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The Impact of Artificial Intelligence Literacy on the Expected Outcome of AI Tool's Integration into Higher Education Institutions: A Systematic Review of EFL Departments

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ABSTRACT

This study explores the integration of Artificial Intelligence (AI) in English as a Foreign Language (EFL) departments, focusing on the relationship between AI literacy and educational outcomes for both educators and students. Using the PRISMA guidelines for the review of current literature, the study included 12 studies on the AI Literacy and its impact on higher education, the research identified key themes, including the impact of AI tools on language learning, the level of AI literacy among EFL educators and students, and the broader implications of AI on teaching methodologies. AI-powered tools, such as intelligent tutoring systems and automated language assessments, offer personalized learning experiences and adaptive feedback, which enhance student engagement and learning efficiency. However, the effectiveness of these tools is closely tied to the AI literacy levels of both teachers and learners. The study finds that educators with higher AI literacy are more adept at integrating AI technologies into their instructional practices, fostering dynamic and blended learning environments. Meanwhile, students with greater AI literacy can utilize these tools to take a more active and autonomous role in their language learning process. Despite these benefits, challenges such as resistance from educators, ethical concerns, and uneven AI literacy levels pose significant barriers to effective AI integration. The findings underscore the need for structured AI literacy programs to maximize the potential of AI technologies in EFL education while maintaining the essential role of human educators.

INTRODUCTION

Artificial Intelligence (AI) is rapidly revolutionizing industries across the globe including education. In the last few years, there has been an increased emphasis on utilizing AI in higher education to provide various approaches for improving teaching, learning, and management (Yuan & Liu, 2024). Beginning from customized learning management systems, smart content delivery interfaces and engines, proctored auto-grading, and augmented analytics to forecast student outcomes, institutional practices are being transformed by AI (Singh & Hiran, 2022). This revolution is especially apparent in the EFL departments where AI tools can enhance the process of language acquisition as well as offer targeted assistance for learners in their learning progress (Mohamed, 2024). Nonetheless, for the institutions to fully unlock the benefits of this advancement, another issue, AI literacy, has to be addressed.

AI literacy can be defined as the level of readiness to learn AI and to utilize it in practice as the AI application increases in learning environments (Alsaleh, 2020). Educators and students should have information about how the AI tool works, the benefits, and drawbacks of using the tool, and the effect of the tool on learners' performance (Sumakul *et al.*, 2022). The changes occurring in higher learning institutions especially EFL departments as a result of digitization make it pertinent for every stakeholder to acquire the required knowledge in the use of AI. Given that EFL entails teaching and learning strategies that may

be challenging involving language acquisition processes, students' learning needs as well as dynamic instructional practices, AI assumption in EFL Learning should be handled deliberately (Ayotunde *et al.*, 2023).

In EFL settings, AI instruments enhance numerous advantages, particularly in the understanding that they can make adjustments to learning tasks in a manner that is unique to the individual student (Darwin *et al.*, 2024). For example, the uses of platforms such as artificial intelligence offer remedies in real-time correction of grammar, and pronunciation and even improve the learning of vocabulary with increased efficiency (Alshumaimeri & Alshememry, 2023). Computerized evaluations can provide the convenience of quick feedback, while formative tasks scramble traditional classroom priorities for instructors (Nazari *et al.*, 2021). However, this must be understood and done by both educators and students who should have functional knowledge of AI tools. Moreover, lack of AI literacy would therefore hurt the potential of learning outcomes that can be achieved with the adoption of AI; while conversely, the learner would take using AI as an excuse to learn rather than a tool to complement learning (Khlaif *et al.*, 2024).

However, like any other system, AI has several challenges when it comes to the promotion of language learning. For, instance, the use of AI tools such as translation and grammar correction software can become a helping hand, but it will also make the students rely on these tools instead of doing things themselves (Dewi *et al.*, 2021).

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This goes to show the need to ensure students develop high critical thinking skills that will enable them to employ AI learning appropriately. However, with the use of AI in teaching and learning, teachers face numerous ethical issues such as; data protection and cheating (Sharadgah & Sa'di, 2022). Consequently, AI literacy within the EFL departments should focus not only on technology adoption knowledge but on educational and ethical AI adoption knowledge as well (Alhalangy & AbdAlgane, 2023).

