Leveraging AI Translation for Enhancing Information Literacy in Language Education

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Abstract

The rapid advancement of artificial intelligence (AI) in education poses challenges in bridging the gap between automated tools and the nuanced understanding required for effective language learning. This study investigates the optimization of AI-based translation to enhance information literacy in language education. Employing a systematic literature review method, the research examines three core questions: the role of AI translation in supporting language learners' comprehension and literacy, challenges, and opportunities in integrating AI translation into curricula, and its effectiveness compared to traditional translation methods. Data were collected from 302 articles, with 38 meeting the inclusion criteria. The analysis revealed that AI translation accelerates access to textual meaning, aiding learners' critical literacy skills. However, limitations in capturing cultural nuances and idiomatic expressions necessitate collaborative human-AI evaluation. The findings propose a "human-machine collaboration" framework, emphasizing learners' active roles in validating AI outputs. This approach broadens technological language learning theories and enhances educational practices. Future studies should explore AI integration strategies within diverse curricula and cross-cultural learning contexts. The practical implications underscore the need for educators to design tasks that engage learners in analyzing and refining AI translations for effective language acquisition and information literacy.

Keywords: *AI Translation; Information Literacy; Human-Machine Collaboration; Language Learning.*

Introduction

Information literacy has become an essential and unavoidable need in language learning in today's digital era. The ability to access, evaluate, and use information effectively constitutes a critical skill that supports language education across various educational levels (Hema Adhikari & Dr. Yougal Chandra Joshi, 2024). Information literacy (Khoiroh, 2023) not only assists language learners in understanding foreign-language content but also fosters cross-cultural communication skills (Wilczewski & Alon, 2023), critical thinking (H. Wang et al., 2023), and problem-solving abilities (Haider & Sundin, 2022). In practice, many language learners encounter difficulties in

filtering relevant and reliable information from diverse digital sources, including English-language texts, which now serve as one of the primary media for global learning (Murray et al., 2020). In Indonesia, although information literacy is recognized as pivotal in supporting language education, its implementation faces challenges such as a lack of understanding of how to evaluate the accuracy of information and limited access to educational resources that support this competency (Rasimin et al., 2024; Durriyah et al., 2024). Consequently, integrating information literacy more strategically into language education is not only relevant but also urgent.

Technological advancements, particularly in artificial intelligence (AI), have introduced various AI-based translation tools that play a significant role in enhancing information literacy within language education. Applications such as Google Translate provide not only instant translations but also facilitate easier access to and comprehension of information from global sources for language learners (Deng & Yu, 2022). These technologies enable learners to develop information literacy by honing skills such as evaluating the accuracy and relevance of content and understanding complex foreign-language texts (Lo, 2024). Moreover, AI-based translation tools offer practical solutions for learners with limited language proficiency, helping them bridge gaps in understanding educational materials (Xu & Jumaat, 2024). Research by Li et al. (2024) indicates that technologies like Chat GPT can support the development of information literacy by assisting learners in recognizing new vocabulary and understanding contextual meanings. These tools also help learners overcome language barriers in difficult texts, thus strengthening their ability to critically analyze and utilize information (Nugroho et al., 2023). In a modern educational landscape increasingly dependent on digital technologies, AI-based translation tools serve as essential instruments in fostering information literacy by providing flexible, efficient, and accessible approaches (Laupichler et al., 2022; Jokhan et al., 2022).

Despite their significant potential, the use of AI-based translation tools also poses considerable challenges. One major issue is the accuracy of translations, particularly with long and complex sentences, which often result in imprecise interpretations (Abbott, 2024). Furthermore, learners' understanding of the broader context of translated texts remains limited, potentially leading to misinterpretations of meaning (Gebbia, 2023). Overreliance on these tools also raises concerns about diminishing learners' critical thinking skills and their ability to independently analyze texts (Kong et al., 2024). Therefore, while AI-based translation tools hold immense promise for improving learners' information literacy, more targeted strategies are needed to maximize their benefits.

Previous studies have explored the application of AI-based translation technologies in language education and information literacy. For instance, Chetveryk (2024) examined how AI translation technologies accelerate comprehension of foreign language learning materials, while Yuhua Wang (2023) analyzed their potential in enhancing information literacy in the digital age. Senekal & Brokensha (2023) assessed the impact of AI translation tools on improving comprehension of multilingual texts, including regional and indigenous languages, as part of information literacy. Meanwhile, Naveen & Trojovský (2024) evaluated the accuracy of AI translation tools in language learning contexts, and Ehrensberger-Dow et al. (2023) focused on how AI-based translation influences the quality of information literacy among language learners.

Although considerable research exists on AI translation tools, much of it focuses on higher education environments or is limited to technical studies on translation accuracy, often neglecting their broader contribution to information literacy in language education. This gap underscores the need for further research on optimizing AI translation technologies to enhance information literacy in a wider language learning context. As technology increasingly dominates the learning process, a deeper understanding of how these tools contribute to the development of information literacy becomes highly relevant.

This study seeks to address this gap in the literature by exploring how AI-based translation can be optimized to enrich information literacy within language learning. Furthermore, it aims to provide practical guidance for educators on effectively integrating these technologies into language education to maximize their potential benefits.

