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Implementation of Artificial Intelligence (AI): Chat GPT for Effective English Language Learning among Thai Students in Higher Education

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ABSTRACT

The study aimed to (i) explore the effectiveness of Artificial Intelligence (AI) models like Chat GPT to facilitate English language learning among Thai students in Higher education and (ii) compare the English Language Learning effectiveness among Thai Students after implementing artificial intelligence (AI) like Chat GPT to facilitate English language learning. The participants were Thai students aged 19-20 from first-year pre-service teachers in Bangkok. A total of 120 students participated, 60 in the control and 60 in the experimental group. The selection of participants was done through stratified random sampling to ensure a diverse representation of pre-service teachers with varying levels of English proficiency. We utilized a mixed-methods approach that combined qualitative and quantitative data: Standardized English tests, Chat GPT, focus group interviews, and field notes. The research instruments were (i) Standardized English Tests, (ii) Chat GPT, (iii) Focus Group interview questions, and (iv) Field Notes Form. The research findings strongly advocated integrating AI tools like Chat GPT in educational settings to facilitate more effective language learning. The study demonstrates that students who interacted with AI improved their language skills. A paired sample t-test revealed that this difference between control and experimental groups was statistically significant ($p < .001$). Feedback from the focus group interviews indicated that students in the experimental group. After implementing artificial intelligence (AI) like Chat GPT, the AI-based learning experience increased engagement, personalization, real-time feedback, attitude change, and learning motivation. They reported that the real-time feedback and interactive exercises offered by Chat GPT helped them understand and apply language concepts more effectively. Lastly, the attitude changes because the students had high motivation, strong self-confidence, and a positive attitude shift.

Key words: Artificial Intelligence, English Language Learning, Chat GPT, Thai Students, Higher Education

INTRODUCTION

English has become vital for international communication and business in today's globalized world. English proficiency is an academic necessity for Thai students and a crucial ability that can open the door to countless future chances. However, traditional techniques of language training, which frequently rely on memorization by rote and repetitive exercises, are less efficient at engaging pupils and offering a tailored learning experience. Artificial Intelligence (AI) has emerged as a potent tool in various industries, altering how jobs are accomplished and issues are solved. Recently, there has been a growing interest in utilizing AI technologies for educational applications, specifically language learning. This study investigates the potential for AI to boost Thai students' English language learning literacy. Students can engage in personalised and interactive learning using AI-based platforms and applications tailored to their requirements and interests. This study examines the benefits of artificial intelligence in English language learning, discusses the problems that need to be solved, and recommends appropriately incorporating AI into the Thai education system.

The capacity to create tailored learning experiences is one of the most significant benefits of using AI in English language learning literacy. Individual student strengths, limitations, and learning styles can be analyzed using AI-powered platforms, allowing customized content and exercises. According to a study by Wang and Chen (2018), AI algorithms may adjust the level of difficulty of exercises based on a student's performance, ensuring that they are appropriately pushed without being overwhelmed. By focusing on specific growth areas and delivering tailored feedback, this individualized method can dramatically increase language learning efficiency.

In addition to personalization, AI's dynamic and engaging character facilitates English language learning. Traditional language acquisition methods rely on textbooks and lectures, which may only partially engage and fascinate

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students. However, AI-based systems can incorporate gamification elements such as quizzes, interactive exercises, and virtual chats to make learning more engaging and motivating. According to a study by Suleman et al. (2019), students who used AI-based language learning platforms reported higher levels of engagement and motivation than those who used conventional methods.

When integrating AI into English language education in Thailand, various obstacles must be overcome despite the potential benefits. One of the most significant problems is ensuring that all students, regardless of socioeconomic status, have equitable access to AI technologies. AI platforms frequently necessitate internet connectivity and gadgets, which some students, especially those from underprivileged regions, may need easier access. According to Rovai et al. (2020), policymakers and educational institutions must invest in infrastructure and resources to overcome the digital divide and offer fair access to AI-based language learning tools. Artificial Intelligence (AI) in the classroom provides many advantages, including customized learning experiences for each student. Using AI algorithms, intelligent tutoring systems can adjust and meet each learner's specific demands, improving comprehension and memory retention. AI is used in adaptive assessments to evaluate students' performance, giving them immediate feedback and pinpointing areas for development.

Several recommendations can be proposed to leverage AI for English language learning literacy in Thailand effectively. First, teacher training programs should be developed to equip educators with the necessary skills and knowledge to integrate AI into their teaching practices effectively. This will ensure teachers can guide and support students utilizing AI tools to maximize their learning outcomes. Additionally, a collaboration between educational institutions, AI developers, and language experts is crucial in designing and developing AI platforms that are culturally sensitive and aligned with the Thai curriculum. By working together, universities can create AI-based solutions that cater to Thai students' specific needs and context, enhancing their English language learning experience.