LITERATURE REVIEW

Impact of Artificial Intelligence on Higher Education

AI is impressively disrupting higher learning institutions and practices internationally altering the institutional architecture and the teaching-learning processes. Therefore, currently, AI technologies are also being implemented in an encompassing manner in all aspects of education starting from administrative roles (Yuan & Liu, 2024). This transformation is changing the landscape of how educational institutions operate as well as the approaches adopted by learners to learning contexts (Singh & Hiran, 2022). AI's greatest effect on higher learning remains in the realm of customizable learning experiences. Intelligent tutoring systems and adaptive learning technologies are described as automated applications of AI that work with large sets of data to deliver content that meets the learner's requirements. Ayotunde *et al.* (2023) state that these systems monitor progress, identify poor performance and areas of improvement, and directly feedback and guide lessons. Given the fact that large and diverse classes are normally characterized by slow learners where conventional pedagogy cannot follow special learning rates, AI's considerate learning solution has been credited for raising student interest and boosting their academic performances (Alshumaimeri & Alshememry, 2023). The study shows that the learning supported by AI makes education more effective by focusing on students' characteristics (Sharadgah & Sa'di, 2022).

AI is also being applied to clerk-like functions in higher education contexts especially grading duties and course administration. Nazari *et al.* (2021), stated that AI-based tools can provide student results in a short time and assist educators in the grading system. Proctoring tools and grading systems are automated, especially for objective tests such as multiple-choice questions, and have already been adopted and enable instructors to focus on other tasks like critical appraisal, and student support (Sumakul *et al.*, 2022). Furthermore, Khlaif *et al.* (2024) showed that using AI, together with predictive analytics in student enrolment as well as in the academic counseling process, helps in early identification of the students at risk so that supportive interventions that enhance institutional retention and completion can be promptly done.

Apart from the managerial and teaching usages, AI stimulates a new educational paradigm by contributing to widening access to learning. According to Dewi *et al.* (2021), it is driving the personalization of learning

experiences in platforms like MOOCs, or other forms of online learning, by offering learner support at scale around the world. This innovation has made education more readily available to learners irrespective of their geographical location, their status in society, and their culture. Knowledge that was formerly delivered in actual classrooms is now available in virtual classrooms (Mohamed, 2024).

On a broader scale, AI is forcing universities to rethink their curriculum. Since AI continues to become more and more commonplace in people's day-to-day lives and at work, schools ensure that they equip their students for the modern workplace by incorporating AI literacy into their curricula (Gardner, O'Leary & Li, 2021). Fields like data sciences, machine learning, and computational thinking are becoming core components of university programs because of the increase in demand for artificial intelligence-related skills in industries (Singh & Hiran, 2022).

Nevertheless, AI integration in higher education has its issues, especially those related to ethics. Ou, Stöhr, and Malmström (2024) detail potential issues with data privacy, algorithmic bias, and the potential for the dehumanization of learning as AI use escalates. It means that introducing AI into the atmosphere of higher education institutions has to be done with extreme responsibility and preoccupation with ethical aspects. Further, Alhalangy and AbdAlgane (2023) pointed out that as the progress of AI technologies is very fast, several issues have arisen for educational professionals, where AI leads to the blurring of the gap between automated instruction and the instructor.

Role of AI in EFL Departments

AI is already in EFL departments which are changing the ways by which languages are taught, as well as learned. Technologies like intelligent tutoring systems (ITS), natural language processing (NLP), and automated language assessments are acting as agents of change in traditional approaches to language instruction and learning; personalized instruction, efficient assessment, and improved interaction (Nazari *et al.*, 2021). These innovations are thus revolutionizing the contemporary teacherless EFL class into a rich and vibrant innovative space where AI has an influential function in nurturing language acquisition (Ayotunde *et al.*, 2023).

One of the most significant practical implementations of AI in EFL departments is an ITS. These systems have the feature of delivering a learning experience that is more personal and thus also based on the abilities of the learners. As highlighted by Yuan and Liu (2024), ITS responds to the student's ongoing language use, constantly modifying the teaching-learning feedback based on the identified student learning trajectory. For instance, if a result of the diagnosis is in terms of skills in language, where a particular student has difficulties in mastering some important elements of grammar or pronunciation, the ITS can offer corresponding exercises and feedback

to the student indicating that further training corresponds to the student's learning style. Such an approach makes learning easier and more effective than in cases where many general methods are applied (Sumakul *et al.*, 2022). Other AI platforms in language learning like Duolingo and Babbel also use artificial intelligence in machine learning algorithms of language learning which customizes the learner's course based on student's ability. These systems are conducive to encouraging students, this kind of game rewards good performances in terms of sharing of marks and necessary correct feedback by pointing out the mistakes made by the students in the course of lessons (Nazari *et al.*, 2021). The constant feedback loop provided through the use of AI technology elicits an effective mechanism for learning, practice, and repetition, all of which are critical in modifying and enhancing language learning (Dewi *et al.*, 2021).

