



VNU Journal of Foreign Studies

Journal homepage: <https://jfs.ulis.vnu.edu.vn/>

USABILITY, EFFECTIVENESS AND ENGAGEMENT OF TARI AI TOOLS FOR LANGUAGE LEARNING

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Received 16 September 2025

Revised 19 January 2026; Accepted 03 February 2026

Abstract: This study investigates user perceptions of AI-supported tools developed by the Training and Applied Research Institute (TARI) at Ho Chi Minh City University of Foreign Languages - Information Technology (HUFLIT), designed to enhance language education. As artificial intelligence continues to transform educational practices, the research evaluates the extent to which localized AI tools facilitate usability, effectiveness, and engagement in linguistics learning. The data were collected from 271 participants using a structured questionnaire comprising 18 Likert-scale items and 6 open-ended questions to capture both quantitative and qualitative insights. Data cleaning was conducted using Python, followed by Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) to validate the measurement scale. The EFA confirmed a three-factor structure aligned with the theoretical framework, while the CFA demonstrated good model fit (CFI = 0.969; RMSEA = 0.052). Reliability testing indicated strong internal consistency across all constructs of the measurement scale (overall $\alpha = 0.944$). Composite Reliability (CR) and Average Variance Extracted (AVE) further supported convergent validity for most dimensions. The findings revealed predominantly positive user perceptions. The participants regarded the tools as accessible, interactive, and effective in supporting both conceptual understanding and practical application. The qualitative responses emphasized advantages such as personalization, efficient data processing, and enhanced motivation, while also acknowledging limitations in capturing humanistic dimensions of language learning. The study concludes that TARI AI tools hold significant potential to foster inclusive, engaging, and impactful language education. Continued refinement and user-centered development are recommended to ensure these tools remain responsive to diverse learner needs in dynamic educational contexts.

Keywords: AI tools, language education, usability, engagement, educational technology

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<https://doi.org/10.63023/2525-2445/jfs.ulis.5623>

TÍNH KHẢ DỤNG, HIỆU QUẢ VÀ MỨC ĐỘ THAM GIA CỦA NGƯỜI HỌC ĐỐI VỚI CÁC CÔNG CỤ TARI AI TRONG DẠY VÀ HỌC NGÔN NGỮ

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Nhận bài ngày 16 tháng 9 năm 2025

