Using Technology to Enhance Language Learning in the Digital Era

Saiwaroon Chumpavan[1], Poonyapat Boonyarattanasoontorn[2], Simon McIver[3], and Sirawich Tampanich[4*]

[1] Shinawatra University, Bangkok, Thailand
[2] Srinakharinwirot University, Bangkok, Thailand
[3] Srinakharinwirot University, Bangkok, Thailand
[4] Srinakharinwirot University, Bangkok, Thailand

Author Note

Saiwaroon Chumpavan is now at the Faculty of Education, Shinawatra University, Bangkok, Thailand. Email: saiwaroon@gmail.com

Poonyapat Boonyarattanasoontorn is now at the Faculty of Humanities, Srinakharinwirot University, Bangkok, Thailand. Email: poonyapat@g.swu.ac.th

Simon McIver is now at the Graduate School, 114 Sukhumvit 23, Bangkok 10110, Thailand. Email: simonmc23@yahoo.com

Correspondence concerning this article should be addressed to Sirawich Tampanich, Faculty of Humanities, Srinakharinwirot University, 114 Sukhumvit 23, Bangkok 10110, Thailand. Email: sirawich@g.swu.ac.th

Abstract

Digital technology has become central to language teaching and learning. This paper is a documentary research study investigating the potential advantages and challenges of technology in the field of language education, as well as exploring strategies to maximize its potential for language learning in the digital era. For language teachers, advanced technology can be integrated into contemporary and future classrooms, serving as an individual teaching aid. This assists teachers in providing more dynamic and effective language instruction. In terms of learners, advanced technology presents a world of boundless resources for foreign language enthusiasts. It supports learning beyond the classroom, facilitating independent and self-regulated learning. We also present implications regarding the future utilization of technology-assisted classrooms and provide several research directions that should be considered to ensure a safe and ethical integration of advanced technology in language education. Finally, we consider the implications of integrating technology-assisted classrooms in the Thai educational setting, emphasizing the importance of employing advanced technology in language education in Thailand.

Keywords: digital technology, English as a second or foreign language, benefits and challenges of educational technology

In the current digital era, technological advancements have transformed approaches to language learning and pedagogy. Electronic communication devices, like computers and mobile phones, along with innovations such as video conferencing, are integral to language instruction and acquisition. Their ubiquitous integration into education has given rise to technology-enhanced learning, facilitating language learning and teaching from the confines of traditional classroom settings (Yaman & Bećirović, 2016).

This paradigm shift holds immense educational potential, facilitating easy access to language learning materials through various digital platforms and promoting exposure to native speaker lessons and diverse online courses. As technology redefines language education, it is imperative to analyze current research on the effectiveness of technological tools in language learning to devise optimal technology integrations. In this paper, we examine the potential advantages and challenges of technology in the language education field, as well as explore language skills and subsystems in technology-enhanced language learning (TELL) (Zhou & Wei, 2018). By evaluating and synthesizing key studies in this emerging field, we offer insights into effective implementations of technology in language pedagogy to help educators access its benefits in facilitating successful language learning.

Technology and Teachers

The integration of technology holds tremendous potential for enriching learning outcomes, but truly realizing its benefits requires a range of factors, including supportive equipment and teacher readiness. Teachers embrace technology integration in education to access a broad array of learning materials. This may improve students' skills in communication, information technology (IT), and self-learning. The equipment for language classrooms such as computers, tablets, and mobile phones may also lead to the creation of an enjoyable learning atmosphere and enhance the overall learning experience (Elbanna, 2022).

Regarding teacher readiness, teachers should know how to use the technology effectively and be able to deal with any difficulties that may occur. Those difficulties include underprivileged schools and low-income families. A key consideration in utilizing technology for pedagogical purposes is the financial cost entailed. Thus, devising solutions makes TELL more obtainable and affordable for academic institutions at any level of education (Su & Yang, 2023).

In summary, TELL is characterized by autonomy and multimedia richness, with students relying on teachers for guidance. Even in well-equipped schools with advanced technology, teachers are the primary agents of change, emphasizing the necessity of technological skills and dedication to TELL (Ahmetović, Bećirović, & Dubravac, 2020). Also, students tend to be more active in lessons by teachers who mentor them through the use of technology (Ghavifekr & Rosdy, 2015). Teachers are seen as primary agents of change, fostering active student engagement through mentorship in technology use.