As an indispensable part of artificial intelligence, NLP has introduced improvements in the process of EFL education as well. The NLP technologies are ingrained in several language learning applications for use in translation, writing, and speech (Gardner *et al.*, 2021). Some examples of automated technologies applied in learning include; AI-enabled speech tools for example assist learners in the manner they pronounce their words by using native examples and describing the regions that require enhancement (Mohamed, 2024). These tools allow learners a specific chance to practice in a low-risk setting to improve their skill level. Furthermore, though frail, external applications that use AI such as Google Translate help the learner translate foreign language text to gain independence in learning and in improving

comprehension (Sharadgah & Sa'di, 2022).

Another area of active contribution of AI to EFL education is in the use of automated language assessments. The paper and pencil tests including final examinations, quizzes, or oral tests are time-consuming tests wherein teachers have to devote considerable time to check and update the solutions manually. However such technologies are automated by AI technologies. Automated Writing Evaluation or writing checking software can examine text content about grammar, vocabulary, readability, or logical progression in the content (Alshumaimeri & Alshememry, 2023). These tools provide formative feedback and thus can effectively eliminate tasks that otherwise have to be done by teachers to provide feedback on a student's performance. However, it is equally important that computers can evaluate spoken language and give back detailed feedback on aspects like pronunciation, intonation, and advancement of material respectively, making language evaluations richer (Darwin *et al.*, 2024). In addition to instructional and assessment applications, AI tools help teachers in their administrative responsibilities, which saves them time for more meaningful student contact (Alasadi & Baiz, 2023). Facilitating tools have emerged, that allows educators to track student performance levels, create performance reports, and recommend individual learning activities (Khlaif *et al.*, 2024). This shift enables the teachers to spend more time on interactivity as well as attending to the individual needs of the students throughout the learning process, making the learning process more effective for both the students and the teachers (Dewi *et al.*, 2021).

Table 1:

Author(s) and Year	Main Theme/Aim of the Research	Methodology	Key Findings/Outcomes
Ayotunde <i>et al.</i> (2023)	Impact of AI in foreign language learning through LMS	Systematic literature review	AI enhances engagement and efficiency in learning management systems.
Sumakul <i>et al.</i> (2022)	Exploration of AI in EFL classrooms and its dual roles	Qualitative analysis	AI is both beneficial and challenging; requires careful integration.
Yuan & Liu (2024)	Effect of AI tools on EFL learners' engagement, enjoyment, and motivation	Mixed methods	AI tools significantly increase learner motivation and enjoyment.
Nazari <i>et al.</i> (2021)	Application of AI-powered digital writing assistants in higher education	Randomized controlled trial	Improved writing skills and confidence among students using AI tools.
Sharadgah & Sa'di (2022)	Systematic Review of AI's effects on English language Teaching and learning	Systematic review	Positive impacts on learner outcomes, though challenges exist.
Khlaif <i>et al.</i> (2024)	University teachers' views on the adoption of generative AI tools for assessments	Qualitative interviews	Mixed perceptions; concerns about reliability and validity of AI tools.
Alhalangy & AbdAlgane (2023)	Impact of AI on EFL contexts in Saudi universities	Case study	Noted improvements in teaching practices and student engagement with AI.
Dewi <i>et al.</i> (2021)	Use of AI in English learning among university students	Case study	Highlighted enhanced learning experiences through AI technologies.

Alshumaimeri & Alshememry (2023)	Extent of AI applications in EFL learning and teaching	Survey research	Identified varying levels of AI integration and effectiveness.
Mohamed (2024)	The potential of AI-based chatbot (ChatGPT) in EFL teaching	Qualitative survey	Positive perceptions of chatbots enhancing language teaching.
Ou <i>et al.</i> (2024)	Academic communication with AI-powered language tools from a post-humanist perspective	Theoretical analysis	Emphasized the transformative role of AI in academic communication.
Singh & Hiran (2022)	Impact of AI on teaching and learning in higher education	Literature review	Noted increased efficiency and personalized learning opportunities.