However, before exploring the possible advantages of AI in English language learning literacy, it is crucial to undertake a gap analysis to pinpoint the current flaws in the language learning methodologies in Thailand. Thai students frequently require assistance in understanding the language despite efforts to increase their English language ability. Traditional approaches like lectures and textbooks must be upgraded to provide individualized and exciting learning experiences. These methods may need to be revised to effectively address each student's unique learning needs and preferences, which could lead to less-than-ideal learning outcomes.

Additionally, a lack of interactive and exciting language learning activities might hinder students' motivation and interest. The gap in the existing language learning strategies emphasizes the demand for novel techniques to overcome these constraints and offer Thai students a more effective and exciting learning environment.

This study seeks to close the gaps in Thailand's language-learning strategies by completing a gap analysis. AI technology can close these gaps by providing interactive learning experiences tailored to each student's requirements and interests. By including AI-based platforms and applications, learning activities, gamification features, and virtual discussions can be provided to motivate and enliven students' learning. Artificial Intelligence (AI) in the classroom offers many advantages, including customized learning experiences for each student. Using AI algorithms, intelligent tutoring systems can adjust and meet each learner's specific demands, improving comprehension and memory retention. AI is used in adaptive assessments to evaluate students' performance, giving them immediate feedback and pinpointing areas for development (Ideal Asarsh, 2023).

This study aims to fill the holes in Thailand's language-learning methodologies by performing a gap analysis. AI technology can close these gaps by offering interactive learning opportunities customized to each student's needs and interests. Learning activities, gamification elements, and virtual dialogues can be provided to stimulate and animate students' learning by incorporating AI-based platforms and applications.

The gap analysis highlights the shortcomings of conventional language learning methods in Thailand and the demand for creative solutions (Balaji & Chakravarthy, 2019).

McDiarmid and Zhao (2023) claimed the technological sector has advanced significantly in recent years, and education is one area where this is most noticeable. Students now have more excellent options than ever to customize their learning experiences to meet their unique needs, thanks to the development of artificial intelligence (AI) and personalized learning.

The way students study is being revolutionized by AI-driven individualized learning. Personalized learning can produce more tailored learning routes for students by utilizing AI technology, leading to more effective and efficient learning. By assessing each student's unique needs and customizing the materials and activities to suit their interests, artificial intelligence (AI) technology can assist in making learning more personalized. Students may receive individualized content based on their skills, interests, and learning preferences, for instance, through AI-driven customized learning.

Moreover, compared to conventional approaches, AI-driven individualized learning can offer pupils more feedback and direction. AI can identify the areas in which pupils are having difficulty and provide focused comments to help them improve. AI is also capable of making activity and resource recommendations that are specific to each student's needs. As they continue learning, this keeps pupils interested and involved.

AI technologies can close these gaps and improve Thai students' English language acquisition. The remainder of this essay will expand on the advantages of AI in language acquisition, go over the issues that must be resolved, and offer suggestions for successfully incorporating AI into the Thai educational system. Therefore, the researcher wishes to consider the gap analysis to explore the potential of artificial intelligence (AI) in English language learning literacy.

Objectives

The current study aimed

1. To investigate the potential of artificial intelligence (AI) like Chat GPT to facilitate English language learning among Thai students.
2. To compare the effectiveness of English Language Learning among Thai Students for experimental after implementing artificial intelligence (AI) like Chat GPT to facilitate English language learning.

Research Questions

1. What is the potential of artificial intelligence (AI) like Chat GPT to facilitate English language learning among Thai students?
2. What is the effectiveness of English Language Learning among Thai Students after implementing artificial intelligence (AI) like Chat GPT to facilitate English language learning?

LITERATURE REVIEW

AI in Education

In education, this technology will influence how students learn, teachers work, and ultimately, how people structure the education system. Some educators and leaders look forward to these changes with great enthusiasm. Sal Kahn, founder of Khan Academy, went so far as to say in a TED talk that AI has the potential to effect "probably the biggest positive transformation that education has ever seen." However, others warn that AI will spread misinformation, facilitate cheating in school and college, kill whatever vestiges of individual privacy remain, and cause massive job loss. The challenge is to harness the positive potential while avoiding or mitigating the harm. In May 2023, the U.S. Department of Education released a report titled *Artificial Intelligence and the Future of Teaching and Learning: Insights and Recommendations*. The department conducted listening sessions 2022 with more than 700 people, including educators and parents, to gauge their views on AI. The report noted, "Constituents believe that action is required now to get ahead of the expected increase of AI in education technology—and they want to roll up their sleeves and start working together." People expressed anxiety about "future potential risks" with AI but felt that "AI may enable achieving educational priorities in better ways, at scale, and with lower costs" (Education Next, 2023). The use of AI: ChatGPT, a powerful natural language processing model, in the field of education, has several significant implications:

Enhancing learning motivation

Research by Zhou and Li (2023) demonstrates that ChatGPT can positively impact students' learning motivation. ChatGPT can foster high motivation, strong self-confidence, and a positive attitude shift among students when integrated into the educational environment. It can be attributed to its ability to provide personalized and interactive support, making learning more engaging and enjoyable.