Technology and Learners

Despite the availability of various human-computer interaction formats (such as email, Facebook, Google Hangout, Skype, Twitter, and WeChat) that offer more authentic language learning opportunities, it cannot be assumed that 21st-century learners are skilled at learning a

foreign language with technology or learning independently. Instead, educators recognize the need to explicitly teach them. Consequently, it is recommended that they are taught self-regulated learning and strategic skills from explicit instruction (Farivar & Rahimi, 2015). Self-regulated language learning is defined by the acquisition of strategies, including planning, resource management, and the evaluation of learning behavior (An et al., 2021; Carneiro, Lefrere & Steffens, 2007). That instruction may lead to improved language learning efficiency and skills, especially when enhanced by technology (Mutlu & Eroz-Tuga, 2013; Zhou & Wei, 2018).

However, some learners from low-income families and attending underprivileged schools may have difficulties accessing technology in the classroom, and measures should be taken to provide them with access to technology. The research highlights the socioeconomic gap in technology access, revealing significantly lower internet accessibility for learners from low-income households compared to their middle- and high-income counterparts (Afzal, et al., 2023; Barrot et al., 2021). Such an economic disparity may deny learners the opportunities needed for successful learning experiences (Vardeh, 2023). Without access to high-quality technology, students face difficulties completing homework, participating in online discussions, and accessing digital resources outside the classroom, creating significant barriers to learning (Schleicher, 2020). Therefore, it is crucial to emphasize equity in school computer usage. This ensures equal access to technology and fair consideration of the learning needs of those from low-income and minority communities.

As a result, governments and educational institutions should prioritize infrastructure development in rural areas by establishing broadband networks or Wi-Fi hotspots (Williams et al., 2018). Simultaneously, initiatives should focus on providing affordable devices to learners from low-income households. Collaboration among technology companies, educational institutions, and government agencies is crucial in securing funding and resources for such initiatives (Fairlie, 2012). Moreover, implementing digital literacy and skills training programs is essential to empower learners with the ability to use technology for educational purposes (Afzal, et al., 2023). Schools can also bridge the digital divide by providing technology resources, such as well-equipped computer labs, access to devices during school hours, and blended learning models that combine online and offline resources (Vardeh, 2023).

In summary, it is necessary to consider the digital inequality faced by learners in terms of accessing educational resources. Through collaborative efforts, all learners should have the opportunity to excel in the digital era and contribute to society (Afzal, et al., 2023).

Advantages and Challenges of Technology in the Language Education Field

Numerous studies have explored the advantages of integrating technology into language learning. Even though technology has made a positive impact, there have also been some challenges. In the following section, we discuss the advantages and challenges related to technology and language education.

Firstly, the introduction of technology in the classroom, incorporating elements of fun and games, has boosted student motivation; therefore, this enjoyable aspect is a crucial advantage (Arigusman et al., 2018). The novelty associated with exposure to new technology has the potential to increase engagement and motivation among learners. (Abukhattala, 2016). The enhancement of learners' language proficiency through technology is an evident trend. This positive transformation can be attributed to learning attitudes and increased self-

confidence (Ahmadi, 2013). Also, the integration of technology improves learners' language proficiency and contributes to the development of their broader language skills (Parvin & Salam, 2015).

The evolution of technology and its impact on education have led to a learner-centered approach. Teachers should respond to the needs of digitally skilled learners (Abukhattala, 2016) and act as facilitators by guiding the students and supporting the learning environment (Lee et al., 2016). This transformation is in line with changes to the contemporary educational landscape (Leis et al., 2015; Schindler et al., 2017).

The integration of technology in classrooms enhances the ability of learners to meaningfully assess their work. It also promotes a shift toward self and peer evaluation, leading to student autonomy (Department of Education and Early Childhood Development (DEECD), 2010). To promote student autonomy, educators should rethink language teaching methods and use advanced techniques such as AI technology including ChatGPT for assessment (Moqbel & Al-Kadi, 2023). Language learning technology has the potential to reduce anxiety among learners (Abukhattala, 2016). For instance, a study by Özerol (2009), which involved 60 language teachers in Turkish schools, revealed that technology lowered language learning anxiety and improved learners' communication.

While technology is beneficial to education, there are also some challenges. For example, the dissemination of false information poses a significant concern which includes the internet, video games, and social media. Cyberbullying may also be used to bully or harass others in online forums, social media platforms, or messaging apps. In educational settings, cyberbullying can disrupt the learning environment and negatively impact students' emotional well-being (Patchin & Hinduja, 2020). Catfishing involves creating a fake online persona to deceive others, often for personal gain or to manipulate emotions. In language learning contexts, individuals may pose as language learners or teachers to exploit or mislead others. This can lead to trust issues and undermine the authenticity of online interactions (Bates, 2022). Information leakage refers to the unauthorized disclosure of sensitive or confidential information. In language learning and teaching, this can occur through insecure communication channels, such as unencrypted emails or file-sharing platforms. It may compromise students' privacy and academic integrity (Mitra, 2018). Accordingly, educators play a crucial role in guiding students to use technology responsibly, as well as the importance of the critical evaluation of online sources.