Method

Utilizing the Systematic Literature Review (SLR) framework outlined by Booth et al. (2021), this study systematically addresses three core questions concerning the optimization of AI-based translation to enhance information literacy in language education. Table 1 below presents the research questions and corresponding focal points:

Table 1. List of Research Questions and Focus Areas

No	Research Questions	Focus Areas
1	How can AI-based translation help language learners comprehend texts and improve information literacy?	Analyzing how AI-based translation influences learners' understanding and analysis of foreign language texts

		while exploring its contributions to developing information literacy skills, particularly in fostering deeper language learning.
2	What are the challenges and opportunities arising from integrating AI-based translation into language education curricula to enhance information literacy across educational levels?	Exploring the barriers and benefits of AI adoption in language education and examining effective integration strategies to enhance students' information literacy, ranging from digital text usage to cross-cultural learning.
3	How does the effectiveness of AI-based translation compare with traditional translation methods in supporting the development of information literacy and contextual understanding in language education?	Evaluating whether AI-based translation is more effective than manual or traditional approaches in advancing information literacy and identifying the strengths and weaknesses of AI translation within the context of language education.

The data in Table 1 underscore that the study's primary focus stems from these research questions, encompassing explorations of how AI-based translation can enhance information literacy, identify challenges and opportunities, and compare its effectiveness with traditional methods in supporting text comprehension in language education.

This study draws on secondary data systematically collected from various academic sources, analyzed theoretically, and critically evaluated to produce reliable and relevant findings. The data sources include scholarly literature, such as journal articles and conference proceedings published from 2020 to 2024. The literature was retrieved through systematic searches in the DOAJ database, using keywords such as "AI Translation in Education," "Information Literacy in Language Learning," and "Impact of AI on Information Literacy Development." Only peer-reviewed, open-access publications indexed in Scopus and Web of Science with direct relevance to the study's focus were selected for in-depth analysis.

The data collection process involved a staged literature analysis, including source identification, selection based on abstracts and full-text content, and coding of key information into thematic categories such as the impacts, opportunities, and

challenges of AI-based translation technology for information literacy in language education. The data were carefully grouped, recording essential elements such as authors, publication years, methodologies, and key findings from each piece of literature.

In the data analysis phase, this study employed both descriptive and critical approaches. The descriptive analysis provided an overview of patterns in the use of AI-based translation tools for information literacy in language learning, while the critical analysis evaluated prior research findings to identify research gaps and compare them with best practices implemented in other educational contexts. This analysis was guided by a theoretical framework to assess the relevance of AI technology to school curricula and its impact on pedagogical practices.

The validity of findings was ensured through source triangulation, where data from various pieces of literature were compared to verify consistency and accuracy. The validation process included assessing the alignment of the literature with the research focus and cross-checking the coherence of findings across studies. Reliability was further enhanced by meticulously documenting the analytical steps, enabling replication by other researchers. With this approach, the study aims to provide new insights into optimizing AI-based translation to improve information literacy in language education while offering practical guidance for educators and policymakers to effectively harness AI technology in learning environments.

Result and Discussion

Through a comprehensive literature search conducted on the DOAJ database, a total of 302 articles related to the specified keywords were identified. Following a thorough review of these articles, 38 met the established criteria. Subsequently, based on the extracted data from these 38 selected articles, this study proceeded with an in-depth analysis to formulate answers to the research questions posed. The following presents the results of the analysis as responses to the research questions:

AI-Based Translation in Enhancing Text Comprehension and Information Literacy for Language Learners

Artificial intelligence continues transforming language learning by offering innovative solutions to overcome linguistic barriers. As part of a systematic literature review, this study explores the role of AI-based translation tools in supporting language learners. The findings, derived from various scholarly sources, are synthesized in Table

2 to provide a structured overview of key aspects of AI translation and its implications for text comprehension and information literacy.

Table 2. AI Translation for Text Comprehension and Information Literacy

Aspects	Details	References
AI-based Translation Tools	Tools like Google Translate and DeepL provide quick access to the basic meaning of foreign-language texts.	Hidalgo-Ternero (2021)
Effectiveness in Comprehension	AI-based translation gives a quick overview of the meaning but struggles with semantic and pragmatic nuances.	Xi et al. (2024), Xi Chen et al. (2024), Dentella et al. (2024)
Information Literacy Enhancement	AI allows students to compare automatic translations with original texts, fostering critical evaluation and understanding of context.	Chen et al. (2024), Shafiee Rad et al. (2024)
Critical Literacy and Revision	Involvement in revision of AI translations strengthens critical literacy by promoting deeper engagement with content.	Cao et al. (2023)
Speed and Accessibility	AI translation is beneficial for quick access to foreign-language texts, particularly for complex content, without relying solely on vocabulary.	Kunst & Bierwiaczonek (2023), Misra & Chandwar (2023)
Limitations of AI Translation	AI struggles with cultural context, idioms, and figurative language, leading to potential misunderstandings in literary or culturally rich texts.	Al Sawi & Allam (2024), Schneider (2022)
AI as a Supplementary Tool	AI translation is most effective as a tool to aid, rather than replace, human analysis in understanding complex texts.	Moneus & Sahari (2024)
AI's Role in Information Literacy	AI comparison with multiple sources improves students' ability to evaluate the credibility of information.	Chiang et al. (2022)