Improved writing and reading skills

ChatGPT has been found to enhance students' reading and writing abilities generally. It can provide instant feedback, suggest improvements, and help students develop their language skills. This benefit aligns with Ali et al.'s (2023) findings, indicating that ChatGPT encourages students to improve their written communication skills.

Support for learning English

In the context of language learning, students' desire to learn and their belief in having readily available support is crucial. ChatGPT can be a helpful tool for language learners, offering instant translations, language practice, and conversation partners. The positive attitude shift observed in the study by Zhou and Li (2023) highlight the potential of ChatGPT in fostering a supportive and motivating environment for language education.

Enhanced teaching practices

ChatGPT in the classroom can encourage more motivated teaching. Educators can leverage ChatGPT to provide personalized assistance to students, offer explanations, and facilitate interactive discussions. It can create a more engaging and dynamic learning experience, aligning with contemporary pedagogical approaches emphasizing learner-centered instruction.

Areas for further research

While ChatGPT shows promise in various aspects of education, there is still room for more in-depth research. Some areas that require further exploration include the impact of ChatGPT on speaking and listening skills, the potential drawbacks or limitations of ChatGPT in educational settings, and strategies for effectively integrating ChatGPT into the curriculum.

In summary, ChatGPT has the potential to revolutionize education by improving learning motivation, enhancing writing and reading skills, and supporting language learning. Its use in the classroom can create a more engaging and interactive learning environment, benefiting students and educators. However, continued research and experimentation are necessary to understand the implications and challenges of fully integrating ChatGPT into education. While AI can significantly enhance the process of second language acquisition, it is essential to note that it should complement, not replace, human instructors and real-life language practice. AI can provide valuable support and resources, but meaningful communication and cultural understanding often require human interaction. The correlation between AI and SLA is evolving, with technology playing an increasingly prominent role in language education.

Recent Studies and Theories Relevant to AI in Language Learning

Recent advancements in AI have significantly impacted language learning, prompting researchers to explore its

potential in educational settings. Chung et al. (2023) conducted a comprehensive review of AI applications in language education, highlighting the growing trend of using chatbots and intelligent tutoring systems. Their study found that AI-powered tools can provide personalized feedback, adaptive learning paths, and real-time language practice opportunities, aligning with contemporary theories of second language acquisition. Building on this, Li and Wang (2022) proposed a framework for integrating AI into language learning curricula, emphasizing the importance of combining AI tools with human instruction. Their research demonstrated that a blended approach, leveraging AI for personalized practice and human teachers for nuanced cultural and contextual understanding, yielded the most effective learning outcomes. In the context of motivation and engagement, Zhang et al. (2024) explored the impact of AI-driven gamification in language learning apps. Their study revealed that AI algorithms could adjust difficulty levels and reward systems dynamically, increasing learner motivation and prolonged engagement with language learning materials. Addressing concerns about AI's potential to hinder authentic language production, Patel and Nguyen (2023) investigated using AI writing assistants in second-language composition. They found that AI assistants could enhance learners' writing skills and confidence as a scaffolding tool rather than replacing student writing.

Furthermore, recent neuroimaging studies by Moreno and Kim (2023) have shed light on the cognitive processes involved in AI-assisted language learning. Their research suggests that interaction with AI language models activates similar neural pathways to those engaged during human-to-human language interaction, supporting the efficacy of AI in language acquisition. These recent studies collectively point to the growing potential of AI in language learning, highlighting the need for careful integration and continued research to maximize its benefits.

Theoretical Related

SLA theories

The theoretical framework for this study is grounded in Second Language Acquisition (SLA) theories, particularly the Input Hypothesis and the Interaction Hypothesis. These theories posit that language learning is most effective when learners are exposed to "comprehensible input" and have opportunities for interactive communication. In other words, learners benefit slightly from language input above their current level of understanding and from interactive experiences that allow them to negotiate meaning.

AI and SLA

AI tools like Chat GPT align well with these SLA theories. They can provide comprehensible input tailored to the learner's current level of language proficiency and offer interactive experiences that simulate real-world language use. This alignment suggests that AI tools can effectively facilitate language learning and deliver personalized, interactive, and contextually relevant language experiences.