In addition, various studies indicate institutional barriers, such as the attitudes of more traditional teachers. Language teachers should be aware of technology and its potential in terms of more effective learning (Stockwell & Reinders, 2019). The motivation of teachers is a crucial factor in the successful implementation of technology in the classroom. Teachers are responsible for acquiring the skills to integrate technology into their classrooms (Reinders, 2018). As a result, some teachers have some degree of reluctance or distrust toward using technology. Negative attitudes from teachers can influence learners regarding using technology. This, in turn, can adversely impact the classroom environment.

A deficiency in technological competency requires an effort by both teachers and students to improve specific digital skills. It is essential for teachers to develop proficiency in utilizing AI tools such as ChatGPT to design learning tasks in pedagogically beneficial and ethical ways (Kohnke et al., 2023). Additionally, students need to have advanced digital

competencies, including tool limitations and safe usage practices (Jones & Hafner, 2022). Educational institutions should create guidelines for the use of such tools, adapt teaching and assessment methodologies, and strategize on preparing students for a future where AI-driven digital tools become integral to daily life.

In summary, the impact of technology on language learning has both advantages and challenges. Therefore, educators and policymakers need to reassess pedagogical approaches, develop advanced assessment tools, and address the resistance of some teachers toward technology. The encouragement of technological competency and advanced digital skills is significant for both teachers and students to effectively and ethically use digital tools in language education. A summary of the advantages and challenges of using technology in language education is presented in Table 1 below.

Table 1

Advantages and Challenges of Using Technology in Language Education

Advantages	Challenges

1. Increase in Student Motivation
   - Fun factors in the language classroom
	1. Lack of Resource Issues
	   - Lack of access to a computer or the internet

2. Improvement in Language Proficiency
   - Changing students' learning attitudes
   - Boosting their self-confidence
	2. Giving False Information
	   - Awareness towards the accuracy of generative AI response

3. A Paradigm Shift
   - Shifting from teacher-centered to learner-centered approach
   - Teachers as a facilitator
	3. Teacher's Negative Attitudes
	   - Reluctance to use technology
	   - Distrust of technology

4. An Assessment Shift - Meaningful self-assessment	4. Lack of Technological Competence
5. Lowering students' language learning anxiety	

Language Skills and Subsystems in Technology-Enhanced Language Learning

The role of technology in language learning has evolved from a support tool to a vital and normalized component in classrooms. Educators increasingly recognize the importance of technology tools in promoting learner autonomy, engaging students, and maximizing positive learning outcomes. These tools are now considered essential in both traditional and independent learning settings, offering diverse opportunities for language acquisition across various modalities. In addition to their supportive function, these tools play a crucial role in language learning, encompassing listening, reading, speaking, writing, and communication. The widespread use of technology, combined with easy access to online resources, enhances language learning effectiveness for both learners and instructors. In this review, we categorize language learning strategies in TELL settings, focusing on language skills and subsystems, including grammar and vocabulary (Oxford, 2011; Zhou & Wei, 2018).

Language Skills

Language skills in technology-enhanced environments emphasize speaking, listening, reading, and writing skills. Concerning speaking skills, the main goal of teaching is to interact successfully in the target language, encompassing both comprehension and production. In addition, it is worthwhile to practice lower-level speaking skills, given that difficulties in these areas tend to persist longer than other skills. The available research on TELL speaking strategies is still limited and may be due to the constraints of available technology for interactive speaking (Zhou & Wei, 2018). Despite this limitation, speech recognition technologies can help improve language accuracy through consistent practice, with the added benefit of observing model samples and receiving feedback for future improvements. Moreover, students can use online voice recording or record their voice during speaking practice. This process has various purposes, including comparison, corrective feedback, and rating. Tecedor and Campos-Dintrans (2019) studied the development of spoken language skills among Spanish learners in primary school on the effects of online voice recording activities and point-to-point video meetings. The results revealed that voice recording activities contributed to fluency and complex tasks requiring interpersonal and presentation skills.

In terms of listening, podcast technology offers learners opportunities to enhance both informational and interactional listening skills. Rahimi and Katal (2012) studied 141 college students in Tehran in terms of metacognitive listening strategies and podcast-use readiness. These findings revealed that students employed crucial strategies, such as solving problems, planning evaluation, directed attention, personal knowledge, and mental translation, all pivotal indicators of effectively using English podcasts. This emphasized the significance of metacognitive listening strategies for improved language acquisition with podcast technology.