Chỉnh sửa ngày 19 tháng 01 năm 2026; Chấp nhận đăng ngày 03 tháng 02 năm 2026

Tóm tắt: Nghiên cứu này khảo sát nhận thức của người dùng đối với các công cụ hỗ trợ trí tuệ nhân tạo (AI) do Viện Đào tạo và Nghiên cứu Ứng dụng (TARI) thuộc Trường Đại học Ngoại ngữ - Tin học TP. Hồ Chí Minh (HUFLIT) phát triển, nhằm nâng cao hiệu quả giáo dục ngôn ngữ. Trong bối cảnh trí tuệ nhân tạo ngày càng tác động sâu rộng đến hoạt động giáo dục, nghiên cứu đánh giá mức độ mà các công cụ AI được nội địa hóa có thể hỗ trợ tính khả dụng, hiệu quả và sự tham gia của người học trong lĩnh vực ngôn ngữ học. Dữ liệu được thu thập từ 271 người tham gia thông qua một bảng hỏi có cấu trúc gồm 18 câu hỏi thang đo Likert và 6 câu hỏi mở, nhằm thu thập cả dữ liệu định lượng và định tính. Quy trình làm sạch dữ liệu được thực hiện bằng Python, sau đó tiến hành Phân tích nhân tố khám phá (EFA) và Phân tích nhân tố khẳng định (CFA) để kiểm định thang đo. Kết quả EFA xác nhận cấu trúc ba nhân tố phù hợp với khung lý thuyết, trong khi CFA cho thấy mức độ phù hợp tốt của mô hình (CFI = 0,969; RMSEA = 0,052). Phân tích độ tin cậy cho thấy tính nhất quán nội tại cao của các cấu trúc đo lường (Cronbach's Alpha = 0,944). Các chỉ số Độ tin cậy tổng hợp (CR) và Phương sai trích trung bình (AVE) cũng có giá trị hội tụ của các thang đo. Kết quả nghiên cứu cho thấy phần lớn người tham gia có nhận thức tích cực đối với các công cụ AI của TARI. Người học đánh giá các công cụ này dễ tiếp cận, có tính tương tác cao và hiệu quả trong việc hỗ trợ cả hiểu biết khái niệm lẫn ứng dụng thực tiễn. Các phản hồi định tính nhấn mạnh những ưu điểm như: khả năng cá nhân hóa, xử lý dữ liệu hiệu quả và gia tăng động lực học tập, đồng thời cũng ghi nhận một số hạn chế trong việc tái hiện các khía cạnh nhân văn của việc học ngôn ngữ. Nghiên cứu kết luận rằng các công cụ AI của TARI có tiềm năng lớn trong việc thúc đẩy giáo dục ngôn ngữ theo hướng toàn diện, hấp dẫn và có tác động tích cực. Việc tiếp tục cải tiến và phát triển dựa trên người dùng được khuyến nghị nhằm đảm bảo các công cụ này đáp ứng linh hoạt nhu cầu đa dạng của người học trong các bối cảnh giáo dục đang thay đổi nhanh chóng.

Từ khóa: công cụ AI, giáo dục ngôn ngữ, tính khả dụng, sự tham gia của người học, công nghệ giáo dục

1. Introduction

The integration of Artificial Intelligence (AI) into education has marked a transformative shift in how knowledge is delivered, accessed, and personalized (Willis, 2024). In the realm of language education, AI tools offer innovative approaches to enhance teaching and learning processes through features such as automated feedback, personalized learning pathways, intelligent tutoring systems, and natural language processing applications (Douali et al., 2022). These advancements have the potential to address common pedagogical challenges and improve student engagement and learning outcomes, though it is essential to balance AI integration with critical thinking skills (Bai et al., 2023).

As educational institutions across the globe embrace digital transformation, the

development and adoption of localized AI solutions have become increasingly significant. In Vietnam, the Training and Applied Research Institute (TARI) at HUFLIT University has pioneered the development of AI tools specifically tailored for linguistics education (Gümüş et al., 2023). These tools aim to support learners by improving the usability, effectiveness, and interactivity of language learning experiences in higher education settings. While the global literature highlights the growing interest in AI-supported learning, there is a need for empirical studies that evaluate the practical impact of such tools in localized contexts (Atiomo et al., 2024). Understanding user perceptions, particularly regarding usability and engagement, is essential to inform future improvements and guide effective pedagogical integration (Asad, 2016).

This study, therefore, seeks to evaluate the AI tools developed by TARI at HUFLIT University through a survey-based approach. The research aims to explore learners' perceptions of TARI AI tools with these 2 questions:

1. *How do the students evaluate the usability, effectiveness, and engagement of TARI AI tools in language education?*

2. *What general perceptions, experiences, and suggestions do the students express about the use of TARI AI tools?*

2. Literature Review

2.1. Theoretical Frameworks Supporting AI Integration in Language Learning

AI integration into language learning can be effectively supported by various theoretical frameworks, including Constructivist Learning Theory, Connectivism, Technological Pedagogical Content Knowledge (TPACK), and Cognitive Load Theory.

Constructivist Learning Theory emphasizes that learners construct knowledge through experiences and interactions. AI tools, such as language learning applications utilizing chatbots, can facilitate personal interaction, enabling learners to engage in dialogues that enhance their language proficiency and contextual understanding. Recent studies, such as (Yu et al., 2024), demonstrate that AI, particularly through systems like ChatGPT, can significantly enhance language learning by providing tailored experiences based on user interactions, thus aligning with constructivist principles of personalized learning and adaptation to individual needs (Yu et al., 2024).