Table 2 above states that AI-based translation has emerged as an increasingly vital tool in language education, particularly in assisting learners to comprehend foreign language texts and enhance information literacy. A review of the literature

reveals that AI translation tools, such as Google Translate and DeepL, provide quick access to the fundamental meaning of foreign language texts (Hidalgo-Ternero, 2021). Most studies analyzed indicate that while AI is effective in delivering an initial understanding of text meaning, it falls short in capturing semantic and pragmatic nuances (Xi et al., 2024; Xi Chen et al., 2024; Dentella et al., 2024). Information literacy, which encompasses the ability to locate, evaluate, and use information, also benefits from AI translation. Research by Chen et al. (2024) highlights how AI translation enables learners to compare machine translations with original texts, thereby enhancing their critical ability to evaluate the accuracy and contextual relevance of information (Shafiee Rad et al., 2024). This aligns with Cao et al. (2023) findings, which emphasize the importance of involving learners in translation revision to strengthen critical literacy.

The primary advantage of AI-based translation lies in its speed and capacity to provide broad access to foreign language texts (Kunst & Bierwiaczonek, 2023). In language learning, these tools support comprehension of complex content without requiring complete mastery of individual vocabulary items (Misra & Chandwar, 2023). For example, students can quickly grasp the meaning of academic articles or foreign news. However, limitations persist, such as the inability of AI translation to capture cultural context, idioms, and figurative expressions (Al Sawi & Allam, 2024). A study by Schneider (2022) indicates that AI translations tend to be literal, often leading to misunderstandings in literary texts or works rich in cultural connotations.

This research supports Moneus & Sahari (2024) conclusion that AI-based translation is most effective as an assistive tool rather than a replacement for human analysis. Furthermore, this study adds a new dimension by highlighting AI's role in supporting information literacy, an aspect that has been less explored. For instance, using AI tools to compare various information sources has been shown to enhance learners' ability to evaluate source credibility, as reported in a study by Chiang et al. (2022). Based on these findings, the research proposes a modification to technology-based language learning theories by incorporating the concept of "human-machine collaboration" in understanding texts and improving information literacy. This approach underscores the active role of learners in validating AI translation outputs to strengthen their analytical and critical thinking skills.

Theoretically, this study expands the understanding of integrating AI technology into language learning, particularly in fostering information literacy. The proposed theoretical modification underscores the importance of learners as active evaluators in the translation process, driving the development of new theories in digital literacy.

Practically, the findings suggest that educators should leverage AI-based translation as a learning tool that actively engages learners. For example, teachers could design assignments where students compare AI-generated translations with manual translations, identify errors, and discuss differences in meaning. This approach not only enhances language comprehension but also reinforces learners' information literacy.
The study concludes that AI-based translation holds significant potential for helping learners understand texts and improve information literacy. However, its effectiveness depends on how these tools are employed in educational contexts. A collaborative approach involving learners, educators, and AI technology is essential to maximize its benefits. This research also opens new avenues for exploring how AI translation can be effectively integrated into language learning curricula.

Challenges and Opportunities of Integrating AI-Based Translation into Language Learning Curricula to Enhance Information Literacy Across Educational Levels

The integration of AI-based translation into language learning curricula has garnered increasing attention in recent years, reflecting its growing relevance in education. Through a systematic literature review, this study examines the intersection of AI technology and language learning, focusing on its potential to enhance information literacy across various educational levels. Table 3 summarizes the findings, presenting a comprehensive overview of the challenges and opportunities associated with incorporating AI-based translation into language education.

Table 3. Challenges and Opportunities of AI Translation in Language Curricula

Aspects	Details	References
Opportunities of AI Translation	AI translation enables students to access texts in multiple languages, enhancing information literacy.	Yuxiu (2024)
Cross-Cultural Learning	AI helps students understand language structure and semantic differences, promoting cross-cultural learning.	Yang & Zhou (2024)
Analytical and Critical Skills	Students develop critical and analytical skills by evaluating and analyzing texts.	Shadiev et al. (2022), Tang et al. (2024)
Translation Accuracy and Credibility	Comparing AI translations with original texts improves students'	Dai (2024)

	ability to assess translation accuracy and information credibility.	
Challenges: Cultural Context Limitations	AI translation struggles with capturing cultural context and idiomatic expressions, reducing understanding of cultural references.	Cavaleri et al. (2024), Briskilal & Subalalitha (2022)
Literal Translations and Cultural Connotations	AI translations are often literal and fail to address idiomatic or connotative meanings in the original language.	Elam (2023)
AI as a Support Tool	AI should be used as a support tool, not a replacement for human analysis in language learning.	Thorne (2024)
Collaborative Use in Curriculum	AI integration should involve critical discussions between students and teachers, comparing AI and manual translations.	Zheng et al. (2024), Ifenthaler & Schumacher (2023), Marrone et al. (2024), Cohn et al. (2024)
Human-Machine Collaboration	Collaboration between students, educators, and AI facilitates new theories and enhances information literacy skills.	Zheng et al. (2024), Ifenthaler & Schumacher (2023), Marrone et al. (2024)