Comparing Artificial Intelligence (AI) and Second Language Acquisition (SLA) theories (Table 1) can provide

Table 1. Comparison between Artificial Intelligence (AI) and Second Language Acquisition (SLA) theories

Aspect	Artificial Intelligence (AI)	Second Language Acquisition (SLA)	Complementarity	Citation & References
Objective	To create intelligent systems capable of performing tasks that would require human intelligence.	To understand how people acquire a second language.	AI can be designed to align with SLA theories to facilitate effective language learning.	(Smith & Johnson, 2015; Lee & Kim, 2020)
Methodology	Algorithms, machine learning, natural language processing.	Observational and experimental studies on language learners.	AI can use SLA research to create more effective language-learning algorithms.	(Williams, 2018; Davis, 2016)
Personalization	High: AI can tailor learning experiences to individual needs.	Varies: SLA theories acknowledge the importance of individual differences but may not offer solutions.	AI can provide the personalized learning experiences that SLA theories recommend.	(Roberts & Jones, 2019; Thomas et al., 2017)
Interactivity	Can offer interactive learning experiences through chatbots, virtual environments, etc.	Emphasizes the importance of interaction in language learning.	AI can provide the interactive experiences that are crucial in SLA.	(Kim & Park, 2021; Martin & White, 2019)
Real-time feedback	Provides immediate feedback based on learner input.	Feedback is considered crucial but depends on the teacher or environment.	According to SLA theories, AI can offer immediate, consistent, and beneficial feedback.	(Smith & Davis, 2021; Brown & Green, 2017)
Scalability	Highly scalable; can serve many learners simultaneously.	They are limited by classroom size and teacher availability.	AI can extend the reach of effective SLA-based teaching methods to more learners.	(Johnson & Lee, 2020; Williams & Clark, 2018)

a concise overview of their similarities and differences and how they can complement each other in language learning.

Related Studies

As elucidated in this study, the implications of leveraging Artificial Intelligence (AI) for adequate English language learning literacy among Thai students resonate with a growing body of research exploring AI's integration into language education. Several studies have delved into the transformative potential of AI-driven language learning, providing valuable insights and supporting the assertions made in this thesis.

The effectiveness of AI-driven language-learning platforms is a significant field of related study. Smith et al. (2019) conducted a study that confirmed the present study's quantitative findings. Students who interacted with an AI-based language-learning platform considerably increased their language skills. Their research supports the notion that AI can improve language learning outcomes.

The influence of AI on personalized learning experiences presented in this thesis is consistent with Roberts and Jones's study (2019). They investigated the concept of personalized learning in the context of AI. They discovered that AI-driven systems may modify material and pace to meet the specific requirements of each learner. Individualization is a crucial component of the personalized approach observed in the experimental group of this study, as evidenced by the high levels of engagement and personalization stated by participants (Thomas et al., 2017).

Regarding providing real-time feedback, the present study resonates with the research of Smith and Davis (2021). They emphasized the importance of timely and relevant feedback in language learning, which was a significant attribute of Chat GPT in this research. The immediate feedback AI provides contributes to understanding and applying language concepts, as observed in this study.

The alignment between AI-driven language learning and Second Language Acquisition (SLA) theories, a core aspect of this thesis, has also been explored in previous research. Williams & Clark (2018) and Lee and Kim (2020) delved into the harmony between AI-based language learning methods and SLA principles. They found that AI systems can facilitate the comprehensible input and interaction aspects, central tenets of SLA theories.

The global importance of English proficiency, as emphasized in the implications for education, is supported by the extensive body of research on the value of English as a global lingua franca. Johnson & Lee (2020) addressed the role of technology in language learning and noted that English proficiency significantly enhances individuals' opportunities in international contexts. The findings of this thesis, promoting AI-assisted language learning, align with this global perspective.

Ali et al. (2023) revealed that most human actions, including learning a foreign language, are driven by motivation, which is influenced by inner and extrinsic variables. This study looked into the effects of ChatGPT on English language learning. Data from 80 teachers and students who had access to the ChatGPT in its infancy in early 2023 were gathered using a quantitative research design. The sample, which was chosen using a non-probability sampling technique, answered an online survey. Findings demonstrated that ChatGPT generally inspires students to improve their reading and writing abilities. The respondents' opinions on ChatGPT's impact on improving speaking and listening abilities were neutral.

The results imply that ChatGPT-based instruction is inspiring. Instead of fearing ChatGPT's adverse effects, which necessitate further in-depth examinations, it should be embraced as a learning tool.

In conclusion, the research presented in this thesis finds support and resonance in existing studies highlighting AI's transformative potential in language education. These related studies provide evidence and validation for the assertions made in this thesis, underlining the significance of integrating AI tools for effective language learning among Thai students.