Connectivism stresses the importance of networks for knowledge sharing, which aligns well with AI-supported learning networks. Tools powered by AI create environments where learners can connect and collaborate globally, tapping into vast resources and diverse perspectives. This interconnectedness fosters a rich learning landscape, enhancing learners' understanding through collaborative and shared knowledge experiences. However, specific studies supporting this direct link between connectivism and AI tools in language learning were not identified in the references, therefore this claim will be omitted for clarity. The TPACK framework (Technological Pedagogical Content Knowledge) is crucial for integrating technology effectively within language teaching.

TPACK synthesizes multiple knowledge types - pedagogical, technological, and content - to prepare educators to create a balanced teaching approach responding to diverse learner needs. Studies indicate that integrating TPACK in English Language Teaching (ELT) helps in adapting instructional strategies and promoting engagement, particularly in the post-COVID-19 educational landscape (Kusaini et al., 2022; Daulay, 2024). As teachers develop their TPACK, they can effectively leverage AI tools that integrate language content and pedagogical strategies that enhance learning experiences and outcomes (Padmavathi, 2017; Shu, 2016).

Cognitive Load Theory (CLT) is another vital framework in designing AI tools for language learning. CLT posits that individuals can process only a limited amount of information at one time and highlights the importance of designing user interfaces that minimize unnecessary cognitive load. AI tools can optimize user experience by employing adaptive interfaces that respond to users' cognitive states, subsequently modifying the display of information to improve learning efficiency (Gwizdka, 2010; Teng et al., 2023; Krejtz et al., 2018). Effective user interface design is imperative in ensuring that AI tools are user-friendly and capable of maintaining an optimal cognitive load, allowing learners to focus on language acquisition without being overwhelmed.

2.2. Usability and User Experience in Educational Technology

Usability and user experience (UX) in educational technology are crucial parameters that determine the effectiveness of digital learning tools. The definition of usability encompasses how easy, efficient, and satisfactory a tool is for users to accomplish specific tasks. In the context of educational tools, usability is essential as it directly influences learner engagement, cognitive load, and satisfaction with the learning process. High usability facilitates smoother interactions, reduces frustration, and enhances learning outcomes, particularly in language education, where the nuances of communication and comprehension are vital (Luckin & Cukurova, 2019; Tlili et al., 2023).

To quantify usability, several metrics can be employed, including ease of use, accessibility, navigation, and interface design. Ease of use refers to how intuitively users can operate the tool, which is fundamental in educational contexts where learners may have varying levels of technological proficiency (Albdarani & Al-Shargabi, 2023). Tools must be accessible to all learners, including those with disabilities, ensuring equal opportunities for engagement (Rodríguez-Abitia et al., 2020). Navigation encompasses the clarity and intuitiveness of pathways within the tool, critical for minimizing cognitive overload (Huang et al., 2025). Effective interface design is paramount; it should promote user-friendliness, presenting information in an engaging and organized manner while aligning with users' expectations (Kadaruddin, 2023). Research consistently suggests that tools with favourable usability metrics significantly enhance user satisfaction, leading to increased engagement and better educational outcomes (Kristiawan et al., 2024; Dong et al., 2022).

The role of user-centred design (UCD) in the development of educational tools is pivotal. UCD emphasizes involving users at every stage of the development process, ensuring that the final product meets their needs and expectations. This iterative approach allows for frequent user feedback, facilitating the continuous improvement of functionalities and usability features (Zainuddin, 2024; Vall & Araya, 2023). Educational tools designed with a user-centred perspective are likely to be more effective in supporting learning, as they align more closely with learners' preferences and challenges, thus promoting a more engaging learning experience (Wang, 2022). The importance of incorporating user feedback into design frameworks is underscored by the growing body of research that demonstrates how UCD leads to higher levels of user satisfaction and engagement with educational technologies (Zhou & Hou, 2024).

