, Y. (2022). Inspecting EFL teachers' academic literacy development in multilingual contexts: A global vision. *Heliyon*, 8(12), 1–6.

<http://doi.org/10.1016/j.heliyon.2022.e12143>.

- Galla, C. K. (2016). Indigenous language revitalization, promotion, and education: function of digital technology. *Computer Assisted Language Learning*, 29(7), 1137–1151. <https://doi.org/10.1080/09588221.2016.1166137>
- Gao, Y., Zeng, G. Wang, Y., Klan, A. & Wang, X. (2022). Exploring educational planning, teacher beliefs, and teacher practices during the pandemic: A study of science and technology-based universities in China. *Frontiers in Psychology*, 13, 903244. <https://doi.org/10.3389/fpsyg.2022.903244>.
- Gao, F., Luo, T., & Zhang, K. (2012). Tweeting for learning: A critical analysis of research on microblogging in education published in 2008–2011. *British Journal of Educational Technology*, 43(5), 783–801. <https://doi.org/10.1111/j.1467-8535.2012.01357.x>
- Garrido-Iñigo, P., & Rodríguez-Moreno, F. (2015). The reality of virtual worlds: pros and cons of their application to foreign language teaching. *Interactive Learning Environments*, 23(4), 453–470. <https://doi.org/10.1080/10494820.2013.788034>
- Green, J. K., Burrow, M. S., & Carvalho, L. (2020). Designing for transition: Supporting teachers and students cope with emergency remote education. *Postdigital Science and Education*, 2(3), 906–922. <https://doi.org/10.1007/s42438-020-00185-6>
- Greene, J. A., Yu, S. B., & Copeland, D. Z. (2014). Measuring critical components of digital literacy and their relationships with learning. *Computers & Education*, 76, 55–69. <https://doi.org/10.1016/j.compedu.2014.03.008>
- Gregersen, T., Macintyre, P. D., & Meza, M. D. (2014). The motion of emotion: Idiodynamic case studies of learners' Foreign Language Anxiety. *The Modern Language Journal*, 98(2), 574–588. <https://doi.org/10.1111/modl.12084>
- Hafner, C. A., & Ho, W. Y. J. (2020). Assessing digital multimodal composing in second language writing: Towards a process-based model. *Journal of Second Language Writing*, 47, 100710. <https://doi.org/10.1016/j.jslw.2020.100710>
- Hartwick, P. (2018). Investigating research approaches: Classroom-based interaction studies in physical and virtual contexts. *ReCALL*, 30(2), 161176. <https://doi.org/10.1017/S0958344017000386>

- Hockly, N. (2015). Developments in online language learning. *ELT Journal*, 69(3), 308–313. <https://doi.org/10.1093/elt/ccv020>
- Hsu, T.-C. (2017). Learning English with Augmented Reality: Do learning styles matter? *Computers & Education*, 106, 137–149. <https://doi.org/https://doi.org/10.1016/j.compedu.2016.12.007>
- Huang, C. L., Luo, Y. F., Yang, S. C., Lu, C. M., & Chen, A.-S. (2020). Influence of students' learning style, sense of presence, and cognitive load on Learning Outcomes in an Immersive Virtual Reality Learning Environment. *Journal of Educational Computing Research*, 58(3), 596–615. <https://doi.org/10.1177/0735633119867422>
- Imlawi, J., Gregg, D., & Karimi, J. (2015). Student engagement in course-based social networks: The impact of instructor credibility and use of communication. *Computers & Education*, 88, 84–96. <https://doi.org/https://doi.org/10.1016/j.compedu.2015.04.015>
- Jensen, L., & Konradsen, F. (2018). A review of the use of virtual reality head-mounted displays in education and training. *Education and Information Technologies*, 23(4), 1515–1529. <https://doi.org/10.1007/s10639-017-9676-0>
- Kaeophanuek, S., Na-Songkhla, J., & Nilsook, P. (2018). How to enhance digital literacy skills among. *International Journal of Information and Education Technology*, 8(4), 292–297. <https://doi.org/doi:10.18178/ijiet.2018.8.4.1050>
- Kashada, A., Li, H., & Koshadah, O. (2018). Analysis Approach to Identify Factors Influencing Digital Learning Technology Adoption and Utilization in Developing Countries. *International Journal of Emerging Technologies in Learning (iJET)*, 13(02), 48–59. <https://doi.org/10.3991/ijet.v13i02.7399>
- Kent, C., Laslo, E., & Rafaeli, S. (2016). Interactivity in online discussions and learning outcomes. *Computers & Education*, 97, 116–128. <https://doi.org/https://doi.org/10.1016/j.compedu.2016.03.002>
- Kessler, G., Bikowski, D., & Boggs, J. (2012). Collaborative writing among second language learners in academic web-based projects. *Language Learning & Technology*, 16(1), 91–109. <http://llt.msu.edu/issues/february2012/kesslerbikowskiboggs.pdf>
- Kim, Y., & Belcher, D. (2020). Multimodal composing and traditional essays: Linguistic performance and learner perceptions. *Relc Journal*, 51(1), 86–100.

