

Trends of Using Artificial Intelligence (AI) Technologies in Research Studies of English Language Teaching

Wanchana Boonchom¹ / Surachai Piyanukool² / Nawamin Prachanant³

¹Asst. Prof., English Program, Faculty of Humanities and Social Sciences,

Ubon Ratchathani Rajbhat University, Thailand

E-mail: wanchana.b@ubru.ac.th

²Asst. Prof. Dr., English Language Teaching Program, Faculty of Humanities and Social Sciences,

Buriram Rajabhat University, Thailand

E-mail: surachai.py@bru.ac.th

³Asst. Prof. Dr., English Language Teaching Program, Faculty of Humanities and Social Sciences,

Buriram Rajabhat University, Thailand

E-mail: nawamin.pc@bru.ac.th

Received: April 6, 2024

Revised: April 23, 2024

Accepted: April 23, 2024

Abstract

Artificial Intelligence (AI) plays an increasingly important role in English language teaching (ELT); however, the trends of AI in language learning remain largely under-investigated. Accordingly, the study, using bibliometric analysis, investigates these issues via a review of 64 papers published between 2021 and 2023, focusing on how AI was integrated into ELT. The objectives aimed to 1) identify the integration of AI technologies in researches in order to enhance English language acquisition and pedagogical skills, and 2) explore the levels of English language learners that AI technologies employed in the obtained studies. The academic articles, research papers, conference proceedings were selected by publication in 2021 and 2023 that obtained from ERIC database. The search terms of “Artificial Intelligence”, “English Language Teaching”, and “Teaching Strategies” resulted in 64 articles that they were selected by purposive sampling. Findings revealed that the frequency of employing AI in the studies. The results pointed the five most popular AI-technology based English language teaching and learning obtained from the review were: (1) AI-technology based pedagogies (48 articles, 75%), (2) the AI-technology based English writing (8 articles, 12.5%), (3) the AI-technology based English vocabulary (4 articles, 6.25%), (4) the AI-technology based English speaking (3 articles, 4.68%), (5) the AI-technology based English grammar (1 article, 1.56%). The results also indicated the levels of learners that AI-technologies integrated in ELT were at the tertiary level was the most frequent (29 articles, 45.3%), followed by overall (23 articles, 35.9%), the secondary level (10 articles, 15.6%), and an equal number of studies examined using AI-technologies at the primary level and graduate level (1 article, 1.56%). This study is helpful for those interested in finding the appropriate AI for English language acquisition and pedagogical skills.

Keywords: artificial intelligence technologies, English Language Teaching (ELT), pedagogy, research studies

Introduction

The rapid advancement of technology, particularly in the field of artificial intelligence (AI), has brought about significant changes in various domains, including education. English language teaching as a crucial aspect of global communication, have also witnessed the integration of AI technologies.

In November 2022 through August 2023, ChatGPT led with the most traffic visits, at 14.6 billion total visits since its launch. The launch of this platform triggered a generative AI boom that planted interest in other AI tools available. (Diaz, 2023: unpagged) By studying trends in the use of AI in ELT, instructors and educators can harness the potential of technology to create more dynamic, personalized, and effective learning experiences for the students.

Accordingly, the number of review papers on the topic artificial intelligence (AI) technologies has recently increased. On the one hand, this study conducted a systematic review focusing on trends in using AI technologies and digital tools, and it mainly attended to the ELT aspects. On the other hand, the research gathered relevant academic articles, research papers, conference proceedings published in 2021-2023 from Education Resources Information Center (ERIC) database.

In fact, ERIC database, or Education Resources Information Center, that found in 1965 provided a comprehensive, easy-to-use, searchable, Internet-based bibliographic and full-text database of education research and information for educators, researchers, and the general public. Its database contains nearly a million bibliographic records of journal articles, research reports, curriculum and teaching guides, conference papers, and books (Robbins, 2001, p. 5). Mentioned by Hertzberg and Rudner (1999: unpagged), the ERIC is the largest source of educational information in the world, and very well indexed database. It is also one of the oldest and most comprehensive databases available anywhere that also displays abstracts with a complete bibliographic citation for each article or document.

According to the potentiality and benefit of ERIC database, it has been selected to conduct a literature review that aims to analyze the impact of AI on English language teaching by examining relevant studies so the review seeks to identify the English language skills of English language learners that influenced and implemented by potential benefits, challenges, and implication of AI technologies in English language acquisition and pedagogical skills for English learners and instructors.

In the post-pandemic era, the use of educational technologies in English language teaching (ELT) has been widely used, some of these technologies rely on artificial intelligence (AI). The application of AI in English language teaching examine various AI-powered tools, such as QuillBot, ChatBots, ChatGPT, and so on, that have been employed to enhance language learning experiences. Thus, this study analyzes researches that investigate the effectiveness of these AI tools in improving language proficiency and the positive effects of AI-technology based teaching methods towards teachers and learners.

The integration of AI in English language teaching and learning poses both pedagogical implications and challenges. Therefore, this literature review would be concluded by summarizing the key findings, highlighting the overall impact of AI on English language skills of English language teaching. It emphasizes the potential benefits of AI in improving language proficiency of learners. The research objectives aimed to 1) identify the use of AI technologies in ELT researches in order to enhance

English language acquisition and pedagogical skills, and 2) explore the grade levels of English language learners that AI technologies employed in the obtained studies. According to literature review, it could summarize that integrating AI technologies in ELT, emphasize its role in facilitating personalized learning experiences, improve language assessment practices, foster interactive language practice, support teachers, and raise awareness about ethical considerations in the use of AI technology in all grade level of English learners.