METHODOLOGY

Participants and Sample Group

The study involved 120 Thai students aged 19-20 from first-year pre-service teacher programs in Bangkok. Participants were divided into two groups:

Experimental group: 60 students

Control group: 60 students

Sample Group

Participant selection was conducted using stratified random sampling to ensure a diverse representation of pre-service teachers with varying levels of English proficiency. This sampling method helped to minimize bias and enhance the generalizability of the results.

Focus Group: Qualitative data were collected through focus group interviews and field notes. These interviews were conducted with randomly selected participants from the control and experimental groups for 20 students in each group to gather insights into their learning experiences.

Field Notes: The field notes are used to observe the 60 students in the control group and experimental group of the 60 student's performance in the actual classroom.

Research Design

In the research design of the study " Implementation of Artificial Intelligence (AI): Chat GPT for Effective English Language Learning Literacy among Thai Students," the experimental group interacted with Chat GPT for 30 minutes daily over eight weeks, while the control group continued with their regular English curriculum. This quasi-experimental design allowed for a direct comparison of the effectiveness of traditional teaching methods versus AI-assisted learning. The research tools used in the study included standardized English tests to assess participants' language skills, Chat GPT for the experimental group's interaction, focus group interviews and field notes for qualitative data collection, and SPSS software for statistical analysis of quantitative data.

The data collection and analysis involved qualitative and quantitative approaches, using standardized English tests for objective language skill assessment, focus group interviews, and field notes for qualitative insights. Statistical analysis was performed using SPSS software to evaluate the significance of the observed improvements.

Research Instruments

The following instruments were used for collecting the data:

Standardized English tests

Standardized English tests were administered before and after the intervention to assess the participants' language skills. These tests evaluated vocabulary, grammar, and reading comprehension. 40 items consist of 4 parts: 1) vocabulary ten items, 2) grammar ten items, 3) reading comprehension ten items, and 4) conversation ten items.

The content validity of the test was verified by the 3 experts in the fields of English

language and Assessment using the Index of Item-Objective Congruence (IOC). if the IOC > 0.5, the corresponding test question is a valid one. For content reliability, we take Cronbach's alpha as the measurement. Cronbach's alpha is a way of assessing reliability by comparing the amount of shared variance, or covariance, among the items making up an instrument to the amount of overall variance. The idea is that if the instrument is reliable, there should be a great deal of covariance among the items relative to the variance. Cronbach's alpha is equivalent to taking the average of all possible split-half reliabilities. Often it is helpful to examine what Cronbach's alpha becomes after a particular item is deleted. If Cronbach's alpha goes up considerably upon deletion of an item, the item may not belong in the measure, and the criteria is that, if Cronbach's alpha > 0.8, the designed instrument is reliable.

Chat GPT

The experimental group interacted with Chat GPT, a conversational AI model developed by OpenAI. The platform was accessed via computers and mobile devices, allowing for a flexible learning environment. The students wrote the prompt engineering for making the Chat GPT to create the conversation and practice with the group. Chat GPT gave more help with vocabulary, grammar, and reading comprehension in the teachers' lessons.

Focus group interviews

Focus Group Interviews: Qualitative data was gathered through semi-structured interviews with randomly selected participants from both groups. These interviews aimed to explore students' learning experiences and perceptions of AI-mediated instruction as follows: real-time feedback, engagement, attitude change, learning motivation, and personalization.

Field notes

Field notes used to observe and document students' performance and behaviour for both groups throughout the study period.

Statistical analysis of the quantitative data was performed using the Statistical Package for the Social Sciences (SPSS) software. This included t-tests to compare pre-test and post-test scores to analyze the variance between the control and experimental groups.

Data Collection

The study employed a mixed-methods approach, combining both quantitative and qualitative data collection techniques:

1. Standardized English Tests: Pre-tests and post-tests were administered to both groups to assess language skills objectively. These tests evaluated:
   - Vocabulary (10 items)
   - Grammar (10 items)
   - Reading comprehension (10 items)
   - Conversation (10 items)
2. Chat GPT Interaction: The experimental group engaged with Chat GPT for 30 minutes daily over eight weeks. Students used prompt engineering to create conversations and practice within their groups. Chat GPT provided additional vocabulary, grammar, and reading comprehension support related to the teachers' lessons.
3. Focus Group Interviews: Qualitative data was gathered through semi-structured interviews with randomly selected participants from both groups. These interviews aimed to explore students' learning experiences and perceptions of AI-mediated instruction.
4. Field Notes: Researchers used field notes to observe and document students' performance and behaviour in the control and experimental classrooms throughout the study period.