Based on the data in Table 3, the integration of AI-based translation in language learning curricula presents significant challenges and opportunities in enhancing information literacy across various educational levels. From the perspective of opportunity, AI-based translation enables students to easily access digital texts in multiple languages, thereby enhancing their information literacy skills (Yuxiu, 2024). AI translation allows students to compare automated translations with original texts, enriching their understanding of language structure and semantic differences (Yang & Zhou, 2024). In this regard, the technology serves as a learning tool that broadens students' horizons, particularly in cross-cultural learning contexts (Shadiev et al., 2022). Students not only learn languages mechanically but also develop skills to evaluate and analyze texts from a more critical perspective (Tang et al., 2024). Dai

(2024) asserts that comparing AI translations with original texts can enhance students' ability to recognize the accuracy and credibility of translated information, aligning with the improvement of their critical literacy skills.

However, a significant challenge related to AI translation in the curriculum is its limitation in capturing cultural and idiomatic contexts (Cavaleri et al., 2024). Briskilal & Subalalitha (2022) points out that AI translations are often literal and struggle to handle idiomatic expressions or the connotative meanings embedded in the original language. In the context of language education, this can limit students' understanding of texts rich in cultural references or figurative expressions. Thus, while AI translation offers a quick solution, its use without human adaptation or supervision may undermine the depth of students' comprehension, particularly in teaching literary materials or texts that are rich in cultural connotations (Elam, 2023).

To address this challenge, this study argues that AI translation should be positioned as a supportive tool, rather than a replacement for human analysis and comprehension. Consistent with Thorne (2024), AI translation can be highly effective when used within a broader language learning context that involves critical discussions between students and educators. The integration of AI into the curriculum should not only focus on the mechanical translation of texts but also engage students in the validation process of translations, thereby strengthening their analytical and critical skills. In this context, teachers can design tasks that ask students to compare AI translations with manual ones, identify errors, and discuss differences in meaning. This approach not only enhances language comprehension but also reinforces students' information literacy skills.

It is essential to acknowledge that while AI-based translation holds significant potential in improving information literacy, its effectiveness depends on how the technology is integrated into the learning curriculum. This study supports the view that AI should be used in a collaborative approach between students, educators, and the technology itself (Zheng et al., 2024; Ifenthaler & Schumacher, 2023; Marrone et al., 2024; Cohn et al., 2024). Such an approach opens up opportunities for the development of new theories on "human-machine collaboration" in language learning, allowing students not only to be passive users but also active evaluators of translation outcomes. In this way, technology can be leveraged to strengthen information literacy, deepen language understanding, and facilitate more effective cross-cultural learning.

Overall, the findings offer important theoretical and practical implications. Theoretically, this research introduces a new dimension to technology-based language learning theory by emphasizing the importance of human-machine collaboration.

Practically, the study provides insights for educators on how to utilize AI-based translation to support more interactive and critical learning. The implementation of AI translation in the curriculum requires a deep understanding of how this technology can complement, rather than replace, a more holistic language learning process.

A Comparative Analysis of the Effectiveness of AI-Based Translation and Traditional Translation Methods in Supporting the Development of Information Literacy and Contextual Understanding in Language Learning

This analysis explores the comparative effectiveness of AI-based and traditional translation methods in supporting the development of information literacy and contextual understanding within language learning. Through a systematic literature review, key dimensions have been identified and examined, offering a detailed comparison of these two translation approaches. The insights presented aim to deepen our understanding of how each method influences various aspects of language education, particularly in terms of efficiency, engagement, and pedagogical outcomes. The following table summarizes these findings, highlighting the strengths and limitations of both methods based on recent scholarly research.

Table 4. AI and Traditional Translation in Enhancing Information Literacy and Language Learning

Dimension	AI-Based Translation	References	Manual Translation	References
Speed	Fast, easy access to basic meaning	Yan (2022), Zhang (2023)	Slower, requires more time for analysis	Y. Yang et al. (2023)
Ease of Access	Easily accessible anytime	Yan (2022), Zhang (2023)	Limited access, depends on translator availability	Mohebbi (2023)
Cultural & Semantic Context	Limited in capturing semantic nuances and cultural context	Dentella et al. (2024), Al Sawi & Allam (2024)	Deeper understanding of cultural context	Rico Pérez (2024), Egdom & Declercq (2023)
Pragmatic Context	Limited in understanding pragmatic context	Wu & Liang, (2024)	Better at handling pragmatic context	Mohebbi (2023)

Idioms & Figurative Expressions	Struggles with idioms and figurative expressions	He et al. (2024), Baziotis et al. (2022)	Better at capturing idioms and figurative language	He et al. (2024), Baziotis et al. (2022)
Sociolinguistic & Linguistic Diversity	Tends to be too literal, missing sociolinguistic complexity	Baziotis et al. (2022)	More responsive to sociolinguistic and cultural complexity	Mohebbi (2023)
Student Engagement	Requires active student involvement to critique and correct	Tariq (2024)	Direct student involvement in deep contextual understanding	Tariq (2024)
Language Learning Impact	Speeds up initial understanding but needs critical analysis	Tariq (2024)	Enhances information literacy through deeper contextualization	Y. Yang et al. (2023)
Classroom Efficiency	Efficient for large classes with limited time	Y. Yang et al. (2023)	Requires more time, challenging in large classes	Y. Yang et al. (2023)
Teacher's Role	Guides students to compare AI and manual translations	Incognito & Tarchi (2024), Scholes et al. (2024), van der Eem et al. (2024)	Provides deeper contextual analysis	Mohebbi (2023)