Previous research has explored learner engagement and user satisfaction in relation to educational AI tools, indicating a strong correlation between user experience and educational outcomes. For instance, studies reveal that when learners perceive AI tools as accessible and user-friendly, their levels of engagement and satisfaction significantly increase, which in turn positively impacts learning achievements (Anoir et al., 2024; Albdarani & Al-Shargabi, 2023). The use of AI in language learning contexts has shown promise in enhancing learner

engagement through personalized feedback and adaptive learning pathways (Alafnan, 2024). Such tools have been noted for their capabilities to not only meet individual learner needs but also foster a more immersive educational experience by leveraging interactive and multimedia functionalities (Vall & Araya, 2023). Scholars emphasize that the adaptation of AI tools should be informed by ongoing user experience research, highlighting the dynamic nature of learner needs as educational paradigms evolve (Islam et al., 2019; Wang, 2022).

2.3. Learner Engagement with AI Tools

Evaluating learner engagement with AI tools in language education involves understanding the multifaceted concept of engagement, which encompasses behavioural, emotional, and cognitive dimensions. Behavioural engagement refers to the active participation of learners in learning tasks, emotional engagement denotes their feelings of interest and connection to the learning material, and cognitive engagement relates to the depth of processing and investment in learning activities (Liu et al., 2024; Zhou & Hou, 2024). Successful integration of AI tools in educational contexts aims to enhance these engagement dimensions, thereby improving learning outcomes and student satisfaction. According to Lai and Trinh (2025), AI tools like ChatGPT can significantly improve students' academic vocabulary, refine grammatical accuracy, facilitate idea generation, and increase motivation in academic writing.

Factors influencing engagement with AI tools in language classrooms are diverse and complex. Key elements include perceived tool usability, motivational aspects, and the quality of the interactive experience provided by the AI system. Liu et al. highlight that the personalization and interactivity offered by generative AI tools can significantly increase learners' foreign language enjoyment and align with their ideal self-image in language learning (Liu et al., 2024). Additionally, Zhou and Hou demonstrate that personalized learning experiences and adaptive feedback from AI systems can bring about substantial gains in cognitive engagement and educational innovation (Zhou & Hou, 2024).

A critical relationship exists between tool usability and learner motivation. High usability ratings for educational tools have been linked to increased engagement, as learners are more likely to interact with tools that are intuitive and easy to use. Alghabban and Hendley emphasize that the usability of learning systems directly affects learners' motivational levels, showing that effective designs facilitate greater involvement with the material (Alghabban & Hendley, 2022). Similarly, research by Dahleez et al. indicates that usability plays a significant role in enhancing student engagement by positively influencing their self-motivation in higher education contexts (Dahleez et al., 2021).

Engagement measurement frameworks in educational research offer structured approaches to analyse and quantify student engagement with AI tools. Various instruments and metrics have been developed to assess behavioural, emotional, and cognitive engagement, facilitating nuanced understandings of how learners interact with technology. For instance, engagement may be measured through self-report surveys, observational studies, and performance assessments, allowing researchers to gather comprehensive data on learner experiences and satisfaction (Hamari et al., 2016; Kristiawan et al., 2024). The frameworks help elucidate the complexities of interactions between learners and AI, providing valuable insights for educators and developers aiming to refine educational technologies for maximum impact.