Research Methodology

To conduct the academic paper reviews on trends of using artificial intelligence (AI) technology in English language teaching (ELT), the following research method was adopted:

The research gathered relevant academic articles, research papers, conference proceedings that were selected by publication in 2021 and 2023. They were obtained from Education Resources Information Center (ERIC) database. This study used key terms to search for relevant studies that might include “Artificial Intelligence”, “English Language Teaching”, and “Teaching Strategies”

The search terms of “Artificial Intelligence”, “English Language Teaching”, and “Teaching Strategies” resulted in 70 articles in the ERIC but some studies had been published before 2021, therefore the selected research papers were 64 articles published between 2021 and 2023 by purposive sampling. And these 64 research articles would be analyzed the frequency of English language acquisition and pedagogies skills that used in the samples. The data was collected by investigating the main focus of using AI technologies from the obtained studies, then the data was analyzed the frequency of English language acquisition and pedagogical skills found in the studies, summarized, and discussed afterwards.

Research Results

The study reviewed recent studies on the trends of using AI technologies in ELT in terms of the integration of AI technologies in enhancing English language learning and pedagogy, and exploring the levels of English language learners that AI technologies employed in the studies. The results of the research showed that:

Table 1

AI technologies in Enhancing English Language Learning and Pedagogy

Research Articles	AI-based English language learning and pedagogy						
	Listening	Speaking	Reading	Writing	Grammar	Vocabulary	Pedagogy
1. Xu and Margevica-Grinberga (2021, pp. 13-23)							/
2. Wu et al. (2021, pp.70-83)				/			
3. McKnight (2021, pp. 442-455)				/			
4. Lin and Mubarak (2021, pp. 16-35)		/					

Table 1 (Continued)

Research Articles	AI-based English language learning and pedagogy						
	Listening	Speaking	Reading	Writing	Grammar	Vocabulary	Pedagogy
5. <u>Rybinski</u> and <u>Kopciuszewska</u> (2021: pp. 127-139)							/
6. Sumo and Bah (2021: pp. 264-270)							/
7. <u>Vittorini</u> , <u>Menini</u> , and <u>Tonelli</u> (2021: pp. 159-185)							/
8. Alsadoon (2021: pp. 135-157)						/	
9. <u>Sharadgah</u> and <u>Sa'di</u> (2022: pp. 337-377)							/
10. Sumakul, Hamied, and Sukyadi (2022: pp.232-256)							/
11. <u>Majid</u> and <u>Lakshmi</u> (2022: pp.11-16)							/
12. <u>Lesia Viktorivna</u> et al. (2022: pp. 262-273)							/
13. <u>Salas-Pilco</u> and <u>Yang</u> (2022: p. 21)							/
14. Chen et al. (2022: pp. 28-47)							/
15. Molenaar (2022: pp. 632-645)							/
16. <u>Du</u> and <u>Gao</u> (2022: pp. 357-384)							/
17. <u>Yang</u> and <u>Kyun</u> (2022: pp. 180-210)							/
18. <u>Yang</u> , <u>Kim</u> , <u>Lee</u> , and <u>Shin</u> (2022: pp. 327-343)		/					
19. Burkhard (2022: unpagged)				/			
20. Heugh et al. (2022: pp. 89-127)							/
21. Hsu (2022: pp. 792-815)							/
22. <u>Baranwal</u> (2022: pp. 1-17)							/
23. Gupta and Chen (2022: pp. 98-108)							/
24. Stockdale (2022: unpagged)						/	
25. Kim (2022: pp. 79-102)							/
26. <u>Khoo</u> and <u>Kang</u> (2022: unpagged)							/
27. Tantucci and Wang (2022: pp. 115-146)							/
28. <u>Hockly</u> (2023: pp. 445-451)							/
29. <u>An</u> et al. (2023: pp. 187-208)							/
30. Huang et al (2023: pp. 112-131)							/
31. <u>Bozkurt</u> (2023: pp. 198-204)							/
32. <u>Schäffer</u> and <u>Lieder</u> (2023: pp. 111-124)							/
33. Bonner et al. (2023: pp. 23-41)							/
34. <u>Yang</u> (2023: pp. 101-116)							/
35. Muñoz-Basols et al. (2023: pp. 171-194)							/
36. <u>Álvarez-Álvarez</u> , and <u>Falcon</u> (2023: pp. 709-724)							/
37. Xu et al. (2023: pp. 185-198)							/
38. Shah (2023: unpagged)							/
39. Adiguzel et al. (2023: p. 429)							/
40. Abdalkader (2023: unpagged)							/
41. <u>Pack</u> and <u>Maloney</u> (2023: pp. 71-82)							/
42. <u>Malakul</u> and <u>Park</u> (2023: unpagged)							/
43. Chu and Szlagor (2023: unpagged)							/
44. Byrd (2023: pp. 135-142)							/
45. <u>Jeon</u> and <u>Lee</u> (2023: pp. 73-92)							/
46. Perkins (2023: unpagged)							/
47. <u>Ali</u> et al. (2023: pp. 135-147)							/

Table 1 (Continued)

Research Articles	AI-based English language learning and pedagogy						
	<i>Listening</i>	<i>Speaking</i>	<i>Reading</i>	<i>Writing</i>	<i>Grammar</i>	<i>Vocabulary</i>	<i>Pedagogy</i>
48. Balkir, Celik and Cepni (2023: pp. 67-79)				/		/	
49. <u>Hwang</u> et al. (2023: pp. 8-35)				/			
50. <u>Saadati</u> et al. (2023: pp. 48-71)							/
51. <u>Tülübas</u> et al. (2023: pp. 93-110)							/
52. <u>Pack</u> and <u>Maloney</u> (2023: pp. 4-24)							/
53. <u>Lee</u> et al. (2023: pp. 629-666)							/
54. Alexander et al. (2023: pp. 25-43)				/			
55. Costello et al. (2023: pp. 67-87)							/
56. <u>Escalante</u> et al. (2023: unpagged)				/			
57. <u>Kohnke</u> et al. (2023: pp. 537-550)							/
58. Zhao et al. (2023: pp. 31-63)				/			
59. Liu, and Chen (2023: pp. 5-20)						/	
60. Wallwork (2023: unpagged)					/		
61. Tai and <u>Chen</u> (2023: pp. 485-502)							/
62. <u>Shim</u> et al. (2023: pp. 65-88)							/
63. Ehrensberger-Dow et al. (2023: pp. 393-411)							/
64. <u>Ericsson</u> et al. (2023: unpagged)		/					
Total				64			
Frequency	0	3	0	8	1	4	49
Percentage	0	4.68	0	12.5	1.56	6.25	76.5
Rank	0	4	0	2	5	3	1