Furthermore, technology tools such as Annotation and My Notes offer valuable assistance in practicing English reading comprehension. In a study by Nor et al., (2011), 81 Malaysian college students were exposed to interactive tools like Annotation and My Notes during an English reading comprehension lesson. The embedded tools facilitated reading strategies, encouraging students to comprehend the material actively. My Notes prompted reflection, peer sharing, commenting, organizing notes, and listing unknown words, fostering a reflective learning environment. The Annotation tool allowed students to process reading materials by highlighting important points and adding comments, promoting personalized, self-paced learning for enhanced comprehension. Likewise, Ochoa and Ramírez's (2016) study explored the utilization of E-Portfolios, encompassing various multimedia and textual applications, to enhance reading skills. E-Portfolios emerged as valuable tools for self-reflection, enabling students to assess their progress, identify areas for improvement, and consistently monitor their development through representative evidence. The integration of technology, such as E-Portfolios, may enhance metacognitive skills and allow reflection and self-assessment. E-Portfolios document their learning progress, set goals for future learning, and reflect on their learning experiences in the creation and management of E-Portfolios, students engage in metacognitive activities, such as evaluating learning strategies, checking their understanding, and adjusting their learning approaches. Also, they encourage students to think critically and identify areas for improvement. The process of reflection and self-assessment develops the metacognitive skills of self-awareness, self-evaluation, and self-regulation. Furthermore, technology-enhanced tools help students become more comfortable

with monitoring their learning processes, learning strategies, and becoming more effective and independent learners (Lin, Yang, & Lai, 2013).

The last language skill concerns writing skills. AI-powered chatbots are an exemplar of TELL tools that offer continuous linguistic input (Huang et al., 2021), contributing significantly to writing development (Kim, 2019; Kohnke, 2022b). These chatbots, available 24 hours a day and seven days a week, provide real-time assistance (Kohnke, 2022b), enhancing learning opportunities for interaction and communication modification (Mackey, 2012). The convenience of practicing anytime and anywhere fosters interactive language learning (Haristiani, 2019; Winkler & Söllner, 2018). Chatbots, like ChatGPT, simulate authentic interactions, supporting language learning both in and out of the classroom, and offering diverse avenues for language enhancement (Kohnke et al., 2023).

In addition, ChatGPT, an advanced AI-powered chatbot, plays a pivotal role in language learning by simulating authentic interactions (Kohnke et al., 2023). The application also applies to language learning out-of-class. It also complements in-class input and facilitates output. The adaptability of ChatGPT to learners' abilities and pace allows for differentiated instruction, offering personalized learning experiences (Kohnke, 2022a). This applies in terms of writing, as ChatGPT helps L2 learners identify the disparities between language production and target forms. This process involves the differences between the simple and the perfect tense, and active and passive voice (Kohnke, 2022a). This also includes the comprehension of the meanings of words in context. This was achieved by composing texts in a variety of genres. It also involved correcting language mistakes, making quizzes, and giving dictionary definitions, sample sentences, and translations. Additionally, ChatGPT can generate dialogue and various text genres on a specific topic, offering valuable suggestions for students to enhance their English proficiency (Kohnke et al., 2023).

Moreover, Quillbot can be used to combine the features of other applications that only provide a single service, such as a citation generator or a writing assistant, by offering a wider range of services, such as plagiarism scans, paraphrasers, and summarizers which can be used for summaries and to paraphrase a text. While there are other applications with similar characteristics, Quillbot offers multiple services and a simple interface.

Therefore, applications such as ChatGPT and Quillbot can effectively enhance the writing skills of learners. It can assist them in composing diverse text genres centered around a specific topic such as developing an advertisement for an electric company, drafting an email to a friend regarding energy-saving tips, and making a dialogue addressing the issue of rising electricity prices.

Subsystems

In the context of vocabulary, a lack of knowledge about collocation usage poses challenges in second language acquisition, impacting productive skills competence. L2 learners often exhibit issues such as vague expressions, poor coherence, and unnatural language (Boonyarattanasoontorn, Tampanich, & Pimphakorn, 2020; Sararit, Chumpavan, & Al-Bataineh, 2020; Sararit et al., 2018). To address these challenges, effective assistance is needed to help students recognize and use collocations in L2 production, leading to improved performance. Boonyarattanasoontorn, Tampanich, and Pimphakorn (2020) conducted research utilizing corpora software to explore word collocations and create sentences based on corpora

software. This activity, facilitated by corpora, provided students with opportunities to produce collocations at a sentence level, enhancing their familiarity with these linguistic constructs. The pretest and posttest scores indicated a positive impact of collocation lessons on students' testing scores. The use of corpora-assisted collocation lessons significantly benefited students, reinforcing the importance of integrating technology-enhanced methods to enhance language learning outcomes.