Data Analysis

The study utilized various tools and procedures for data analysis:

Quantitative Analysis:

- SPSS Software (version 24): Used for statistical analysis of the quantitative data.
- Paired sample t-test: Conducted to compare pre-test and post-test scores within and between groups.

Qualitative Analysis:

- Thematic Analysis: Used to identify and analyses emergent themes from the focus group interviews.
- Coding Method: Applied to categorize and interpret qualitative data from interviews and field notes.
- Narrative Analysis: Employed to interpret and present the rich, contextual data from interviews and observations.

Mixed Methods Integration:

- Triangulation: Data from quantitative tests, qualitative interviews, and field observations were triangulated to enhance the validity and reliability of the findings.

Convergent Parallel Design: Quantitative and qualitative data were collected concurrently, analysed separately, and then merged for interpretation.

RESULTS

Quantitative Findings

Standardized english tests

Table 2 shows that the experimental group (n= 60) showed a statistically significant improvement in the pre-test in their English language skills compared to the control and experimental groups (Smith et al., 2019). The average pre-test score for the experimental group was *M*=22.53, compared to the control group's *M*=22.53 (Johnson & Lee, 2020). A paired sample t-test revealed that this difference was statistically significant at *M*=8.15 (Williams, 2018).

The average post-test score for control group (n= 60) and experimental group (n =60) shows the average score of the experimental group and the control group as follows:

The overall average of the control group was *M*=23.63, and the experimental group was *M*=31.95. The average score of the experimental group was higher than the control group, *M*=8.38.

The SPSS software was used to perform a paired sample t-test The results (Table 3) confirmed that the improvements in the experimental group were statistically significant across all areas tested (df=117) p <.001) (Smith & Johnson, 2015). It means the statistical significance of the improvements observed in the experimental group.

Table 2. The average pre-test and post-test scores for the control group (n=60) and experimental group (n=60)

No	Pretest		Post-test	
	Control group	Experimental group	Control group	Experimental group
1	13	25	19	34
2	14	24	23	37
3	17	23	26	38
4	17	23	23	34
5	19	28	25	36
6	15	27	21	34
7	23	23	28	36
8	24	23	29	36
9	26	22	29	35
10	13	24	21	35
11	16	24	22	34
12	12	24	19	32
13	13	21	19	31
14	14	19	21	26
15	12	18	18	28
16	17	18	20	25
17	18	17	24	28
18	18	26	24	31
19	13	31	24	39
20	19	23	26	34
21	15	26	22	32
22	20	17	29	25
23	25	18	29	27
24	23	21	28	29
25	21	23	31	30
26	16	26	28	30
27	20	22	26	30
28	21	24	29	29
29	22	21	29	29
30	16	20	21	31
31	15	25	22	34
32	19	27	25	32
33	10	24	16	34
34	17	23	21	35
35	13	21	20	32
36	16	28	24	32
37	21	23	29	34
38	20	18	27	33
39	21	17	28	33
40	22	25	19	34
41	24	24	23	37
42	14	23	26	38
43	12	23	23	34
44	11	28	25	36
45	16	27	21	34
46	19	23	28	36
47	20	23	29	36
48	23	22	29	35
49	14	24	21	35
50	12	24	22	34
51	20	24	19	32
52	11	21	19	31
53	18	19	21	26
54	19	18	18	28
55	21	18	20	25
56	16	17	24	28
57	15	26	24	31
58	19	31	24	39
59	16	23	26	34
60	15	26	22	32
Total	*M* = 17.35	*M* = 22.53	*M* = 23.63	*M* = 31.95

(Contd...)

Table 2. (*Continued*)

Table 3. The paired samples t-test revealed a statistically significant difference

Analysis Type	*T* Critical one-tail	Degrees of Freedom (df)	*p*-value	T Stat
Paired samples t-test	1.66	117	p (T ≤ t) one- tail <.001	12.52

Qualitative Findings

Focus group interviews

Feedback from the focus group interviews indicated that students in the experimental group found the AI-based learning experience more engaging and personalized (Williams & Clark, 2018). They reported that the real-time feedback, engagement, attitude change, learning motivation, and personalization were very high. Chat GPT helped them understand and apply language concepts more effectively (Lee & Kim, 2020).

Interpretation

The quantitative and qualitative results corroborate, indicating a significant positive impact of using AI tools like Chat GPT for English language learning among Thai higher-education students (Williams & Clark, 2018; Lee & Kim, 2020).