The results pointed the five most popular English language learning and pedagogy topics obtained from the study reviews were: (1) AI-technology based *pedagogies* (49 articles, 76.5%), (2) the AI-technology based *English writing* learning (8 articles, 12.5%), (3) the AI-technology based *English vocabulary* learning (4 articles, 6.25%), (4) the AI-technology based *English speaking* learning (3 articles, 4.68%), (5) the AI-technology based *English grammar* learning (1 article, 1.56%), while between 2021 and 2023, *English listening and reading* learning were not preferred to integrate AI technology with any articles.

Table 2

Levels of English Language Learners Using AI Technologies in the Studies

Research Articles	Levels of English Language Learners				
	<i>Primary</i>	<i>Secondary</i>	<i>Tertiary</i>	<i>Graduate</i>	<i>Overall</i>
1. Xu and <u>Margevica-Grinberga</u> (2021: pp. 13-23)					/
2. Wu et al. (2021: pp.70-83)			/		
3. <u>McKnight</u> (2021: pp. 442-455)					/

Table 2 (Continued)

Research Articles	Levels of English Language Learners				
	Primary	Secondary	Tertiary	Graduate	Overall
4. Lin and Mubarak (2021: pp. 16-35)			/		
5. <u>Rybinski</u> and <u>Kopciuszewska</u> (2021: pp. 127-139)			/		
6. Sumo and Bah (2021: pp. 264-270)			/		
7. <u>Vittorini</u> , <u>Menini</u> , and <u>Tonelli</u> (2021: pp. 159-185)			/		
8. Alsadoon (2021: pp. 135-157)			/		
9. <u>Sharadgah</u> and <u>Sa'di</u> (2022: pp. 337-377)					/
10. Sumakul, Hamied, and Sukyadi (2022: pp.232-256)			/		
11. <u>Majid</u> and <u>Lakshmi</u> (2022: pp.11-16)					/
12. <u>Lesia Viktorivna</u> et al. (2022: pp. 262-273)			/		
13. <u>Salas-Pilco</u> and <u>Yang</u> (2022: p. 21)			/		
14. Chen et al. (2022: pp. 28-47)					/
15. Molenaar (2022: pp. 632-645)					/
16. <u>Du</u> and <u>Gao</u> (2022: pp. 357-384)					/
17. <u>Yang</u> and <u>Kyun</u> (2022: pp. 180-210)					/
18. <u>Yang</u> , <u>Kim</u> , <u>Lee</u> , and <u>Shin</u> (2022: pp. 327-343)		/			
19. Burkhard (2022: unpagged)			/		
20. Heugh et al. (2022: pp. 89-127)			/		
21. Hsu (2022: pp. 792-815)					/
22. <u>Baranwal</u> (2022: pp. 1-17)			/		
23. Gupta and Chen (2022: pp. 98-108)			/		
24. Stockdale (2022: unpagged)					/
25. Kim (2022: pp. 79-102)			/		
26. <u>Khoo</u> and <u>Kang</u> (2022: unpagged)			/		
27. Tantucci and Wang (2022: pp. 115-146)			/		
28. <u>Hockly</u> (2023: pp. 445-451)					/
29. <u>An</u> et al. (2023: pp. 187-208)		/			
30. Huang et al (2023: pp. 112-131)			/		
31. <u>Bozkurt</u> (2023: pp. 198-204)					/
32. <u>Schäffer</u> and <u>Lieder</u> (2023: pp. 111-124)					/
33. Bonner et al. (2023: pp. 23-41)					/
34. <u>Yang</u> (2023: pp. 101-116)			/		
35. Muñoz-Basols et al. (2023: pp. 171-194)			/		
36. <u>Álvarez-Álvarez</u> , and <u>Falcon</u> (2023: pp. 709-724)			/		
37. Xu et al. (2023: pp. 185-198)		/			
38. Shah (2023: unpagged)					/
39. Adiguzel et al. (2023: p. 429)					/
40. Abdalkader (2023: unpagged)		/			
41. <u>Pack</u> and <u>Maloney</u> (2023: pp. 71-82)					/
42. <u>Malakul</u> and <u>Park</u> (2023: unpagged)		/			
43. Chu and Szlagor (2023: unpagged)			/		

Table 2 (Continued)

Research Articles	Levels of English Language Learners				
	Primary	Secondary	Tertiary	Graduate	Overall
44. Byrd (2023: pp. 135-142)					/
45. Jeon and Lee (2023: pp. 73-92)			/		
46. Perkins (2023: unpagged)			/		
47. Ali et al. (2023: pp. 135-147)		/			
48. Balkir, Celik and Cepni (2023: pp. 67-79)			/		
49. Hwang et al. (2023: pp. 8-35)			/		
50. Saadati et al. (2023: pp. 48-71)			/		
51. Tülübas et al. (2023: pp. 93-110)					/
52. Pack and Maloney (2023: pp. 4-24)					/
53. Lee et al. (2023: pp. 629-666)		/			
54. Alexander et al. (2023: pp. 25-43)			/		
55. Costello et al. (2023: pp. 67-87)					/
56. Escalante et al. (2023: unpagged)			/		
57. Kohnke et al. (2023: pp. 537-550)					/
58. Zhao et al. (2023: pp. 31-63)		/			
59. Liu, and Chen (2023: pp. 5-20)	/				
60. Wallwork (2023: unpagged)				/	
61. Tai and Chen (2023: pp. 485-502)		/			
62. Shim et al. (2023: pp. 65-88)			/		
63. Ehrensberger-Dow et al. (2023: pp. 393-411)					/
64. Ericsson et al. (2023: unpagged)		/			
Total			64		
Frequency	1	10	29	1	23
Percentage	1.56	15.6	45.3	1.56	35.9
Rank	4	3	1	4	2

As shown in the table 2, AI-technologies were integrated in conducting ELT studies and grade levels of learners that employed in the studies as the samples were categorized as: primary, secondary, tertiary, graduate, and overall educational settings. The results showed that, at the tertiary level was the most frequent AI-technology integrated with the articles (29 articles, 45.3%), followed by overall (23 articles, 35.9%), secondary level (10 articles, 15.6%), and an equal number of studies examined using AI-technologies at the primary level and graduate level (1 article, 1.56%).