Turning to the study of grammar, it is essential for understanding language structure and constructing meaningful sentences (Wilson et al., 2014). Ranalli (2021) examined the nature of automated writing evaluation (AWE) feedback provided by Grammarly. It was found that the type of feedback received by all participants was related to grammar and style, with sentence structure being the least addressed. Among the three students with higher proficiency levels, similar quantities of feedback were noted in the area of grammar. Within the category of grammar errors, the most frequently occurring type was the omission of articles. Regarding style-related flagging, the AWE system frequently identified the use of personal pronouns in formal writing as the most prevalent issue. This highlights the significance of integrating both grammar learning and technology, particularly in addressing common errors detected by AWE tools, to enhance writing proficiency in language learning.

In conclusion, the in-depth examination of language skills and subsystems within technology-enhanced language learning highlights the profound influence of technology on language acquisition. The incorporation of technology into language education has evolved beyond a mere support tool, becoming an essential and widely accepted element in classrooms. This transformation opens additional potential avenues for language acquisition. The studies and applications that we selected for discussion in this review illustrate how a range of technologies could enhance learners' language proficiency across all language skills and subsystems. This offers educators and learners valuable tools to facilitate effective language learning across diverse contexts.

Utilization of Technology-Assisted Classrooms

We have identified versatility as the main benefit of AI Teaching and Learning (AITL), It can be used by educators and students alike in a variety of ways. We characterize AITL by its complexity and versatility. According to Lynch (2017), AITL can be divided into 43 distinct categories. For students, the use of internet technology and other audio-visual aids to expand subject knowledge and complete their homework. For teachers, AITL can be used with Nuance Dragon to improve their writing speed and accuracy as well as manage their workload (Gradescope) and numerous other examples. Some applications are beneficial for both teachers and students, which mimic the activity of one-on-one human tutors and are personalized for each student (MATHia).

AITL has numerous categories, such as personalizing classes, taking on the role of a tutor, performing simple and complex grading tasks, and providing feedback on both the course and for individual students (Lynch, 2022). The list of educational applications available in 2022 was limited to Google Play and the Apple App Store. Furthermore, 50% of the users were from the Asia-Pacific region, which highlighted the number of second-language learners using AITL (Wylie, 2024).

One popular category in writing is those applications that act as a writing advisor, which can be used by high school, undergraduate, and postgraduate students. Quillbot offers multiple services and a simple interface. Grammarly also offers many of the same features, as well as a Writing Assistant feature. One of the major problems of AITL and AI-based teaching is that there are so many apps, many of which have overlapping functions. On the other hand, the following example of AITL is a device rather than an application and aimed at children, rather than older students, which is reflected in the name of the product: RoyBi KidSense. This device is an award-winning educational robot, which features a voice recognition feature and can teach in multiple languages, teach a variety of lessons, and other types of content. While these previous examples differ in terms of product type and target audience, as well as many other factors, they are similar in terms of being educational AI products. However, there are other, more conventional applications for children, including Brainly, an application designed for school-aged children, which offers expert-verified homework assistance and other academic tasks, with a focus on personalization and other applications. Another example is Cognii, which is an application for children and focuses on the personalization of AI, interaction with AI tutors, and other homework assistance for students.

Utilizing Technology in Thai Educational Environments

In Thai educational environments, Adipat (2023) studied English-speaking skills and understanding among preservice teachers. There were subjective and speaking tests before and after teaching. The study assessed the quantitative data using descriptive and inferential statistics. The results indicated that AI-enhanced phenomenon-based learning and interdisciplinary understanding enhanced speaking skills. Furthermore, the experimental group showed more improvement compared to the control group.

Moreover, the study "Jumping on the Bandwagon: Thai Students' Perceptions and Practices of Implementing Google Translate in their EFL Classrooms" examined the way Thai students perceived and utilized Google Translate in English as a Foreign Language (EFL) classrooms (Rangsarittikun, 2023). The research investigated how students use Google Translate, their perception of its effectiveness, and their language learning experience. It was found that students used Google Translate for language-related tasks, but they also recognized its limitations.

Furthermore, Visaltanachoti, Viriyavejakulb, and Ratanaolarn (2021) examined the assessment and development of AI technology for the English education of Thai students. Due to the growth of educational AI, the authors and issues addressed such advancements. A prototype AI algorithm was used to teach English to 40 high-school students in Thailand. This study used various tools analysis and data collection, including sentence structure and vocabulary. The results indicated that their knowledge of English significantly improved after using AI technology and the algorithm prototype. As a result, there was a high level of satisfaction among the students. This implies that the model demonstrated suitable acceptability and quality for English language instruction.

To sum up, AI technology has become more popular, as shown by the earnings of the homework help sector and the growth of this industry (Wylie, 2024). This allows the utilization of numerous demographic groups and a vast array of products that meet the specific needs of

users. Furthermore, AI technology is offered at low prices or for free, making it accessible to students and teachers. Moreover, in terms of English Language Teaching (ELT) in Thailand, studies have shown the benefits of AI-enhanced learning. These results highlighted the potential of AI in terms of language learning and accepting AI technology in education for various purposes. The evolution of AI may lead to incorporation in ELT classrooms in Thailand and may lead to enhanced effectiveness in teaching, increased student engagement, and improved learning outcomes.