MATERIALS AND METHODS

Research Design

The research design refers to the actual blueprint of the study being carried out. It lays down the process by which the research will be conducted (Tomaszewski *et al.*, 2020). The research design of the present study is qualitative, and it uses a systematic review of the literature approach. This approach is suitable for the integration of several research findings on the concept of AI literacy and its effects on the EFL course and instruction. It specifically enables an analysis of the past literature for trends, knowledge gaps, and new research directions (Mohamed Shaffril *et al.*, 2021).

Therefore, the purpose of this systematic review is to provide a critical evaluation of the research examining the relationship between AI literacy and the implementation of AI technologies in EFL classrooms, considering implications for educators and students, as well as educational outcomes and potentials. Through the process of synthesizing the studies qualitatively, it is possible to provide a sophisticated interpretive perspective (Rethlefsen *et al.*, 2021) on the challenging issue of AI implementation in language learning.

Data Collection and Search Strategy

The process of data collection for this review was systematic, involving PRISMA (Page *et al.*, 2021) to search for published peer-reviewed academic papers in prestigious databases that included Scopus, Web of Science, and IEEE Xplore. As such criteria regarding relevancy, validity, and significance were adopted to select the most appropriate pieces of research that address AI literacy, available AI tools, and their implications to the context of EFL departments. The search terms used to retrieve the literature include “Artificial Intelligence,” “AI literacy,” “EFL,” “language learning,” “higher education,” and “teaching technologies.” In addition, Boolean Operators AND and OR were applied to elicit even more specific results.

The inclusion and exclusion criteria for selecting papers are provided in detail in Table 1 below:

This rigorous selection process ensured that only the most relevant studies were included in the review (Muzari *et al.*, 2022). Figure 1 below; illustrates the PRISMA flow chart of the identification of the studies.

Table 2: Data Collection and Search Strategy

Inclusion Criteria	Exclusion Criteria
Studies published in peer-reviewed journals between 2019 and 2024.	Papers not specifically addressing EFL or AI literacy.
The research focused on AI integration in language education, with specific emphasis on EFL contexts.	Research that lacked empirical data or was not peer-reviewed.
Studies addressing AI literacy among students and educators in higher education settings.	Studies focused solely on technical aspects of AI without educational context.

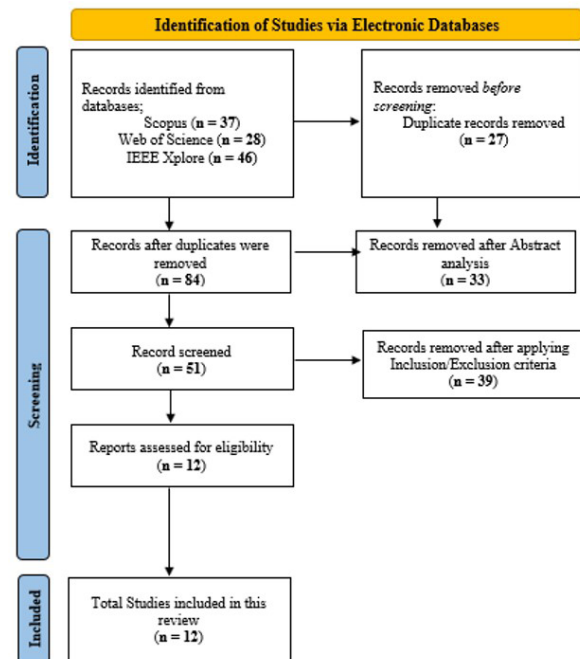


Figure 1: PRISMA Flow Diagram
Source, Author, 2024

Quality Assessment

To ultimately establish the credibility and dependability of the findings, the Critical Appraisal Skills Program or CASP tool was employed to assess the quality of the included studies. CASP is useful because it offers a set of

guidelines on how to assess the methodological quality, credibility, and relevance of the research investigation (Long *et al.*, 2020). All the papers are reviewed based on the research methodology, data collection technique, analyses, and findings. In the last stage, all the identified studies that did not meet the quality inclusiveness criteria were excluded to provide a reliable review of the high-quality studies. This quality assessment assists in increasing the credibility of the systematic review to improve in the findings of the study.