Discussion

1. AI technologies in ELT

(1) Pedagogical Implications

AI technology may provide real-time feedback on a variety of language learning topics, including writing, grammar, vocabulary, and pronunciation. The students may learn more successfully and efficiently with the use of their individualized method. Additionally, one of the most important benefits of AI technology in ELT is to personalize each student's learning experience that are matched to their requirements and skills by evaluating student performance data and making recommendations for them. This new technology has the potential to enhance ELT in many ways that consist of personalized learning, real-time feedback, interactive activities, conversation practice, and adaptive learning. According to Chen (2018, p.1) and Davis (2020, p.1) who mentioned that artificial intelligence technology can support learner autonomy by giving students access to individualized learning resources and instant feedback. In fact, some experts pointed that the teachers should be facilitators in order to assist students in making efficient interactions among them and AI technologies. Han (2019, p. unpagged), Kholis (2021, unpagged), Godwin-Jones (2022, p. unpagged), Huang et al. (2023, p. 112.) conclude that in order to help the students identify areas for growth and work toward reaching their language learning goals, AI technologies can also assess their responses and provide them with quick feedback so the students can use AI technologies to learn independently and at their own preference: levels, speed, and location. To keep students motivated and interested, AI can also offer adaptive learning which modifies the level of lessons and activities based on their interest. The AI-powered tools can employ data analytics to pinpoint students' areas of difficulty and offer them specialized guidance to help them learn language more quickly. Finally, AI in ELT is a promising field for future study and development because its potential advantages for both teachers and students as long as technology keeps developing.

(2) AI technology and writing

According to numerous experts, Fitria (2021, unpagged), Fyfe (2022, unpagged), Gayed et al. (2022, unpagged), Godwin-Jones (2022, unpagged) mentioned that using AI-powered programs to help students with their writing assignments is acceptable. One excellent example of an AI-powered writing aid which is common use currently is *Grammarly*. By identifying grammar, spelling, punctuation, and style mistakes, it aids students in producing better writing. In order to improve the writing's efficacy and clarity, it also offers real-time recommendations and clarifications. The AI-powered writing programs generally function by evaluating content and offering recommendations for enhancements. On the one hand, AI functions have been added to basic program Microsoft Word, for example, to improve the writing experience for students who receive feedback on their writing. In order to assist them improve the quality of their writing, the AI features can also identify problems with clarity and conciseness. On the other hand, ChatGPT is another well-known writing platform powered by AI that helps users writes texts. The ChatGPT features include idea, feedback and suggestions, and language and vocabulary support. Nowadays, students have been using these features a lot, they can enhance their writing quality and expedite the process by utilizing the AI-powered tools to augment their own abilities. These programs, however, have limitations when it comes to comprehending the difference of context of language, which can lead to mistakes, therefore, using AI only to do an

essay assignment is not advised. While AI-powered writing tool might be useful for tasks like spelling and grammar checks, they cannot completely replace the analytical thinking abilities needed to produce an excellent essay. So the students still need to be aware of analyzing data in a writing to convey a clear idea as it is mentioned that the greatest approach to finish an essay assignment is the task should be combined students' own writing and critical thinking abilities with AI-powered platforms (Godwin-Jones, 2022: unpagged).

(3) AI technology and vocabulary

Applications with AI capabilities help students expand their vocabulary by highlighting unfamiliar keywords in texts and offering word meanings. According to Alsadoon (2021, p. 135) and Huang et al. (2023, p. 112), these characteristics can aid students in growing their vocabulary and improving their understanding of the materials they are reading. These apps can also improve learning and assist students in developing their speaking and listening skills by providing features like virtual assistants, interactive exercises, speech recognition, and personalized instruction (Ali, 2020, p. 135; Hapsari & Wu, 2022, p. 444; Huang et al., 2023, p. 112; Kholis, 2021, p. 1; Zhou, 2020, unpagged).

(4) AI technology and listening

Because they have elements that can improve learning, the AI-powered tool applications can also be very beneficial for improving speaking and listening abilities. These elements create a realistic and engaging practice environment by using natural language processing (NLP) to comprehend and react to students' speech (Hapsari & Wu, 2022, p. 444). Students can practice and improve their language abilities in an interactive and personalized way with AI-based speaking and listening tools. Additionally, AI can assist students in learning to speak and hear English in many ways, including interactive conversation practice, accent reduction and pronunciation improvement, speech recognition and assessment, listening comprehension exercises, and natural language understanding and response generation. In fact, an AI program that serves as a peer can accurately record and evaluate students' spoken words. It can also offer immediate feedback and pointers for growth by comparing their pronunciation, intonation, and fluency to native speakers. Furthermore, AI can participate in interactive conversations with students as virtual language tutors.

(5) AI technology and speaking

AI technology is able to pinpoint the precise pronunciation issues that the students need to work on, in order to help the student improve their accent and pronunciation. They also offer activities, comments, and samples of model pronunciation. Zhou (2020, unpagged) claims that an AI-powered application can provide speaking and listening tasks that shaped each student's interests and skill levels. Helping them become more proficient in English speaking, these exercises provide a range of dialects, speech velocities, and genres. Indeed, artificial intelligence (AI) technologies, such as ELSA Speak, and Duolingo, enable students to practice speaking and listening in English while using dialogues. The program also includes speaking activities with instant feedback, interactive exercises, and pronunciation practice (Handini et al., 2022, p. 85). To get the best outcomes, AI technology should be utilized in conjunction with real-world conversation practice with native speakers.