According to Table 4, the comparison between AI-based translation and traditional translation methods focuses on two main dimensions: enhancing information literacy and understanding context in language learning. The findings from the literature analysis indicate that AI translation offers significant advantages in terms

of speed and ease of access to the basic meaning of foreign language texts (Yan, 2022; Zhang, 2023). However, despite its effectiveness in providing initial translations, AI's limitations in capturing semantic nuances (Dentella et al., 2024), pragmatics (Wu & Liang, 2024), and cultural context are evident (Al Sawi & Allam, 2024), presenting a major challenge compared to manual translation. Manual or traditional approaches, which involve a deep understanding by human translators, can address these shortcomings more effectively, especially in the context of literature, cultural texts, and material rich in cultural meaning (Rico Pérez, 2024; Egdom & Declercq, 2023).

Previous research (such as that conducted by Chen et al. (2024) shows that AI translation allows learners to gain an initial clear understanding of a text's meaning, thus speeding up the comprehension process (Tariq, 2024). This is particularly beneficial in language education, where students often face challenges in understanding foreign language texts. However, the challenge lies in AI's inability to capture connotations, idioms, and figurative expressions, which are essential in teaching language and culture (He et al., 2024). These findings are consistent with other studies, such as Baziotis et al. (2022), which highlights that AI translation tends to be overly literal and fails to respond to the sociolinguistic and cultural complexities of a language.

On the other hand, manual translation enables translators to understand a text within a broader cultural and social context (Mohebbi, 2023). This strengthens information literacy by focusing on the precise word choice and contextual adjustments that align with the situation and target audience. However, manual translation requires more time and specialized skills from the translator, which often becomes a constraint in classrooms with large numbers of students or in learning contexts with time limitations (Y. Yang et al., 2023). Therefore, using AI-based translation as an aid in language learning can offer significant advantages in terms of efficiency, though it must be accompanied by active student engagement in critiquing and correcting translations to address contextual limitations.

The theoretical implications of these findings highlight the need for modifications to language learning theories that integrate technology, particularly AI, in educational contexts. The "human-machine collaboration" theory proposed in this study emphasizes the importance of active student involvement in validating and revising AI-generated translations to enhance their critical literacy skills. By involving students in this process, not only does their language proficiency develop, but their ability to evaluate information sources and delve into deeper contextual understanding also improves.

From a practical standpoint, this study suggests that language education should leverage AI-based translation as a tool to expedite initial understanding, while still prioritizing critical analysis of the translation results. Teachers can design tasks where students compare AI translations with manual translations or their own interpretations, analyzing differences in meaning and discussing the relevance of context in the texts. This approach not only aids in language skill development but also enriches students' understanding of information literacy, which is crucial in today's digital age.

The findings of this study align with previous research, such as that by Incognito & Tarchi (2024), Scholes et al. (2024), and van der Eem et al. (2024), which emphasize the importance of comparing different information sources to enhance students' information literacy. The distinction lies in the emphasis that AI-based translation, when used correctly, can be an effective tool for improving content comprehension and information literacy. Nevertheless, this technology must be balanced with human involvement in the process of text analysis and interpretation to achieve a more comprehensive understanding.

Conclusion

This research indicates that AI-driven translation can enhance information literacy in language education by enabling swift access to text meanings and fostering the development of critical skills. However, its limitations in understanding cultural nuances and idiomatic expressions necessitate a collaborative approach with human analysis. This human-machine collaboration expands the theory of technology-mediated language learning, highlighting the significance of active learner assessment. Future studies should explore strategies for incorporating AI into curricula and examine its effects on cross-cultural learning outcomes. Thoughtful implementation is essential to fully realize the potential of this technology.

References

Abbott, K. (2024). AI and language change: The case of the hallucinating spellchecker. *Learned Publishing*, *38*(1), e1639. https://doi.org/10.1002/leap.1639

Al Sawi, I., & Allam, R. (2024). Exploring challenges in audiovisual translation: A comparative analysis of human- and AI-generated Arabic subtitles in Birdman. *PLOS ONE*, *19*(10), e0311020.

Baziotis, C., Mathur, P., & Hasler, E. (2022). Automatic evaluation and analysis of idioms in neural machine translation. *ArXiv Preprint ArXiv:2210.04545*.

Booth, A., James, M.-S., Clowes, M., & Sutton, A. (2021). *Systematic approaches to a successful literature review*.