<https://doi.org/10.1177/0033688220906943>

- Lander, B. (2015). Lesson study at the foreign language university level in Japan. *International Journal for Lesson and Learning Studies*, 4(4), 362–382. <https://doi.org/10.1108/IJLLS-02-2015-0007>
- Li, C., Ip, H. H. S., Wong, Y. M., & Lam, W. S. (2020). An empirical study on using virtual reality for enhancing the youth's intercultural sensitivity in Hong Kong. *Journal of Computer Assisted Learning*, 36(5), 625–635. <https://doi.org/https://doi.org/10.1111/jcal.12432>
- Li, L.-Y., & Tsai, C.-C. (2017). Accessing online learning material: Quantitative behavior patterns and their effects on motivation and learning performance. *Computers & Education*, 114, 286-297. <https://doi.org/10.1016/j.compedu.2017.07.007>
- Littlejohn, A., Hood, N., Milligan, C., & Mustain, P. (2016). Learning in MOOCs: Motivations and self-regulated learning in MOOCs. *The Internet and Higher Education*, 29, 40–48. <https://doi.org/10.1016/j.iheduc.2015.12.003>
- Makransky, G., Terkildsen, T. S., & Mayer, R. E. (2019). Adding immersive virtual reality to a science lab simulation causes more presence but less learning. *Learning and Instruction*, 60, 225–236. <https://doi.org/https://doi.org/10.1016/j.learninstruc.2017.12.007>
- Mellati, M., & Khademi, M. (2020). MOOC-based educational program and interaction in distance education: long life mode of teaching. *Interactive Learning Environments*, 28(8), 1022–1035. <https://doi.org/10.1080/10494820.2018.1553188>
- Mudra, H. (2020). Digital literacy among young learners: How do EFL teachers and learners view its benefits and barriers? *Teaching English with Technology*, 20(3), 3–24.
- Özyurt, Ö., & Özyurt, H. (2015). Learning style based individualized adaptive e-learning environments: Content analysis of the articles published from 2005 to 2014. *Computers in Human Behavior*, 52, 349–358. <https://doi.org/https://doi.org/10.1016/j.chb.2015.06.020>
- Palacios-Hidalgo, F. J., & Huertas-Abril, C. A. (2022). Developing digital literacy in initial EFL teacher education: A study in a Spanish distance university. *Open Learning: The Journal of Open, Distance and e-Learning*, 1–17.

<https://doi.org/10.1080/02680513.2022.2157709>

- Pang, S., Reinking, D., Hutchison, A., & Ramey, D. (2015). South Korean teachers' perceptions of integrating information and communication technologies into literacy instruction. *Education Research International*, 2015, 783593. <https://doi.org/10.1155/2015/783593>
- Park, B., Knörzer, L., Plass, J. L., & Brünken, R. (2015). Emotional design and positive emotions in multimedia learning: An eyetracking study on the use of anthropomorphisms. *Computers & Education*, 86, 30–42. <https://doi.org/https://doi.org/10.1016/j.compedu.2015.02.016>
- Parsazadeh, N., Ali, R., & Rezaei, M. (2018). A framework for cooperative and interactive mobile learning to improve online information evaluation skills. *Computers & Education*, 120, 75–89. <https://doi.org/https://doi.org/10.1016/j.compedu.2018.01.010>
- Pérez-Escoda, A., García-Ruiz, R., & Aguaded, I. (2019). Dimensions of digital literacy based on five models of development / Dimensiones de la alfabetización digital a partir de cinco modelos de desarrollo. *Culture and Education*, 31(2), 232–266. <https://doi.org/10.1080/11356405.2019.1603274>
- Pratolo, B. W., & Solikhati, H. A. (2020). The implementation of digital literacy in Indonesian suburban EFL classes. *International Journal of Scientific and Technology Research*, 9(1), 1508–1512.
- Pun, J. K., & Curle, S. (2022). The use of technology in English medium education. In *The Use of Technology in English Medium Education* (pp. 1–9). Springer. https://doi.org/10.1007/978-3-030-99622-2_1
- Revesz, A. (2011). Task Complexity, Focus on L2 Constructions, and Individual Differences: A Classroom-Based Study. *The Modern Language Journal*, 95(s1), 162–181. <https://doi.org/https://doi.org/10.1111/j.1540-4781.2011.01241.x>
- Shakki, F. (2022). Iranian EFL students' L2 engagement: The impact of teacher support and teacher-student rapport. *Language Related Research*, 13(3), 175–198. <https://doi.org/10.52547/lrr.13.3.8>
- Shanshan, S., & Wenfei, L. (2022). Understanding the impact of quality elements on MOOCs continuance intention. *Education and Information Technologies*, 27(8), 10949–10976. <https://doi.org/10.1007/s10639-022-11063-y>