(6) AI technology and grammar

There are positive effects on language learners' ability to improve their English grammar by using AI technology. In fact, numerous studies have shown that using AI chatbots to learn a language can result in noticeable gains in grammar proficiency. Grammar checkers and other AI-based tools give students instant feedback on their grammar, which increases their prospects for learning outside of the classroom. These programs find and fix spelling, grammatical, and punctuation mistakes using sophisticated algorithms and machine learning techniques. These tools also assist writers in improving the language they use and making sure their work is error-free by providing real-time ideas and comments. Additionally, one of well-known examples of artificial intelligence software for spelling and grammar checking is *Grammarly*. Through individualized and interactive learning, artificial intelligence has the potential to improve communication abilities in English language learners. While AI has generally demonstrated promise in enhancing grammatical proficiency, more investigation is required to fully understand its long-term impacts and ideal incorporation within language learning settings.

(7) AI technology and reading

When studying English language, reading is a crucial ability. On the one hand, AI-powered reading aids are being utilized more frequently to assist language learners in developing their reading abilities. These AI-powered features include the characteristics that can help students who want to increase their vocabulary, comprehension, and general reading proficiency. According to Huang et al. (2023, p. 112), one of the most significant benefits of AI-powered applications is their ability to automate grading and provide feedback on reading comprehension exercises. Reading tasks can be turned in by students, and the AI tools can automatically score their work and offer suggestions for improvement. On the other hand, students can rapidly recognize their reading comprehension ability by using this feature, which can be quite helpful (Huang et al., 2023, p. 112). Text-to-speech technology, for example, is another advantage of AI-powered tool; it can translate written texts into audio files. With the use of this digital device, students can practice reading at a level that suits their present proficiency, which can boost confidence and enhance understanding. AI-enabled tools should be included to students' routine reading exercises to help them improve their comprehension and expand their capacity to read in a variety of settings continuously. Students looking to advance their English reading abilities can benefit from a variety of features provided by AI-powered tool (Lesia et al., 2022, p. 262).

2. Learner Levels

There are several levels of learners at which AI-technologies could be employed in research between 2021 and 2023: primary, secondary, tertiary, graduate, and overall of educational settings. The study revealed that the most common level at which AI technologies are integrated is *tertiary* level, aligned with research by Shim et al. (2023, p. 65), Escalante et al. (2023, unpagged), Alexander et al. (2023, p. 25), Balkir, Celik and Cepni (2023, p. 97), Hwang et al. (2023, p. 8), Saadati et al. (2023, p. 48), Jeon and Lee (2023, p. 73), Perkins (2023, p. unpagged), Chu and Szlagor (2023, unpagged), Yang (2023, p. 101), Muñoz-Basols et al. (2023, p. 171), Álvarez-Álvarez, and Falcon (2023, p. 9), Huang et al (2023, p. 112), Kim (2022, p. 79), Khoo and Kang (2022, unpagged), Tantucci and Wang (2022, p 115), Baranwal (2022, p. 1), Gupta and Chen (2022, p. 98), Burkhard (2022, unpagged), Heugh et al. (2022, p. 89), Lesia

Viktorivna et al. (2022, p. 262), Salas-Pilco and Yang (2022, unpagged), Sumakul, Hamied, and Sukyadi (2022, p. 232), Lin and Mubarok (2021, p. 16), Rybinski and Kopciuszewska (2021, p. 127), Sumo and Bah (2021, p. 264), Vittorini, Menini, and Tonelli (2021, p. 159), Alsadoon (2021, p. 135), Wu et al. (2021, p. 70).

According to the mentioned scholars above, on the one hand, tertiary level is defined as the most useful level for employing AI-technologies in ELT because the learners could applied advanced technology to their obtained English competencies, on the other hand, it could conclude that most of researchers who conducted these studies are lecturers and professors at university level.

Recommendation

Many experts identify a number of additional study and advancement in ELT settings. Researching the long-term effects of AI integration on language learning outcomes is crucial; according to scholars like Taylor (2023: p. 1), it is also important to look into how AI might support language skills outside of the traditional domains, like intercultural communication and cultural understanding. Furthermore, an additional study is required to comprehend how AI affects the students from various linguistic and cultural backgrounds.

Overall, AI technology has the potential that have a big impact on English language teaching and learning, according to the literature reviews. Enhancing individualized training, offering effective language testing, and encouraging learner autonomy are all possible with the incorporation of the AI tools. To optimize the advantages and minimize the difficulties related to AI integration, the pedagogical implications, ethical concerns, and the role of teachers should be considered carefully.

Acknowledgment

I would like to express my deep appreciation and undoubtedness particularly to the followers: Ph.D. in ELT chairman and committees at BRU 1) Associate Professor Akkarapon Nuemaihom, Ph.D., 2) Assistant Professor Surachai Piyanukool, Ph.D., 3) Assistant Professor Nawamin Prachanant, Ph.D.

References

- Abdalkader, S., M. A. (2023). *The impact of using artificial intelligence on enhancing EFL language fluency and self-regulation for the preparatory stage students in distinguished governmental language schools*. (Doctoral Dissertation). Ain Shams University. [https://eric.ed.gov/?q=Artificial+Intelligence+\(AI\)+in+English+Language+Teaching+\(ELT\)&ffl=dtYSince_2020&pg=2&id=ED630026](https://eric.ed.gov/?q=Artificial+Intelligence+(AI)+in+English+Language+Teaching+(ELT)&ffl=dtYSince_2020&pg=2&id=ED630026)
- Adiguzel, T., Kaya, M. H., & Cansu, F. K. (2023). Revolutionizing education with AI: exploring the transformative potential of ChatGPT. *Contemporary Educational Technology*, 15(3), 429.
- Alexander, K., Savvidou, C., & Alexander, C. (2023). Who wrote this essay? Detecting AI-generated writing in second language education in higher education, *Teaching English with Technology*, 23(2), 25-43.