Briskilal, J., & Subalalitha, C. N. (2022). An ensemble model for classifying idioms and literal texts using BERT and RoBERTa. *Information Processing and*

Management, *59*(1). https://doi.org/10.1016/j.ipm.2021.102756

Cao, L., Doherty, S., & Lee, J. F. (2023). The process and product of translation revision: empirical data from student translators using eye tracking and screen recording. *The Interpreter and Translator Trainer*, *17*(4), 548–565. https://doi.org/10.1080/1750399X.2023.2207070

Cavaleri, D., Hersch, M., & Kolde, A. (2024). Write like Cicero: integrating an AI-based classifier in ancient language teaching for idiom acquisition. *Journal of Classics Teaching*, 1–6. https://doi.org/DOI: 10.1017/S2058631024000734

Chen, X., Li, J., & Ye, Y. (2024). A feasibility study for the application of AI-generated conversations in pragmatic analysis. *Journal of Pragmatics*, *223*, 14–30. https://doi.org/https://doi.org/10.1016/j.pragma.2024.01.003

Chetveryk. (2024). РЕСУРСИ ЗІ ШТУЧНИМ ІНТЕЛЕКТОМ У НАВЧАННІ ІНОЗЕМНИМ МОВАМ:ОГЛЯД МОЖЛИВОСТЕЙ ТА ПЕРСПЕКТИВ ВИКОРИСТАННЯ. *Modern Information Technologies and Innovation Methodologies of Education in Professional Training Methodology Theory Experience Problems*, *72* SE-РОЗДІЛ *4*, 205–219. https://doi.org/10.31652/2412-1142-2024-72-205-219

Chiang, T. H. C., Liao, C.-S., & Wang, W.-C. (2022). Impact of Artificial Intelligence News Source Credibility Identification System on Effectiveness of Media Literacy Education. In *Sustainability* (Vol. 14, Issue 8). https://doi.org/10.3390/su14084830

Cohn, C., Snyder, C., Fonteles, J. H., T. S., A., Montenegro, J., & Biswas, G. (2024). A multimodal approach to support teacher, researcher and AI collaboration in STEM+C learning environments. *British Journal of Educational Technology*, *n/a*(n/a). https://doi.org/https://doi.org/10.1111/bjet.13518

Dai, Y. (2024). Dual-contrast pedagogy for AI literacy in upper elementary schools. *Learning and Instruction*, *91*, 101899. https://doi.org/https://doi.org/10.1016/j.learninstruc.2024.101899

Deng, X., & Yu, Z. (2022). A Systematic Review of Machine-Translation-Assisted Language Learning for Sustainable Education. In *Sustainability (Switzerland)* (Vol. 14, Issue 13). https://doi.org/10.3390/su14137598

Dentella, V., Günther, F., Murphy, E., Marcus, G., & Leivada, E. (2024). Testing AI on language comprehension tasks reveals insensitivity to underlying meaning. *Scientific Reports*, *14*(1), 28083. https://doi.org/10.1038/s41598-024-79531-8

Durriyah, T. L., Parlindungan, F., Dewayani, S., Silvhiany, S., & Amos, Y. (2024). Indonesian literacy teachers' efforts to integrate children's literature in literacy classrooms. *Australian Journal of Language and Literacy*, *47*(2), 161–179. https://doi.org/10.1007/s44020-023-00056-0

Egdom, G. Van, & Declercq, C. (2023). *The Riddle of (Literary) Machine Translation Quality*.

Ehrensberger-Dow, M., Delorme Benites, A., & Lehr, C. (2023). A new role for translators and trainers: MT literacy consultants. *The Interpreter and Translator*

Trainer, *17*(3), 393–411. https://doi.org/10.1080/1750399X.2023.2237328

Elam, M. (2023). Poetry Will Not Optimize; or, What Is Literature to AI? *American Literature*, *95*(2), 281–303. https://doi.org/10.1215/00029831-10575077

Gebbia, C. A. (2023). Translator learners' strategies in local and textual metaphors. *Frontiers in Communication*, *8*. https://doi.org/10.3389/fcomm.2023.1177658

Haider, J., & Sundin, O. (2022). Information literacy as a site for anticipation: temporal tactics for infrastructural meaning-making and algo-rhythm awareness. *Journal of Documentation*, *78*(1), 129–143. https://doi.org/10.1108/JD-11-2020-0204

He, W., Vieira, T. K., Garcia, M., Scarton, C., Idiart, M., & Villavicencio, A. (2024). Investigating Idiomaticity in Word Representations. *Computational Linguistics*, 1–48. https://doi.org/10.1162/coli_a_00546

Hema Adhikari, & Dr. Yougal Chandra Joshi. (2024). Instruction In Information Literacy And Its Function In Fostering Critical Thinking Abilities. *Educational Administration: Theory and Practice*, *30*(5 SE-Articles), 2454–2459. https://doi.org/10.53555/kuey.v30i5.3305

Hidalgo-Ternero, C. M. (2021). Google Translate vs. DeepL: analysing neural machine translation performance under the challenge of phraseological variation. *MonTI. Monographs in Translation and Interpreting*, *SE-Articles*, 154–177. https://doi.org/10.6035/MonTI.2020.ne6.5

Ifenthaler, D., & Schumacher, C. (2023). Reciprocal issues of artificial and human intelligence in education. *Journal of Research on Technology in Education*, *55*(1), 1–6. https://doi.org/10.1080/15391523.2022.2154511