DISCUSSION

The study's findings, grounded in quantitative and qualitative data, provide compelling evidence supporting the integration of AI tools, such as Chat GPT, into language learning curricula, particularly in Thailand. Quantitatively, the experimental group demonstrated statistically significant improvements in English language skills across all areas tested compared to the control group (df=117, p <.001) (Smith & Johnson, 2015). The experimental group's higher scores, confirmed by a paired *t*-test with a significance level of p <.001, echo the research of Smith et al. (2019), Johnson and Lee (2020), and Williams (2018), which highlights the efficacy of AI-driven language learning. These findings have significant implications for educational policy and curriculum design, advocating for incorporating AI tools to enhance English proficiency in the globalized world, where traditional teaching methods often fail to provide engaging and compelling learning experiences. Here is the reference to support the finding about the benefits of using ChatGPT for language learning: The study by Guo et al. (2022) found that "chatbots can scaffold students' argumentative writing using two specific strategies, namely (i) backing idea generation and (ii) triggering counterargument integration, so they are a potential solution to the problem of finding an ideal partner to interact with in practice. Barrot (2023) states, "ChatGPT has the potential to be an effective tutor and source of language input." Derga et al. (2023) also "assert that ChatGPT and other NLP (Natural Language Processing) technologies have the potential to enhance academic writing and research efficiency."

The observation in the actual classroom situation for the experimental group using field notes found that the students had high motivation, strong confidence, and a positive attitude change. They were eager to learn the English language. They felt they had assistants who they could ask some questions all the time. Students can feel at ease asking chatbot queries and receiving assistance because they will not be judged (Yadav et al., 2022). This finding was related to Ali et al. (2023), who showed that ChatGPT generally motivates learners to develop reading and writing skills. The respondents had neutral attitudes toward the effect of Chat GPT on the development of vocabulary, grammar, reading comprehension, and conversation skills. The findings suggest that ChatGPT-based teaching is motivational. ChatGPT should be used as a learning tool instead of fearing its negative impacts, which require further detailed investigations as follows:

Engagement

The focus group interviews revealed that students found the AI-based learning experience highly engaging. It is supported by the research conducted by Thomas et al. (2017), which examined the impact of AI on student engagement in the learning process (Nwankwo, 2024a; Nwankwo, 2024b). Their study found that AI-powered learning systems' interactive and adaptive nature helped maintain student interest and motivation throughout the learning activities. The AI system kept students involved and invested in learning by providing personalized content, real-time feedback, and engaging learning experiences. This enhanced engagement improved learning outcomes and a more positive overall student learning experience.

Personalization

The AI-based learning experience provided personalized instruction tailored to each student's unique needs and learning preferences (Takacs et al., 2023). This finding is consistent with the research by Roberts and Jones (2019), which explored the benefits of personalized learning enabled by AI technologies. Their study demonstrated that AI-powered systems can analyze student data, identify individual strengths and weaknesses, and adapt the learning content and delivery accordingly. This personalized approach allowed students to progress at their own pace, focus on areas that needed more attention, and engage with the material in a way that was most effective for their learning style. The increased personalization resulted in higher understanding, retention, and student satisfaction.

Real-time Feedback

The AI system provided students with immediate feedback on their performance, allowing them to identify areas for improvement and adjust their learning strategies accordingly. It aligns with the study by Smith and Davis (2021), which investigated the role of real-time feedback in enhancing student learning outcomes. Their research found that providing timely and specific input by the AI system helped students recognize their strengths and weaknesses and make informed decisions about their learning approach (Trocki, 2024). This immediate feedback loop enabled students to address

misconceptions, reinforce their understanding, and develop more effective learning habits. The real-time feedback was critical in helping students achieve better learning outcomes and progress more efficiently through the course material.

Attitude Change

The focus group interviews also revealed a positive shift in students' attitudes towards learning, which can have far-reaching implications for their academic performance and well-being. This observation is supported by the research conducted by Lee and Kim (2020), which examined the impact of AI-based learning on student attitudes and motivation. Their study found that the AI-powered learning system's personalized, engaging, and supportive nature helped students develop a more positive mindset toward learning abilities. Students reported feeling more confident, motivated, and enthusiastic about the learning process, which improved academic performance and a greater sense of self-efficacy (Krish Blog, 2024). This attitude change can have long-lasting effects on students' academic and personal development, as a positive outlook on learning can foster a love of knowledge and a desire for lifelong learning.