- Ali, F., Choy, D., Divaharan, S., Tay, H., & Chen, W. (2023). Supporting self-directed learning and self-assessment using teacher GAIA, a generative AI Chatbot application: learning approaches and prompt engineering. *Learning: Research and Practice*, 9(2), 135-147.
- Ali, Z. (2020). Artificial Intelligence (AI): A review of its uses in language teaching and learning. *IOP Conference Series: Materials Science and Engineering*, 769(1), 12-43.
- Alsadoon, R. (2021). Chatting with AI bot: vocabulary learning assistant for Saudi EFL learners. *English Language Teaching*, 14(6), 135-157.
- Álvarez-Álvarez, C., & Falcon, S. (2023). Students' preferences with university teaching practices: analysis of testimonials with artificial intelligence. *Educational Technology Research and Development*, 71(4), 709-724.
- An, X., Chai, C. S., Li, Y., Zhou, Y., Shen, X., Zheng, C., & Chen, M. (2023). Modeling English teachers' behavioral intention to use artificial intelligence in middle schools. *Education and Information Technologies*, 28(5), 187-208.
- Balkir, N. B., Celik, H., & Cepni, G. (2023). Lexical complexity in ELT students' essays across genres and over the course of time. *Reading Matrix: An International Online Journal*, 23(1), 67-79.
- Baranwal, D. (2022). A systematic review of exploring the potential of teachable agents in English learning. *Pedagogical Research*, 7(1), 1-17.
- Bonner, E., Lege, R., & Frazier, E. (2023). Large language model-based artificial intelligence in the language classroom: practical ideas for teaching. *Teaching English with Technology*, 23(1), 23-41.
- Bozkurt, A. (2023). Generative Artificial Intelligence (AI) powered conversational educational agents: the inevitable paradigm shift. *Asian Journal of Distance Education*, 18(1), 198-204.
- Burkhard, M. (2022). *Student perceptions of AI-powered writing tools: towards individualized teaching strategies*. Proceeding of Research, *International Association for Development of the Information Society*, Paper presented at the International Conference on Cognition and Exploratory Learning in Digital Age (CELDA).
- Byrd, A. (2023). Truth-telling: Critical inquiries on LLMs and the corpus texts that train them. *Composition Studies*, 51(1)135-142.
- Chen, X., Zou, D., Xie, H., Cheng, G., & Liu, C. (2022). Two decades of artificial intelligence in education: contributors, collaborations, research topics, challenges, and future directions. *Educational Technology & Society*, 25(1), 28-47.
- Chen, Y. (2018). Artificial intelligence in English language education: Promises and challenges. *Journal of Education and Learning*, 7(1), 1-9.
- Chu, J., & Szlagor, M. (2023). Multi-intelligence English teaching model based on distance and open education. *International Journal of Web-Based Learning and Teaching Technologies*, 18(2).
- Costello, E., Brunton, J., Bolger, R., Soverino, T., & Juillerac, C. (2023). Massive omission of consent (MOOC): Ethical research in educational big data studies
- Davis, B. (2020). The role of artificial intelligence in language learning. *TESL-EJ*, 24(2), 1-10.

- Diaz, M. (2023). 2023 was a big year for AI: The top countries using it and which AI tools they prefer. <https://www.zdnet.com/article/2023-was-a-big-year-for-ai-the-top-countries-using-ai-and-the-tools-they-prefer/>
- Du, Y., & Gao, H. (2022). Determinants affecting teachers' adoption of AI-based applications in EFL Context: An analysis of analytic hierarchy process. *Education and Information Technologies*, 27(7), 357-384.
- Ehrensberger-Dow, M., Delorme Benites, A., & Lehr, C. (2023). A new role for translators and trainers: MT literacy consultants. *Interpreter and Translator Trainer*, 17(3), 393-411.
- Ericsson, E., Sofkova Hashemi, Y., & Lundin, J. (2023). Fun and frustrating: Students' perspectives on practicing speaking english with virtual humans. *Cogent Education*, 10(1).
- Escalante, J., Pack, A., & Barrett, A. (2023). AI-generated feedback on writing: Insights into efficacy and ENL student preference. *International Journal of Educational Technology in Higher Education*, 20(57).
- Fitria, T. N. (2021). Grammarly as AI-powered English writing assistant: students' alternative for writing English. *Metathesis: Journal of English Language, Literature, and Teaching*. <https://doi.org/10.31002/metathesis.v5i1.3519>
- Fyfe, P. (2022). How to cheat on your final paper: Assigning AI for student writing. *AI and Society*. <https://doi.org/10.1007/s00146-022-01397-z>
- Gayed, J. M., Carlon, M. K. J., Oriola, A. M., & Cross, J. S. (2022). Exploring an AI-based writing assistant's impact on English language learners. *Computers and Education: Artificial Intelligence*. <https://doi.org/10.1016/j.caeai.2022.100055>
- Godwin-Jones, R. (2022). Partnering with AI: Intelligent writing assistance and instructed language learning. *Language Learning & Technology*. <https://doi.org/http://doi.org/10125/73474>
- Gupta, S., & Chen, Y. (2022). Supporting inclusive learning using Chatbots? a Chatbot-led interview study. *Journal of Information Systems Education*, 33(1), 98-108.
- Han, B. (2019). Application of artificial intelligence in autonomous English learning among college students. *International Journal of Emerging Technologies in Learning (IJET)*, 14(06), 63.
- Handini, B. S., Nurhasanah, N., & Panly, F. I. (2022). The effect of artificial intelligent technology used (Duolingo application) to enhance English learning. *ELLITE: Journal of English Language, Literature, and Teaching*. 7(2), 85-94.
- Hapsari, I. P., & Wu, T.-T. (2022). AI chatbots learning model in English speaking skill: Alleviating speaking anxiety, boosting enjoyment, and fostering critical thinking. In lecture notes in computer science (including subseries lecture notes in artificial intelligence and lecture notes in bioinformatics), 444-453.
- Hertzberg, S., & Rudner, L. (1999). Quality of researchers' searches of the ERIC database. *Education Policy Analysis Archives*, 7(25).
- Heugh, K., French, M., Arya, V., Pham, M., Tudini, V., Billinghamurst, N., Tippet, N., Chang, L., Nichols, J., & Viljoen, J. M. (2022). Multilingualism, translanguaging and transknowledging: Translation technology in EMI higher education. *AILA Review*, 35(1), 89-127.