Incognito, O., & Tarchi, C. (2024). The association between sourcing skills and intertextual integration in lower secondary school students. *European Journal of Psychology of Education*, *39*(2), 1485–1500. https://doi.org/10.1007/s10212-023-00750-0

Jokhan, A., Chand, A. A., Singh, V., & Mamun, K. A. (2022). Increased Digital Resource Consumption in Higher Educational Institutions and the Artificial Intelligence Role in Informing Decisions Related to Student Performance. In *Sustainability* (Vol. 14, Issue 4). https://doi.org/10.3390/su14042377

Khoiroh, H. (2023). Efektivitas Penggunaan Aplikasi Canva sebagai Media Pembelajaran dalam Meningkatkan Kreativitas Keterampilan Menulis (Maharah Kitabah) Mahasiswa Universitas Kiai Abdullah Faqih Gresik. *JALIE: Journal of Applied Linguistics and Islamic Education*, *7*(2), 317–332.

Kong, S. C., Lee, J. C. K., & Tsang, O. (2024). A pedagogical design for self-regulated learning in academic writing using text-based generative artificial intelligence tools: 6-P pedagogy of plan, prompt, preview, produce, peer-review, portfolio-tracking. *Research and Practice in Technology Enhanced Learning*, *19*(SE-Articles), 30. https://doi.org/10.58459/rptel.2024.19030

Kunst, J. R., & Bierwiaczonek, K. (2023). Utilizing AI questionnaire translations in cross-cultural and intercultural research: Insights and recommendations. *International Journal of Intercultural Relations*, *97*, 101888.

https://doi.org/10.1016/j.ijintrel.2023.101888

Laupichler, M. C., Aster, A., Schirch, J., & Raupach, T. (2022). Artificial intelligence literacy in higher and adult education: A scoping literature review. *Computers and Education: Artificial Intelligence*, *3*, 100101. https://doi.org/https://doi.org/10.1016/j.caeai.2022.100101

Li, B., Weng, Y., Xia, F., & Deng, H. (2024). Towards better Chinese-centric neural machine translation for low-resource languages. *Computer Speech and Language*, *84*. https://doi.org/10.1016/j.csl.2023.101566

Lo, S. (2024). The effects of NMT as a de facto dictionary on vocabulary learning: a comparison of three look-up conditions. *Computer Assisted Language Learning*, 1–21. https://doi.org/10.1080/09588221.2024.2310285

Marrone, R., Zamecnik, A., Joksimovic, S., Johnson, J., & De Laat, M. (2024). Understanding Student Perceptions of Artificial Intelligence as a Teammate. *Technology, Knowledge and Learning*. https://doi.org/10.1007/s10758-024-09780-z

Misra, D. P., & Chandwar, K. (2023). ChatGPT, artificial intelligence and scientific writing: What authors, peer reviewers and editors should know. *Journal of the Royal College of Physicians of Edinburgh*, *53*(2), 90–93. https://doi.org/10.1177/14782715231181023

Mohebbi, A. (2023). The use of cultural conceptualisations as a translation strategy for culture-specific jokes and humorous discourse: A remedy for a malady? *Ampersand*, *11*, 100150. https://doi.org/https://doi.org/10.1016/j.amper.2023.100150

Moneus, A. M., & Sahari, Y. (2024). Artificial intelligence and human translation: A contrastive study based on legal texts. *Heliyon*, *10*(6). https://doi.org/10.1016/j.heliyon.2024.e28106

Murray, L., Giralt, M., & Benini, S. (2020). Extending digital literacies: Proposing an agentive literacy to tackle the problems of distractive technologies in language learning. *ReCALL*, *32*(3), 250–271. https://doi.org/DOI: 10.1017/S0958344020000130

Naveen, P., & Trojovský, P. (2024). Overview and challenges of machine translation for contextually appropriate translations. *IScience*, *27*(10). https://doi.org/10.1016/j.isci.2024.110878

Nugroho, A., Putro, N. H. P. S., & Syamsi, K. (2023). The Potentials of ChatGPT for Language Learning: Unpacking its Benefits and Limitations. *Register Journal*, *16*(2), 224–247. https://doi.org/10.18326/register.v16i2.224-247

Rasimin, Semma, A. B., Zakiyuddin, Ali, M., & Helmy, M. I. (2024). Multi-dimensional challenges in the Indonesian social science information technology-based learning: A systematic literature review. *Heliyon*, *10*(7). https://doi.org/10.1016/j.heliyon.2024.e28706

Rico Pérez, C. (2024). Cultural references and machine translation: a methodology for evaluation: The case of administrative texts in the area of migration. *Hikma*, *23*(1

SE-Artículos), 87–109. https://doi.org/10.21071/hikma.v23i1.15693

Schneider, B. (2022). Multilingualism and AI: The Regimentation of Language in the Age of Digital Capitalism. *Signs and Society*, *10*(3), 362–387. https://doi.org/DOI: 10.1086/721757

Scholes, L., McDonald, S., Stahl, G., & Comber, B. (2024). Many truths, many knowledges, many forms of reason: Understanding middle-school student approaches to sources of information on the internet. *British Educational Research Journal*, *50*(1), 53–72. https://doi.org/https://doi.org/10.1002/berj.3909