RESULTS AND DISCUSSION

Results

AI Literacy in EFL Departments

The students' and educators' AI literacy in EFL departments varies considerably. Studies also show that despite the efforts to incorporate AI literacy within curricula in some institutions, EFL departments face challenges when it comes to preparing teachers and learners for AI integration (Ayotunde *et al.*, 2023). These findings also imply that most of the EFL teachers surveyed have a minimum level of knowledge regarding AI applications and their potential in instruction (Sumakul *et al.*, 2022). This lack of proficiency limits the opportunity that AI could bring and leverage in personalizing instruction delivery and student engagement. Likewise, many EFL students possess low to moderate AI literacy, especially regarding the functioning of AI language platforms other than essential operations (Alhalangy & AbdAlgane, 2023). These students use AI tools to learn yet they lack understanding of how to use these tools in understanding or to critically engage them. The literature, therefore, calls for the enhancement of refinement of AI tools by going beyond the general use and engraining a more profound attitude in students and faculty (Nazari *et al.*, 2021).

Several studies (Yuan & Liu, 2024; 2018: Sharadgah & Sa'di, 2022; Alshumaimeri & Alshememry, 2023) have called for well-designed AI literacies that encompass not only the proactive knowledge and skills that learners need to engage with AI but also include critical reflection of how AI is being used in education. Those educators with more AI fluency are found to be better equipped to incorporate AI into curriculum delivery hence enhancing students' performances through making teaching and learning fun and less monotonous (Singh & Hiran, 2022). Despite this, the level of AI literacy varies greatly between institutions and geographical locations suggesting that a more consistent and global approach to the development of AI literacy in the EFL departments is needed (Sharadgah & Sa'di, 2022).

AI Tools Integration

Adopting AI technologies has also been an aspect of English as an EFL department with varying impacts. Studies also explain how technologies like ITS, AWE programs, and artificial intelligence language learning applications make up popular technologies that may be used individually or collectively to provide individualized

and adaptive learning environments (Alhalangy & AbdAlgane, 2023). These tools include help for customized feedback and scores as well as the quick assessment to consume much of the teachers' time that would otherwise be used for the same while enhancing students' morale and efficiency (Ayotunde *et al.*, 2023). The flexibility of these AI systems has been similarly useful when it comes to the learners' needs because the systems provide feedback and lessons as soon as possible (Nazari *et al.*, 2021).

Nevertheless, the use of AI tools in teaching EFL has experienced some difficulties in departments. Several works indicate that technical support constraints are among the critical issues that hinder effective implementation most of the time especially in areas with poor access to modern gadgets in education (Sumakul *et al.*, 2022). Furthermore, there continues to be teacher resistance, attributable to AI illiteracy and fears of triggering the displacement of human contact by AI-based language-learning technology (Yuan & Liu, 2024). Teachers understand that it is possible to fall for the 'convenience trap' and overload students with the tasks accomplished by AI, thus failing to help children or teenagers develop essential critical language skills that can be developed only through reasonably meaningful interpersonal interaction (Sharadgah & Sa'di, 2022).

In addition, there are concerns about data sensitivity and privacy since AI tools that harvest and analyze student performance data collect personal information, and learners' consent to sharing this information has been an issue of concern (Dewi *et al.*, 2021). Nonetheless, research works, that have incorporated AI tools show that AI has the potential to optimize language learning practices by creating more engaging and interactive learning spaces (Mohamed, 2024). The findings indicated that when used appropriately, AI technologies can greatly transform classroom language teaching and learning, contingent upon the proper preparation of teachers and if the technical and ethical issues of AI implementation are solved.

Impact of AI Literacy on Educational Outcomes

The literature review identifies three critical themes that shape the relationship between AI literacy and educational outcomes in EFL contexts: (1) the level of AI literacy among educators and students, (2) the impact of AI tools on language learning processes, and (3) the broader implications of AI integration on teaching and learning. Firstly, the AI literacy of teachers and students in AI contexts influences the integration of AI tools for Enhanced EFL instruction. A study reveals that the higher the educators' AI literacy is, the better they can implement AI tools for teaching purposes and feel more confident while doing so (Chen & Xie, 2022). Such educators can use AI more effectively to improve their teaching approaches, use individual learning plans, and develop the use of intelligent tests (Yuan *et al.*, 2023). Similarly, more AI literate students interact with the tools more

constructively, by meaningfully using AI to intercede in the language learning process, not to merely do the tasks (Nazari *et al.*, 2021). For this reason, several studies call for the development of well-coordinated training courses regarding AI, aiming at enhancing the AI competency of teachers and learners to leverage the acceptable value of AI in EFL education (Dewi *et al.*, 2021).