Conclusion

In our view, technology is incompletely integrated into all aspects of life in today's world, and language learning is no different. The introduction of digital tools and platforms has introduced change and innovation into precisely that area of teaching and learning languages, opening up opportunities beyond the traditionally styled classroom.

We suggest that the benefits of using technology in language teaching are enormous. It provides access to rich resources and engages students in ways previously unimaginable. Now, students can engage with native speakers across the world and enroll in online courses that reflect their learning styles. These embrace AI chatbots, speech recognition, and multimedia resources that enrich the learning process for students to acquire language skills more effectively. Moreover, technology helps learners take control of their learning processes, hence their independence and strategic thinking.

Integration of technology into education; however, comes with its challenges as well. The teaching profession should be very competent and confident in using these new tools since their advice will be paramount to the students getting success. Big financial constraints or even simple access to technology still pose a big problem mostly to underprivileged areas. Furthermore, cyberbullying and misinformation need to be controlled so that all are safe and supported in an adequate learning cycle.

We conclude that technology should be available to all. The government, schools, and tech companies have to join hands and bridge the digital divide by ensuring affordable devices, better infrastructure at schools, and digital literacy programs; these are just a few steps necessary for making sure that each learner can benefit from advancements in EdTech.

Where integration of technology into language education opens opportunities and challenges, there lies real potential for change in learning. For this, educators and policymakers need to review their strategies, assessment tools, and further education in the integration of technologies by teachers and students. We can create more dynamic, engaging, and inclusive language learning environments for all if we can overcome these challenges and leverage the power of technology wisely.

References

Abukhattala, I. (2016). The use of technology in language classrooms in Libya. *International Journal of Social Science and Humanity, 6*(4), 262-267. https://doi.org/10.7763/IJSSH.2016

Adipat, S. (2023). An artificial intelligence-enhanced phenomenon-based learning approach for interdisciplinary understanding and speaking skills. *International Journal of Instruction, 16*(3), 531-550. https://doi.org/10.29333/iji.2023.16329a

Afzal, A., Khan, s. Daud, s. Ahmad, Zz., & Butt, A. (2023). Addressing the digital divide: access and use of technology in education. *Journal of Social Sciences Review, 3*(2), 883-895. https://doi.org/10.54183/jssr.43i2.326

Ahmadi, M.R. (2013). The use of technology in English language learning: A literature review. *International Journal of Research in English Education, 3*(2),115-125. https://doi.org/10.29252/ijree.3.2.115

Ahmetović, E., Bećirović, S., & Dubravac, V. (2020). Motivation, anxiety and students' performance. *Eur J Contemp Educ, 9*(2), 271–289. https://doi.org/10.13187/ejced.2020.2.271

An, Z., Wang, C., Li, S., Gan, Z. & Li, H. (2021). Technology-assisted self-regulated English language learning: Associations with English language self-efficacy, English enjoyment, and learning outcomes. *Front. Psychol, 11*:558466. https://doi.org/10.3389/fpsyg.2020.558466

Arigusman, A., Purnawarman, P., & Suherdi, D. (2018). EFL students' use of technology in English lessons in the digital era. *Indonesian Journal of Curriculum and Educational Technology Studies, 6*(2), 77-86. https://doi.org/10.15294/ijcets.v6i2.26599

Barrot, J. S., Llenares, I. I., & Del Rosario, L. S. (2021). Students' online learning challenges during the pandemic and how they cope with them: The case of the Philippines. *Education and information technologies, 26*, 7321–7338. https://doi.org/10.1007/s10639-021-10589-x

Bates, C. (2022, 7 – 8 September). *Catfishing: The phenomenon, its impact, and protection*. [Congerence session]. 14th International Conference on Global Security, Safety & Sustainability (ICGS3). https://dblp.uni-trier.de/db/conf/icgs3/icgs3-2022.html

Boonyarattanasoontorn, P., Sirawich, T., & Chomploen, C. (2020). The Effect of a Collocation Teaching Innovation on Students' Use of Collocations. *Journal of Studies in the English Language*, *15*(2), 98–129. https://so04.tci-thaijo.org/index.php/jsel/article/view/240158

Carneiro, R., Lefrere, P., & Steffens, K. (2007). *Self-regulated learning in technology enhanced learning environments: A European perspective*. Kaleidoscope Network of Excellence.