- Sung, H.-Y., Hwang, G.-J., Lin, C.-J., & Hong, T.-W. (2017). Experiencing the analects of confucius: An experiential game-based learning approach to promoting students' motivation and conception of learning. *Computers & Education*, *110*, 143–153. <https://doi.org/https://doi.org/10.1016/j.compedu.2017.03.014>
- Tamborg, A. L., Dreyøe, J. M., & Fougst, S. S. (2018). Digital literacy-a qualitative systematic review. *Tidsskriftet Læring Og Medier (LOM)*, *11*(19), 29–29. <https://doi.org/10.7146/lom.v11i19.103472>
- Tekinarslan, E. (2008). Computer anxiety: A cross-cultural comparative study of Dutch and Turkish university students. *Computers in Human Behavior*, *24*(4), 1572–1584. <https://doi.org/https://doi.org/10.1016/j.chb.2007.05.011>
- Teo, T., Khazaie, S., & Derakhshan, A. (2022). Exploring teacher immediacy-(non)dependency in the tutored augmented reality game-assisted flipped classrooms of English for medical purposes comprehension among the Asian students. *Computers & Education*, *179*, 104406. <https://doi.org/https://doi.org/10.1016/j.compedu.2021.104406>
- Viberg, O., & Grönlund, Å. (2017). Understanding students' learning practices: challenges for design and integration of mobile technology into distance education. *Learning, Media and Technology*, *42*(3), 357–377. <https://doi.org/10.1080/17439884.2016.1088869>
- Wang, Y. (2017). Construction elements and path of practical education model in universities. *EURASIA Journal of Mathematics, Science and Technology*, *13*(10), 6775–6782. <https://doi.org/10.12973/ejmste/78525>.
- Wang, Y., & Hemchua, S. (2022). Can we learn about culture by EFL textbook images?: A semiotic approach perspective. *Language Related Research*, *13*(3), 479–499. <https://doi.org/10.29252/LRR.13.3.18>.
- Wang, Y. (2023). Probing into the boredom of online instruction among Chinese English language teachers during the Covid-19 pandemic. *Current Psychology*, *43*(1), 1–15. <https://doi.org/10.1007/s12144-022-04223-3>.
- Wang, Y., Pan, Z. W., & Wang, M. Z. (2023). The moderating effect of participation in online learning on EFL teachers' teaching ability. *Heliyon*, *9*(3)e13890, 1–12. <https://doi.org/10.1016/j.heliyon.2023.e13890>.
- Wang, Y., Derakhshan, A., Pan, Z., & Ghiasvand, F. (2023). Chinese EFL teachers' writing assessment feedback literacy: A scale development and validation

- study. *Assessing Writing*, 56, 1–16. <https://doi.org/10.1016/j.asw.2023.100726>.
- Williams, L., Abraham, L., & Bostelmann, E. D. (2014). A survey-driven study of the use of digital tools for language learning and teaching. *Digital Literacies in Foreign and Second Language Education*, 29–67.
- Xie, Y., Chen, Y., & Ryder, L. H. (2021). Effects of using mobile-based virtual reality on Chinese L2 students' oral proficiency. *Computer Assisted Language Learning*, 34(3), 225–245. <https://doi.org/10.1080/09588221.2019.1604551>
- Yudintseva, A. (2023). Virtual reality affordances for oral communication in English as a second language classroom: A literature review. *Computers & Education: X Reality*, 2, 100018. <https://doi.org/https://doi.org/10.1016/j.cexr.2023.100018>
- Zhou, M. (2016). Chinese university students' acceptance of MOOCs: A self-determination perspective. *Computers & Education*, 92-93, 194–203. <https://doi.org/https://doi.org/10.1016/j.compedu.2015.10.012>
- Zimmer, W. K., McTigue, E. M., & Matsuda, N. (2021). Development and validation of the teachers' digital learning identity survey. *International Journal of Educational Research*, 105, 101717. <https://doi.org/10.1016/j.ijer.2020.101717>

About the Authors

Ruohan Chen is a Ph.D. candidate in Applied Comparative Linguistics at the Faculty of Modern Languages and Communication, Universiti Putra Malaysia (UPM). Her research interests lie in Applied Linguistics, TESOL, and language testing. gs62197@student.upm.edu.my

Dr. Ng Boon Sim is a Senior Lecturer at the Department of Foreign Language, Faculty of Modern Languages and Communication, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia, ngboon@upm.edu.my

Dr. Shamala Paramasivam is an Associate Professor at the Department of English, Faculty of Modern Languages and Communication, Universiti Putra Malaysia, 43400, UPM, Serdang, Selangor, Malaysia, shamala@upm.edu.my