Secondly, the recent advances in Adopting technologies like intelligent tutoring systems (ITS) and, automated language assessments have been proven to effectively increase the efficiency of learning. Research shows that those students who engage with artificial intelligence technologies are provided with personalized instruction in ways that target their linguistic difficulties (Mohamed, 2024). For instance, in lessons, the system can adjust according to the learner's performance and give additional help in topics such as grammar or pronunciation which might be problematic for the learner (Alhalangy & AbdAlgane, 2023). Moreover, it will be seen that the automation of work such as grading reduces time and allows teachers to engage in effective strategies of teaching that involve interactions with students (Ayotunde *et al.*, 2023). Nevertheless, existing literature reveals that achieving these outcomes is synonymous with AI literacy, whereby students with high literacy levels in AI profit from these tools, but those with low literacy levels do not benefit much from the tools' potential (Yuan & Liu, 2024).

Last but not least; the incorporation of AI in EFL departments has implications for the teaching and learning process. AI technologies are making changes to the actual language classrooms by making them more open and versatile (Sumakul *et al.*, 2022). AI has taken the teaching-learning process beyond enhancing language learning while changing the ways of teaching and the relationships between students and teachers. Teachers with AI competence are inclined to apply a hybrid model of language instruction that integrates AI tool and traditional approach since this play a comprehensive approach to language learning. However, the literature also shows some threats that can be seen as prospective challenges, for example, AI can dominate the major human components of learning, including cultural humility and individual communication with other people (Nazari *et al.*, 2021). Thus, only the use of AI as a tool should be aimed at supporting the main activities carried out to facilitate the education process rather than replacing traditional approaches as to some extent this can be observed at the moment (Dewi *et al.*, 2021).

Discussion

Theme 1: The Level of AI Literacy Among Educators and Students

AI literacy is the knowledge and application of AI systems, which is essential for the implementation of AI in EFL education. AI fluency is not just a technical matter for educators but encompasses the pragmatic knowledge of how to apply AI tools to enhance teaching and learning processes (Zhang & Zou, 2022). According to research,

some of the main predictors through which AI is more likely to be adopted are sources suggest that educators with high AI literacy levels implement the AI technology confidently and suitably inside their classrooms by using tools like intelligent tutoring systems, an automated essay grader, and AI feedback systems (Lin & Zhao, 2021). Such educators are also more capable of leading students when it comes to the selection of proper AI tools that would foster more independent learning (Xu *et al.*, 2023). However, one can pinpoint what seems to be a critical problem – a lack of or insufficient amounts of professional development for trainers of EFL employing Artificial intelligence models. Most educators lack profound knowledge about AI, though, and, therefore, cannot use AI technologies effectively (Chen & Wang, 2022). Despite the availability of these resources, without properly structured AI literacy programs it can be tricky to incorporate them into teaching practices leading to low and inefficient use of available technology. Furthermore, some educators, who are not used to the incorporation of new technologies, will negatively influence the adoption of AI in general in EFL departments since they are unfamiliar with AI (Yuan *et al.*, 2023).

Thus, AI literacy is as important for students: they need to realize how beneficial AI tools are in improving their language skills, as well. The data analysis shows that the use of AI tools is more active where students have a high level of AI literacy, which means that besides using technologies as the source of information, they also involve them in the learning process (Liu & Li, 2022). For instance, students who can explain how intelligent language learning systems work can improve the results of practicing language skills by using these platforms, analyzing their mistakes, and receiving recommendations (Dewi *et al.*, 2021). Nevertheless, there may be a variation in skill level concerning AI for students that will directly affect the quality and equitable distribution of learning. Some of the students are comfortable with AI interventions, although others who have low AI literacy may find it difficult to operate the tools, reducing the likelihood of AI on language learning (Nazari *et al.*, 2021). Consequently, more attention should be paid to developing AI literacy, at least the basic level of it, for both educators and learners to provide equal opportunities in achieving the benefits of applying AI in EFL learning.