Department of Education and Early Childhood Development. (2010). *Teaching and learning with Web 2.0 technologies*. https://www.education.vic.gov.au/Documents/about/department/200910deecdannualreport.pdf

Elbanna, A. (2022, June 13). *6 essential educational technology equipment for classrooms.* Skolera. https://blog.skolera.com/educational-technology-equipment/

Fairlie, R. W. (2012). Academic achievement, technology and race: Experimental evidence. *Economics of Education Review, 31*(5), 663–679. https://doi.org/10.1016/j.econedurev.2012.04.003

Farivar, A., & Rahimi, A. (2015). The impact of CALL on Iranian EFL learners' autonomy. *Procedia- Social and Behavioral Sciences, 192*, 644–649.Ghavifekr, S., & Rosdy, W. A. W. (2015). Teaching and learning with technology: effectiveness of ICT integration in schools. *Int J Res Educ Sci (IJRES), 1*(2), 175–191Haristiani, N. (2019). Artificial intelligence (AI) chatbot as language learning medium: An inquiry. *Journal of Physics: Conference Series, 1387*, 1-6. https://doi.org/10.1088/1742-6596/1387/1/012020Huang, W., Hew, K. F., & Fryer, L. K. (2021). Chatbots for language learning – Are they really useful? A systematic review of chatbot-supported language learning. *Journal of Computer Assisted Learning 38*(1), 237–257. https://doi.org/10.1111/jcal.12610

Jones, R., & Hafner, C. (2022). *Understanding digital literacies: A practical introduction.* Routledge.

Kim, N. (2019). A study on the use of artificial intelligence chatbots for improving English grammar skills. *Journal of Digital Convergence 17*(8), 37–46. https://doi.org/10.14400/JDC.2019.17.8.037

Kohnke, L. (2022a). A Pedagogical Chatbot: A Supplemental Language Learning Tool. *RELC Journal, 54*(3), 828-838. https://doi.org/10.1177/00336882211067054

Kohnke, L. (2022b). A qualitative exploration of student perspectives of chatbot use during emergency remote teaching. *International Journal of Mobile Learning and Organisation, 16*(4), 475-488. doi: 10.1504/IJMLO.2022.125966

Kohnke, L., Moorhouse, B., & Zou, D. (2023). ChatGPT for language teaching and learning. *RELC Journal, 54*(2), 537–550. https://doi.org/10.1177/003368822311628

Lee, C., Yeung, A. S., & Ip, T. (2016). Use of computer technology for English language learning: Do learning styles, gender, and age. *Computer Assisted Language Learning, 29*(5), 1035-1051.

Leis, A., Tohei, A., & Cooke, S. (2015). Smartphone-assisted language learning and autonomy. *International Journal of Computer-Assisted Language Learning and Teaching, 5*(3), 75-88.

Lin, C., Yang, S., & Lai, C. (2013). Support as a mediator of the impact of cognitive load on students' e-portfolio learning outcomes. *Social Behavior and Personality Journal, 41*(1), 17-30. https://doi.org/10.2224/sbp.2013.41.1.17

Lynch, M. (2022, January 6). *Benefits of Artificial Intelligence for Educators and Learners*. The Tech Edvocate. https://www.thetechedvocate.org/benefits-of-artificial-intelligence-for-educators-and-learners/

Mackey, A. (2012). *Interaction, Feedback and Task Research in Second Language Learning: Methods and Design.* Cambridge University Press.

Mitra, S. (2018). Security implications of information leakage on social media: A case study of Facebook. *International Journal of Information Management, 38*(1), 136-142.

Moqbel, M. S., & Al-Kadi, A. (2023). Foreign language learning assessment in the age of ChatGPT: A theoretical account. *Journal of English Studies in Arabia Felix, 2*(1), 71–84. https://doi.org/10.56540/jesaf.v2i1.62

Mutlu, A., & Eroz-Tuga, B. (2013). The role of Computer-Assisted Language Learning (CALL) in promoting learner autonomy. *Eurasian Journal of Educational Research, 51*, 107-122.

Nor, F. N. M., Hamat, A., Azman , H., Noorizah, N. M., & Bakar, N. A. (2011). An investigation on employment of interactive technological tools to comprehend online reading texts. *International Journal of Learning, 18*(2), 247-260. https://doi.org/10.18848/1447-9494/CGP/v18i02/47469

Ochoa, M., & Ramírez, M. (2016). Strategy based instruction facilitated by technologies to enhance reading comprehension. *Journal of Language Teaching and Research, 7*(4), 655-664. http://dx.doi.org/10.17507/jltr.0704.04

Oxford, R. (2011). Strategies for learning a second or foreign language. *Language Teaching, 44*(2), 167-180. https://doi.org/10.1017/S0261444810000492

Özerol, G. (2009). *Perceptions of EFL primary school teachers towards call* [Master's thesis, Cukurova University]. https://libratez.cu.edu.tr/tezler/7133.pdf

Patchin, J. W., & Hinduja, S. (2020). *Cyberbullying: A prevention curriculum for grades 3-5*. Research Press.