2.4. TARI AI Tools

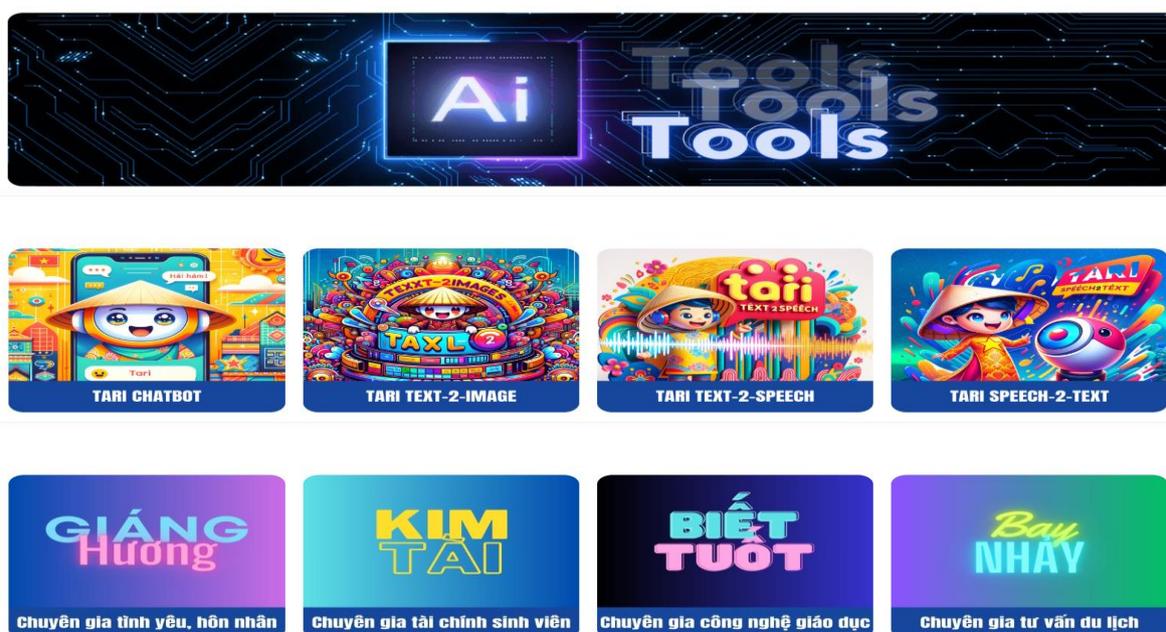
As part of its commitment to educational innovation and digital transformation, the Training and Applied Research Institute (TARI) at HUFLIT University has developed a

comprehensive suite of Artificial Intelligence (AI) tools designed specifically to support language education and linguistics research. These tools have been strategically developed to enhance teaching and learning through interactive, intelligent, and user-centred applications that respond to the evolving needs of students and educators in the digital age. They are available for public access at this link: <https://tari.huflit.edu.vn>.

The TARI AI ecosystem encompasses a wide range of tools that cater to both general and specialized educational purposes. Among the core tools are those that facilitate basic AI-powered interactions and multimodal learning experiences. For example, the TARI Chatbot provides users with a conversational assistant capable of supporting learners in language practice and general inquiries. Tools such as TARI Text-to-Image, Text-to-Speech, and Speech-to-Text enable learners to engage with linguistic content through visual and auditory modes, making abstract concepts more accessible and enhancing pronunciation and comprehension skills.