Theme 2: The Impact of AI Tools on Language Learning Processes

AI literacy as the knowledge and skills required to use AI technologies properly are necessary for applying AI instruments to EFL learning. In AI literacy, teacher's skills do not end at the mere technical knowledge of the use of AI tools but a profound understanding of how these tools can enhance teaching and learning processes (Zhang & Zou, 2022). Research shows that preservice teachers with higher AI literacy are more prepared to integrate AI tools with confidence into instructional practice by applying them effectively as intelligent tutoring systems,

automated essay graders, or AI feedback systems (Lin, & Zhao, 2021). For that matter, such educators are well-positioned to assist students in employing AI instruments, leading to more individualized and self-directed learning environments for learners (Xu *et al.*, 2023). Still, there is a critical issue regarding teacher professional development, particularly the volume of available and accessible AI-based curricula for EFL teachers. Most educators today have only basic AI understanding, and they cannot optimally utilize AI tools (Chen & Wang, 2022). This means that where there are no structured AI literacy programs to enhance the teaching methodologies, there may be difficulties. Further, those educators who have not so much experience operating and learning with AI-related technologies may even prove to be a negative influence on AI implementation across EFL departments (Yuan *et al.*, 2023).

AI literacy is also compulsory for students, especially, in the case of awareness of how AI can be helpful in language acquisition. The study reveals that AI-empowered students are more active when it comes to the use of AI-based tools, they do not only consume content with the help of such tools, but they also use them as a major element in the learning process (Liu & Li, 2022). For instance, it is more useful for students to comprehend how the intelligent language learning systems work to apply them as practice tools to improve their language proficiency and learn more about their results and feedback (Dewi *et al.*, 2021). However, the inequality of AI literacy among the students can lead to the inequality of learning experience. Some of the students benefited from AI-supported learning while the others who lacked AI literacy would be disadvantaged in this learning hence reducing the advantage of integrated learning AI for language learning (Nazari *et al.*, 2021). Thus, improving AI knowledge among educators and students is crucial, so everyone can benefit from the positive effects caused by AI use in EFL courses.

Theme 3: Broader Implications of AI Integration on Teaching and Learning in EFL Contexts

Thus, the integration of AI technology corresponds not only to individual learner processes but also to the general teaching and learning patterns in EFL contexts. Literature shows that AI technologies are disrupting conventional pedagogical paradigms through the increased delivery of a hybrid and assembling approach (Zou & Xing, 2022). The students exposed to this blended learning environment then benefit from intelligent solutions that support traditional methods of language learning, which puts more emphasis on the interaction and creativity of the teachers and AI systems taking up tasks such as grading and assessment (Chen *et al.*, 2023).

Thus, the AI literacy of educators is quite important for the success rate of these blended models and their adoption. Teachers with enhanced AI knowledge scores are inclined to combine AI solutions with the traditional teaching-learning process and yet introduce new concepts

and ideas that make the teaching-learning process lively (Wang & Li, 2023). Regarding the usage of AI in schools, the tutors can track the learners' outcomes, the learning needs that will have to be further addressed, and the instructional methods that can be applied. This is perhaps because this approach fosters a model of education that is a lot more dynamic and 'recruitable' to the learners' needs (Liu & Zhang, 2021).

Nevertheless, the integration of AI also brings concerns regarding the potential displacement of human educators. While AI can enhance the efficiency of teaching and learning, it cannot replace the essential roles that teachers play, such as providing emotional support, cultural context, and fostering interpersonal communication. The literature highlights the necessity of maintaining a balanced approach, where AI tools are utilized to complement, rather than replace, human instructors (Zhang & Xu, 2023).

In terms of student learning, AI integration provides opportunities for more autonomous and self-directed learning experiences. As students become more accustomed to using AI tools, they can gain greater control over their learning process by accessing personalized content and receiving on-demand feedback (Dewi *et al.*, 2022). This move toward autonomous learning is particularly valuable in EFL contexts, where independent language practice is critical. However, this autonomy depends significantly on the students' AI literacy. Without sufficient AI literacy, students may struggle to use these tools effectively, potentially leading to frustration and disengagement (Nazari *et al.*, 2022).