Parvin, R. H., & Salam, S. F. (2015). The effectiveness of using technology in English language classrooms in government primary schools in Bangladesh. *FIRE: Forum for International Research in Education, 2*(1), 47-59. http://preserve.lehigh.edu/fire/vol2/iss1/5

Rahimi, M., & Katal, M. (2012). The role of metacognitive listening strategies awareness and podcast-use readiness in using podcasting for learning English as a foreign language. *Computers in Human Behavior, 28*(4), 1153-1161. https://doi.org/10.1016/j.chb.2012.01.025

Ranalli, J. (2021). L2 student engagement with automated feedback on writing: Potential for learning and issues of trust. *Journal of Second Language Writing, 52*, 100816. https://doi.org/10.1016/j.jslw.2021.100816

Rangsarittikun, R. (2023). Jumping on the Bandwagon: Thai students' perceptions and practices of implementing google translate in their EFL classrooms. *English Teaching & Learning*, *47*, 511–527. https://doi.org/10.1007/s42321-022-00126-5

Reinders, H. (2018). Teacher resistance and resilience. In J. I. Liontas (Ed.), *The TESOL encyclopedia of English language teaching*. John Wiley & Sons.

Sararit, J., Chumpavan, S., & Al-Bataineh, A. (2020). Collocation instruction in English writing classrooms at the university level in Thailand. *Rajapark Journal, 14*(4), 24-34.

Sararit, J., Chumpavan, S., Suksaeresup, N., Srinaowaratt, S., & Al-Bataineh, A. (2018). Collocation instruction through communicative activities to enhance 10th-grade students' English writing ability. *International Journal of Management and Applied Science (IJMAS), 4*(10), 34-40.

Schindler, L. A., Burkholder, G. J., Morad, O. A. & Marsh, C. (2017). Computer-based technology and student engagement: A critical review of the literature. *International Journal of Educational Technology in Higher Education, 14*(25). https://doi.org/10.1186/s41239-017-0063-0

Schleicher, A. (2020). *The impact of COVID-19 on education insights from education at a glance 2020.* Organization for Economic Co-operation and Development (OECD). https://www.oecd.org/education/theimpact-of-covid-19-on-education-insights-education-at-a-glance-2020.pdf.

Stockwell, G., & Reinders, H. (2019). Technology, motivation and autonomy, and teacher psychology in language learning: Exploring the myths and possibilities. *Annual Review of Applied Linguistics, 39*, 40–51. https://doi.org/10.1017/S0267190519000084

Su, J. & Yang, W. (2023). Unlocking the power of ChatGPT: A framework for applying generative AI in education. *ECNU Review of Education, 6*(3), 355–366. https://doi.org/10.1177/20965311231168423

Tecedor, M., & Campos-Dintrans, G. (2019). Developing oral communication in Spanish lower-level courses: The case of voice recording and videoconferencing activities. *ReCALL, 31*(2), 116-134. https://doi.org/10.1017/S0958344018000083

Vardeh, M. (2023). Internet access for low-income students. [Master's thesis, California State University]. https://scholarworks.calstate.edu/downloads/5999n992t

Visaltanachoti, C., Viriyavejakulb, C., & Ratanaolarn, T. (2021). Teaching English to Thai students using an artificial intelligence technology algorithmic model: A prototype analysis. *Turkish Journal of Computer and Mathematics Education, 12*(14), 5623-5630.

Williams, J. M., Greenleaf, A. T., Barnes, E. F., & Scott, T. R. (2018). High-achieving, low-income students' perspectives of how schools can promote the academic achievement of students living in poverty. *Improving Schools, 22*(3), 224–236. https://doi.org/10.1177/1365480218821501.

Wilson, J., Olinghouse, N. G., & Andrada, G. N. (2014). Does automated feedback improve writing quality? *Learning Disabilities: A Contemporary Journal, 12*(1), 93–118.

Winkler, R., & Söllner, M. (2018). Unleashing the Potential of Chatbots in Education: A State-Of-The-Art Analysis. *Academy of Management Proceedings, 2018*(1), 1-40. https://doi.org/10.5465/AMBPP.2018.15903abstract

Wylie, L. (2024, January 8). *Education App Revenue and Usage Statistics*. Business of Apps. https://www.businessofapps.com/data/education-app-market.

Yaman, A., & Bećirović, S. (2016). Learning English and media literacy. *Imp J Interdiscip Res (IJIR), 2*(6), 660–663.

Zhou, Y., & Wei, M. (2018). Studies in second language learning and teaching. *SSLLT, 8*(2), 471-495. https://doi.org/10.14746/ssllt.2018.8.2.13