Figure 1

Screenshot of TARI AI Tools



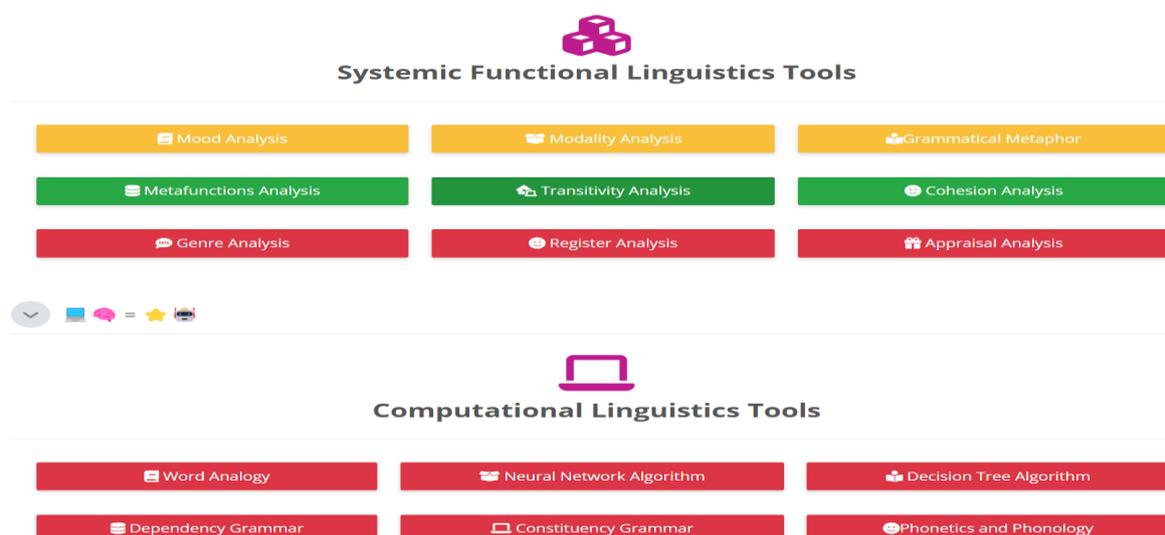
In addition to these foundational tools, TARI has also developed a series of advanced educational assistants that serve as intelligent teaching aids in specific subfields. These include TESOL TA, Computational Linguistics TA, Applied Linguistics Research TA, and Cognitive Linguistics TA. Each of these tools provides learners with expert guidance and support in exploring theoretical concepts, conducting linguistic analysis, and developing academic skills in their respective domains.

Furthermore, TARI offers specialized tools grounded in Cognitive Linguistics, such as modules on Conceptual Metaphor, Conceptual Metonymy, Embodiment, Semantic Frames, and Construction Grammar. These tools allow learners to explore how meaning is constructed through language and thought, helping them deepen their understanding of abstract conceptual systems. Similarly, the Systemic Functional Linguistics tools support the analysis of linguistic functions in social contexts. Tools for Mood Analysis, Modality Analysis, Grammatical Metaphor, Metafunctions Analysis, Transitivity Analysis, Cohesion Analysis, Genre Analysis, Register Analysis, and Appraisal Analysis empower learners to investigate how language is

used to convey meaning, interpersonal relationships, and ideologies in discourse.

Figure 2

TARI AI Tools for Linguistics Analysis



Complementing these tools are several Computational Linguistics applications, including tools for Word Analogy, Neural Network Algorithms, Decision Tree Algorithms, Dependency Grammar, Constituency Grammar, and Phonetics and Phonology. These tools introduce students to AI-based language modelling and parsing techniques, bridging the gap between linguistic theory and computational implementation.

Additionally, TARI has developed pragmatic and pedagogical support tools such as the Pragmatic Analysis tool, ELLA - Lesson Plan Expert, and ORION - a lesson planning assistant for science subjects. These tools assist educators in designing effective lesson plans and integrating AI into curriculum development. Beyond linguistics, TARI AI tools also include domain-specific advisors for career counselling, student finance, education technology, tourism consultancy, and healthcare advice, further showcasing the versatility of the platform.

Together, these tools represent a pioneering model of localized AI applications in education. They reflect TARI's holistic vision to support learner-centred pedagogy, promote digital competencies, and provide linguistically and culturally relevant resources. By integrating these tools into the learning environment, HUFLIT University exemplifies how AI can be effectively harnessed to enhance language education and foster meaningful engagement among learners.

3. Methodology

This study employed a survey-based quantitative design to examine undergraduate students' perceptions of TARI AI tools used in linguistics education. The participants were undergraduate students from the Faculty of Foreign Languages at HUFLIT University who had prior experience using the TARI AI tools. A voluntary convenience sampling approach was applied. In total, 387 raw responses were collected via an online questionnaire.