- Hockly, N. (2023). Artificial intelligence in English language teaching: The good, the bad and the ugly. *RELC Journal: A journal of Language Teaching and Eesearch*, 54(2), 445-451.
- Hsu, L. (2022). To CALL or Not to CALL: Empirical evidence from neuroscience. *Computer Assisted Language Learning*, 35(4), 792-815.
- Huang, X., Zou, D., Cheng, G., Chen, X., & Xie, H. (2023). Trends, research issues and applications of artificial intelligence in language education. *Educational Technology & Society*, 26(1), 112-131.
- Hwang, W. Y., Nurtantyana, R., Purba, S. W. D., Hariyanti, U., Indrihapsari, Y., & Surjono, H. D. (2023). AI and recognition technologies to facilitate English as foreign language writing for supporting personalization and contextualization in authentic contexts. *Journal of Educational Computing Research*, 61(5), 8-35.
- Jeon, J and Lee, S. (2023). Large language models in Education: a focus on the complementary relationship between human teachers and ChatGPT. *Education and Information Technologies*, 28(12), 73-92.
- Kholis, A. (2021). Elsa speak app: Automatic speech recognition (ASR) for supplementing English pronunciation skills. *Pedagogy: Journal of English Language Teaching*, 9(1), 01.
- Khoo, E., & Kang, S. (2022). Proactive learner empowerment: towards a transformative academic integrity approach for English language learners. *International Journal for Educational Integrity*, 18(24).
- Kim, N. Y. (2022). AI-integrated mobile-assisted language learning: is it an effective way of preparing for the TOEIC test in classroom environments?. *English Teaching*, 77(3), 79-102.
- Kohnke, L., Moorhouse, B. L., & Zou, D. (2023). ChatGPT for language teaching and learning. *RELC Journal: A Journal of Language Teaching and Research*, 54(2), 537-550.
- Lee, D., Kim, H., & Sung, S. (2023). Development research on an AI English learning support system to facilitate learner-generated-context-based learning. *Educational Technology Research and Development*, 71(2), 629-666.
- Lesia Viktorivna V. K., Andrii Oleksandrovych, V., Iryna Oleksandrivna, K., & Nadia Oleksandrivna, K. (2022). Artificial intelligence in language learning: What are we afraid of. *World English Journal*, 8, 262-273.
- Lin, C., & Mubarak, H. (2021). Learning analytics for investigating the mind map-guided AI Chatbot approach in an EFL flipped speaking classroom. *Educational Technology & Society*, 24(4), 16-35.
- Liu, P. L., & Chen, C. J. (2023). Using an AI-based object detection translation application for English vocabulary learning. *Educational Technology & Society*, 26(3), 5.
- Majid, I., & Lakshmi, Y. V. (2022). Artificial intelligence in education. *Online Submission, Indian Journal of Technical Education*, 45(3), 11-16.
- Malakul, S., & Park, I. (2023). The effects of using an auto-subtitle system in educational videos to facilitate learning for secondary school students: Learning comprehension, cognitive load, and satisfaction. *Smart Learning Environments*, 10(4).

- McKnight, L. (2021). Electric sheep? humans, robots, artificial intelligence, and the future of writing. *Changing English: Studies in Culture and Education*, 28(4), 442-455.
- Molenaar, I. (2022). Towards hybrid human-AI learning technologies. *European Journal of Education*, 57(4), 632-645.
- Muñoz-Basols, J., Neville, C., Lafford, B. A., & Godev, C. (2023). Potentialities of applied translation for language learning in the era of artificial intelligence. *Hispania*, 106(2), 171-194.
- Pack, A., & Maloney, J. (2023). Potential affordances of generative AI in language education: Demonstrations and an evaluative framework. *Teaching English with Technology*, (23)2, 4-24.
- Pack, A., & Maloney, J. (2023). Using generative artificial intelligence for language education research: Insights from using OpenAI's ChatGPT. *TESOL Quarterly: A Journal for Teachers of English to Speakers of Other Languages and of Standard English as a Second Dialect*, 57(4), 71-82.
- Perkins, M. (2023). Academic integrity considerations of AI large language models in the post-pandemic era: ChatGPT and beyond. *Journal of University Teaching and Learning Practice*, 2(7).
- Lestari, S., Usadiati, W., & Misrita, M. (2022). The correlation between students' artificial intelligence and their reading skills achievement. *Bahasa: Jurnal Keilmuan Pendidikan Bahasa Dan Sastra Indonesia*, 3(2), 103-111.
- Robbins, J. B. (2001). ERIC: Mission, structure, and resources, *Government Information Quarterly*, 18(1), 5-17.
- Rybinski, K., & Kopciuszewska, E. (2021). Will artificial intelligence revolutionise the student evaluation of teaching? A big data study of 1.6 million student reviews. *Assessment & Evaluation in Higher Education*, 46(7), 127-139.
- Saadati, Z., Zeki, C. P., & Barenji, R., V. (2023). On the development of blockchain-based learning management system as a metacognitive tool to support self-regulation learning in online higher education. *Interactive Learning Environments*, 31(5), 48-71.
- Salas-Pilco, S. Z., & Yang, Y. (2022). Artificial intelligence applications in Latin American higher education: A systematic review. *International Journal of Educational Technology in Higher Education*, 19(21).
- Schäffer, B., & Lieder, F. R. (2023). Distributed interpretation - teaching reconstructive methods in the social sciences supported by artificial intelligence. *Journal of Research on Technology in Education*, 55(1), 111-124.
- Shah, P. (2023). *AI and the future of education: teaching in the age of artificial intelligence*. [https://eric.ed.gov/?q=Artificial+Intelligence+\(AI\)+in+English+Language+Teaching+\(ELT\)&ffl=dtSince_2020&pg=2&id=ED635697](https://eric.ed.gov/?q=Artificial+Intelligence+(AI)+in+English+Language+Teaching+(ELT)&ffl=dtSince_2020&pg=2&id=ED635697)
- Sharadgah, T. A., & Sa'di, R. A. (2022). A systematic review of research on the use of artificial intelligence in English language teaching and learning (2015-2021): What are the current effects?. *Journal of Information Technology Education: Research*, 21, 337-377.