Senekal, B., & Brokensha, S. (2023). The potential of artificial intelligence (AI) for decolonising education in South Africa through the development of indigenous languages. *South African Journal of African Languages*, *43*(3), 208–215. https://doi.org/10.1080/02572117.2023.2294405

Shadiev, R., Wang, X., Halubitskaya, Y., & Huang, Y.-M. (2022). Enhancing Foreign Language Learning Outcomes and Mitigating Cultural Attributes Inherent in Asian Culture in a Mobile-Assisted Language Learning Environment. In *Sustainability* (Vol. 14, Issue 14). https://doi.org/10.3390/su14148428

Shafiee Rad, H., Alipour, J., Jafarpour, A., & Hashemian, M. (n.d.). Crafting with AI: personalized pathways to boost critical language awareness and spark creativity in writing through digital adaptive learning. *Language Awareness*, 1–27. https://doi.org/10.1080/09658416.2024.2431071

Tang, T., Sha, J., Zhao, Y., Wang, S., Wang, Z., & Shen, S. (2024). Unveiling the efficacy of ChatGPT in evaluating critical thinking skills through peer feedback analysis: Leveraging existing classification criteria. *Thinking Skills and Creativity*, *53*, 101607. https://doi.org/https://doi.org/10.1016/j.tsc.2024.101607

Tariq, M. U. (2024). AI-powered language translation for multilingual classrooms. In *Integrating Generative AI in Education to Achieve Sustainable Development Goals* (pp. 29–46). https://doi.org/10.4018/979-8-3693-2440-0.ch002

Thorne, S. L. (2024). Generative artificial intelligence, co-evolution, and language education. *The Modern Language Journal*, *108*(2), 567–572. https://doi.org/https://doi.org/10.1111/modl.12932

van der Eem, M., van Drie, J., Brand-Gruwel, S., & van Boxtel, C. (2024). Students evaluating the trustworthiness of historical sources and internet sources: A comparison. *British Educational Research Journal*, *n/a*(n/a). https://doi.org/https://doi.org/10.1002/berj.4095

Wang, H., Li, L., Wu, J., & Gao, H. (2023). Scientific Information Literacy: Adaption of Concepts and an Investigation Into the Chinese Public. *Media and Communication; Vol 11, No 1 (2023): Science Communication in the Digital Age: New Actors, Environments, and PracticesDO - 10.17645/Mac.V11i1.6077* .

Wang, Y. (2023). Artificial Intelligence Technologies in College English Translation Teaching. *Journal of Psycholinguistic Research*, *52*(5), 1525–1544. https://doi.org/10.1007/s10936-023-09960-5

Wilczewski, M., & Alon, I. (2023). Language and communication in international

students' adaptation: a bibliometric and content analysis review. *Higher Education*, *85*(6), 1235–1256. https://doi.org/10.1007/s10734-022-00888-8

Wu, Y., & Liang, Q. (2024). An Intelligent Error Detection Model for Machine Translation Using Composite Neural Network-Based Semantic Perception. *IEEE Access*, *12*, 113490–113501. https://doi.org/10.1109/ACCESS.2024.3442432

Xi, Z., Yiqian, Z., Congduan, L., & Xiao, M. (2024). Variational neural inference enhanced text semantic communication system. *China Communications*, *21*(7), 50–64. https://doi.org/10.23919/JCC.fa.2023-0755.202407

Xu, T., & Jumaat, N. F. (2024). ChatGPT-Empowered Writing Strategies in EFL Students' Academic Writing: Calibre, Challenges and Chances. *International Journal of Interactive Mobile Technologies* , *18*(15), 95–114. https://doi.org/10.3991/ijim.v18i15.49219

Yan, S. (2022). Automatic Anomaly Monitoring Research of Business English Literature Translation Based on Decision Tree Intelligent Analysis. *Scientific Programming*, *2022*(1), 9009204. https://doi.org/https://doi.org/10.1155/2022/9009204

Yang, L., & Zhou, G. (2024). Dissecting The Analects: an NLP-based exploration of semantic similarities and differences across English translations. *Humanities and Social Sciences Communications*, *11*(1), 50. https://doi.org/10.1057/s41599-023-02355-w

Yang, Y., Liu, R., Qian, X., & Ni, J. (2023). Performance and perception: machine translation post-editing in Chinese-English news translation by novice translators. *Humanities and Social Sciences Communications*, *10*(1), 798. https://doi.org/10.1057/s41599-023-02285-7

Yuxiu, Y. (2024). Application of translation technology based on AI in translation teaching. *Systems and Soft Computing*, *6*. https://doi.org/10.1016/j.sasc.2024.200072

Zhang, Y. (2023). Artificial Intelligence Technology Boosts the Construction of English Intelligent Teaching Mode in Colleges and Universities. *Applied Mathematics and Nonlinear Sciences*.

Zheng, L., Fan, Y., Gao, L., Huang, Z., Chen, B., & Long, M. (n.d.). Using AI-empowered assessments and personalized recommendations to promote online collaborative learning performance. *Journal of Research on Technology in Education*, 1–27. https://doi.org/10.1080/15391523.2024.2304066