Recommendation

Developing AI Literacy Programs for EFL Departments

To maximize the potential of AI integration in EFL departments, institutions must prioritize the development of comprehensive AI literacy programs for both educators and students. The literature consistently points to a gap in AI literacy, with many educators and learners lacking the skills needed to engage with AI tools effectively. Educators who are proficient in AI literacy can more confidently integrate AI technologies into their teaching methods, while students with a solid understanding of AI can optimize their learning experiences.

Institutions should design AI literacy programs that address the specific needs of EFL departments. These programs should include practical training on how to use AI-powered tools such as intelligent tutoring systems, automated writing evaluation platforms, and language learning apps. Furthermore, AI literacy programs should go beyond mere technical instruction; they should also focus on cultivating a critical understanding of AI's role in education, enabling both educators and students to make informed decisions about when and how to use AI tools. By developing targeted AI literacy programs, institutions can ensure that their EFL departments are equipped to fully leverage the benefits of AI technologies.

Enhancing Critical Thinking Skills in EFL Students

While AI tools offer significant advantages in personalizing language learning and automating assessments, it is crucial to balance AI integration with the development of critical thinking skills. The literature suggests that relying too heavily on AI-powered tools without encouraging independent thought may hinder students' ability to critically engage with language learning tasks. Thus, institutions should adopt a blended approach, where AI tools are used alongside strategies that foster critical thinking and creativity.

Educators should encourage students to critically assess the feedback and suggestions provided by AI systems rather than passively accepting them. For example, in automated writing evaluation systems, students can be taught to analyze the feedback critically, questioning whether AI suggestions truly enhance the clarity and quality of their writing. By fostering this critical mindset, students can become more autonomous learners, capable of making thoughtful decisions about how to improve their language skills. Additionally, curriculum designers should incorporate activities that challenge students to solve problems, analyze linguistic nuances, and engage in reflective thinking—skills that are crucial for success in language learning and beyond.

Ethical Use of AI in Academic Communication

As AI-powered tools become more prevalent in academic communication, it is essential to develop clear ethical guidelines to ensure their responsible use. The literature highlights concerns related to data privacy, academic integrity, and over-reliance on AI tools for tasks such as writing and assessment. Without proper guidelines, there is a risk that AI tools may be misused, leading to issues such as plagiarism or excessive dependence on automated systems for writing.

Institutions should establish ethical frameworks that govern the use of AI in academic settings. These guidelines should address key areas such as data protection, ensuring that student information collected by AI systems is stored securely and used responsibly. Additionally, academic integrity policies should be updated to reflect the role of AI in writing tasks, emphasizing that AI tools should be used as supportive resources rather than replacements for students' original work. By developing these ethical guidelines, institutions can promote the responsible and transparent use of AI in EFL departments, ensuring that AI tools are used to enhance, rather than undermine, academic communication.

CONCLUSION

This study explored the impact of AI literacy on the integration of AI tools in higher education, with a specific focus on EFL departments. The findings indicate that while AI technologies offer significant potential to enhance language learning processes, their effectiveness is largely contingent upon the levels of AI literacy among both educators and students. The literature review

highlighted three key themes: the critical importance of AI literacy, the transformative role of AI tools in language education, and the broader implications of AI integration. The need for targeted AI literacy programs emerged as a fundamental recommendation, emphasizing that both educators and students require comprehensive training to navigate AI technologies effectively. Such programs can foster a deeper understanding of how AI can be utilized to personalize learning experiences, enhance engagement, and promote autonomous learning. Furthermore, the study underscored the importance of nurturing critical thinking skills in EFL students. While AI tools can provide valuable support, they should complement, rather than replace, the development of independent analytical skills. Encouraging students to critically engage with AI-generated feedback will help them become more discerning learners, capable of leveraging technology without becoming overly reliant on it. Lastly, the establishment of ethical guidelines for the use of AI in academic communication is essential to ensure responsible and transparent practices. By addressing data privacy, academic integrity, and the appropriate use of AI tools, institutions can safeguard the integrity of language education while harnessing the benefits of technological advancements.

limitation

The study addresses a critical gap in the existing literature: the amount of literature on AI literacy and EFL learning, and the effect on the usage of AI tools from the conclusion view. Although prior papers have explained the role of AI in shaping educational systems, few have weighed the impact of the degree of AI understanding across parties involved in the integration process and use of such tools. Thus, besides the revealing of potential threats that may hinder the effective application of AI to education, the study also explores plausible solutions to boost AI comprehensibility and utility, so that both educators and learners could benefit from the implementation of AI in EFL classes.

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