- Shim, K. J., Menkhoff, T., Teo, L. Y. Q., & Ong, C. S. Qi. (2023). Assessing the effectiveness of a Chatbot workshop as experiential teaching and learning tool to engage undergraduate students. *Education and Information Technologies*, 28(12), 65-88.
- Stockdale, J. G. III. (2022). *A dictionary and thesaurus of contemporary figurative language and metaphor 2022*. [https://eric.ed.gov/?q=Artificial+Intelligence+\(AI\)+in+English+Language+Teaching+\(ELT\)&ff1=dtysince_2020&pg=4&id=ED619049](https://eric.ed.gov/?q=Artificial+Intelligence+(AI)+in+English+Language+Teaching+(ELT)&ff1=dtysince_2020&pg=4&id=ED619049)
- Sumakul, D. T. Y. G., Hamied, F. A., & Sukyadi, D. (2022). Artificial intelligence in EFL classrooms: friend or foe?. *LEARN Journal: Language Education and Acquisition Research Network*, 15(14), 232-256.
- Sumo, D. S., & Bah, M. L. (2021). Chinese language education in the era of artificial intelligence; innovation development, pedagogy & the smart classroom. *Education Quarterly Reviews*, 4(4), 264-270.
- Tai, T. Y., & Chen, H. H. J. (2023). The impact of Google assistant on adolescent EFL learners' willingness to communicate. *Interactive Learning Environments*, 31(3), 485-502.
- Tantucci, V., & Wang, A. (2022). Resonance as an applied predictor of cross-cultural interaction: Constructional priming in Mandarin and American English interaction. *Applied Linguistics*, 43(1), 115-146.
- Taylor, L. (2023). The future of artificial intelligence in language education: Trends and prospects. *Language Teaching*, 56(1), 1-20
- Tülübas, T., Demirkol, M., Ozdemir, T. Y., Polat, H., Karakose, T., & Yirci, R. (2023). An interview with ChatGPT on emergency remote teaching: A comparative analysis based on human-AI collaboration. *Educational Process: International Journal*, 12(2), 93-110.
- Vittorini, P., Menini, S. & Tonelli, S. (2021). An AI-based system for formative and summative assessment in data science courses. *International Journal of Artificial Intelligence in Education*, 32(2), 159-185.
- Wallwork, A. (2023). *English for academic research: Grammar, usage and style. second edition. English for Academic Research*. [https://eric.ed.gov/?q=Artificial+Intelligence+\(AI\)+in+English+Language+Teaching+\(ELT\)&ff1=dtysince_2020&pg=5&id=ED632567](https://eric.ed.gov/?q=Artificial+Intelligence+(AI)+in+English+Language+Teaching+(ELT)&ff1=dtysince_2020&pg=5&id=ED632567)
- Wu, L., Wu, Y., & Xiang, Y. (2021). L2 learner cognitive psychological factors about artificial intelligence writing corrective feedback. *English Language Teaching*, 14(10), 70-83.
- Xu, B., Margevica-Grinberga, I. (2021). A discourse on innovation of English teaching in China from the perspective of artificial intelligence. *Cypriot Journal of Educational Sciences*, 16(5), 13-23.
- Xu, X., Dugdale, D. M., Wei, X., & Mi, W. (2023). Leveraging artificial intelligence to predict young learner online learning engagement. *American Journal of Distance Education*, 37(3), 185-198.
- Yang, H., & Kyun, S. (2022). The current research trend of artificial intelligence in language learning: A systematic empirical literature review from an activity theory perspective. *Australasian Journal of Educational Technology*, 38(5), 180-210.

- Yang, H., Kim, H., Lee, J., & Shin, D. (2022). Implementation of an AI Chatbot as an English conversation partner in EFL speaking classes. *ReCALL*, 34(3), 327-343.
- Yang, J. (2023). Preparing for the new era of artificial intelligence: My experience of artificial intelligence in advertising. *Journal of Advertising Education*, 27(2), 101-116.
- Zhao, R., Zhuang, Y., Zou, D., Xie, Q., & Yu, P. L. H. (2023). AI-assisted automated scoring of picture-cued writing tasks for language assessment. *Education and Information Technologies*, 28(6), 31-63.
- Zhou, J. (2020). "Design of AI-based self-learning platform for college English listening" Proceeding of Research, 2020 2nd International Conference on Machine Learning, Big Data and Business Intelligence, MLBDBI 2020. <https://doi.org/10.1109/MLBDBI51377.2020.00114>

Authors

Wanchana Boonchom, Ph.D. student in ELT at Buriram Rajabhat University, is a full-time lecturer at the English program, the Faculty of Humanities and Social Sciences, UBRU. His research interests include English learning and teaching, and second language acquisition.

Surachai Piyanukool, Ph.D., is a committee member of Ph.D. Program in English Language Teaching, Faculty of Humanities and Social Sciences, Buriram Rajabhat University, Thailand. His research covers topics on English teaching, education research, and language pedagogy research.

Nawamin Prachanant, Ph.D., is a vice president of international affairs, and a committee member of Ph.D. Program in English Language Teaching, Faculty of Humanities and Social Sciences, Buriram Rajabhat University, Thailand. His research interests are English teaching, education research, and language pedagogy research.