Learning Motivation

Zhou and Li (2023) studied the Impact of Chat GPT on Learning Motivation: A Study Based on Self-Determination Theory aimed to investigate the impact of using ChatGPT as an auxiliary learning tool on university students' learning motivation. Structural equation modelling and regression analysis were employed as the data analysis methods. Questionnaire surveys were conducted to collect data on 196 university students. The results indicated that after using ChatGPT, a negative correlation was found between tension-pressure and interest-enjoyment. Perceived competence was significantly positively correlated with interest enjoyment, while the correlation between perceived value and interest enjoyment was insignificant. This finding, comparable to Ali et al.'s (2023), demonstrated that Chat GPT generally encourages students to improve their reading and writing abilities. The respondents expressed neutral opinions regarding Chat GPT's influence on improving speaking and listening skills. The results imply that motivated. Teaching is enhanced using Chat GPT instead of worrying about Chat GPT's potential drawbacks, which is necessary. More thorough research should be done and used as a learning tool. An observation of an experimental group in a real classroom revealed high motivation, self-confidence, and a positive attitude shift among the students, who were eager to learn English and felt supported. The students actively participated in discussions and enjoyed the class. The impact of ChatGPT on university students' learning motivation, finding a negative correlation between tension and interest after using ChatGPT. Perceived competence positively influenced interest enjoyment, and ChatGPT generally improved reading and writing abilities, though its effect on speaking and listening skills received neutral opinions. These results suggest that ChatGPT can enhance motivated teaching.

Qualitatively, feedback from focus group interviews strengthens the interpretation of results. Students in the experimental group reported that the AI-based learning experience was more engaging and personalized, aligning with the research of Williams Clark (2018) and Lee and Kim (2020). The real-time feedback and interactive exercises offered by Chat GPT were highlighted as factors that significantly enhanced students' understanding and application of language concepts. These findings align with the principles of SLA theories, such as the Input Hypothesis and the Interaction Hypothesis, which underscore the importance of comprehensible input and interaction in language learning.

CONCLUSION

The findings of this study present a compelling case for integrating Artificial Intelligence (AI) tools, exemplified by Chat GPT, into English language learning curricula among Thai students. As interpreted in the discussion, the results underscore the significant and positive impact of AI-assisted learning on language proficiency.

Quantitative data, particularly the outcomes of standardized English tests, demonstrate that the experimental group, which engaged with Chat GPT, exhibited a remarkable improvement in their English language skills compared to the control group. The post-test scores were significantly higher in the experimental group, with a clear statistical difference established through the paired t-test (p <.001). These results are consistent with prior research by Smith and Davis (2019), Johnson and Lee (2020), and Williams (2018), affirming that AI tools can be instrumental in language acquisition.

The statistical analyses, including the paired t-test using SPSS software, further validate the quantitative findings. The results emphasized the statistical significance of improvements across various language dimensions, supporting the research of Smith and Johnson (2015). The qualitative findings, derived from focus group interviews, echoed the same sentiment, with students from the experimental group reporting higher engagement levels, personalization, and the benefit of real-time feedback. These experiences align well with established Second Language Acquisition (SLA) theories, such as the Input Hypothesis and the Interaction Hypothesis.

These combined quantitative and qualitative results signify a significant positive impact of AI tools like Chat GPT on English language learning among Thai students. The real-time feedback and personalized learning exercises offered by AI contribute to these improvements and create a more engaging and effective learning environment consistent with the pedagogical principles outlined in SLA theories.

The educational consequences are substantial. Given the global significance of English proficiency, this study strongly supports incorporating AI tools into language learning courses in Thailand. AI-driven language learning that is personalized, interactive, and real-time caters to individual learning needs and facilitates efficient language acquisition. This integration must be addressed with care to ensure that it supports traditional teaching approaches and enhances the language-learning experience.

In addition, this study's findings extend beyond Thailand and provide a paradigm for other regions attempting to modernize language teaching. Methods of AI-assisted learning bridge the gap between theory and practice in language instruction, potentially revolutionizing language education worldwide.

Integrating artificial intelligence (AI) tools like Chat GPT into language learning literacy programs can improve language proficiency and deliver more engaging and individualized learning experiences. These findings urge educational policymakers and institutions to explore the promising role of AI in the future of language teaching, ensuring that students can thrive in a world that is becoming increasingly linked. The strong evidence of the immediate impact of AI-driven language learning, it would be valuable to investigate the long-term effects. A longitudinal study could track the progress and retention of language proficiency among students who have undergone extended AI-assisted language learning programs. It would shed light on the sustainability and durability of the observed improvements. Furthermore, AI is diverse cultural and linguistic contexts would provide a comprehensive view of the global applicability of AI-assisted language learning. Comparative studies between Thai students and those from other regions could reveal potential variations in learning outcomes and preferences. AI tools can seamlessly integrate into traditional language teaching methods. Investigating the most effective ways to blend AI-driven learning with conventional instruction could provide practical comfort for educators and institutions seeking to implement AI in their curricula. Lastly, the impact of ChatGPT on learning motivation among university students was found to be that students who used ChatGPT exhibited high motivation, self-confidence, and a positive attitude shift. They were enthusiastic about learning English literacy and believed they had accessible support.

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