The instrument consisted of 36 Likert-scale items developed by the research team to measure multiple dimensions of user experience, including Usability, Effectiveness, Engagement, Accessibility, Satisfaction, and Perceived Impact. While related publications have reported results for Accessibility, Satisfaction, and Perceived Impact, the present article focuses

specifically on Usability, Effectiveness, and Engagement as the three focal perceptual constructs. To strengthen measurement quality, the self-developed items underwent content validation through expert review, followed by quantitative validation procedures using Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) to evaluate the factor structure and model fit.

In addition to close-ended items, the questionnaire included 6 open-ended questions to elicit students' reflections, experiences, and suggestions regarding the tools. These qualitative responses are treated as qualitative elaboration of students' perceptions, providing contextual explanation and illustrative examples that complement the quantitative patterns. Prior to analysis, the data cleaning was conducted in Python using a scripted workflow developed by the research team that: (i) screened for incomplete submissions and low-quality response patterns (e.g., straight-lining or inconsistent answering), and (ii) performed multivariate outlier detection using Mahalanobis distance before exporting the cleaned dataset for statistical analysis.

3.1. Data Cleaning

The raw data were cleaned using Python. Numerical variables were checked for outliers using Mahalanobis distance, low standard deviation, and pattern-based inconsistencies (e.g., constant or sequential responses). Rows with only missing values were removed, and clean data were exported for analysis. After data cleaning, only 271 responses are retained for analysis.

3.2. Reliability

Internal consistency of the measurement scale was assessed using Cronbach's Alpha. All three constructs demonstrated excellent reliability: Usability ($\alpha = 0.880$), Effectiveness ($\alpha = 0.903$), and Engagement ($\alpha = 0.914$), with an overall scale alpha of 0.944.

3.3. Exploratory Factor Analysis (EFA)

To examine construct validity, EFA was conducted in SPSS using Principal Component Analysis with Varimax rotation. The Kaiser-Meyer-Olkin (KMO) value was 0.948 and Bartlett's Test of Sphericity was significant ($\chi^2 = 3158.117, p < .001$), confirming sampling adequacy. EFA supported a three-factor structure aligned with the theoretical model, with items loading cleanly on their respective constructs.

3.4. Confirmatory Factor Analysis (CFA)

CFA was conducted in AMOS to validate the three-factor measurement model derived from the EFA. As illustrated in Table 1, the results indicated a good fit: $\chi^2 (132) = 227.61, p < .001$; CMIN/DF = 1.724; RMSEA = .052 (90% CI [.040-.063], PCLOSE = .385); CFI = .969; TLI = .964; NFI = .930; GFI = .916. Parsimony indices (PNFI = .802; PCFI = .836) and information criteria (AIC = 305.61; BIC = 446.10) further supported model adequacy. Overall, the three-factor model demonstrated acceptable construct validity and an adequate fit to the data.

Table 1

Model Fit Indices for the Three-Factor Measurement Model

Fit Index	Value	Recommended Threshold
CMIN/DF	1.724	< 3.00
RMSEA (90% CI)	.052 (.040-.063), PCLOSE = .385	< .06 (good), < .08 (acceptable)
CFI	.969	≥ .90 acceptable; ≥ .95 good

TLI	.964	≥ .90 acceptable; ≥ .95 good
IFI	.969	≥ .90 acceptable
NFI	.930	≥ .90 acceptable
GFI	.916	≥ .90 acceptable
PNFI	.802	≥ .50 acceptable
PCFI	.836	≥ .50 acceptable
AIC	305.61	Lower than independence model (3276.12)
BIC	446.10	Lower than independence model (3340.96)

3.5. Construct Validity

To assess convergent validity, Average Variance Extracted (AVE) and Composite Reliability (CR) were computed for each construct from the standardized loadings (λ) and error variances (θ). All three constructs exceeded common thresholds (AVE \geq 0.50; CR \geq 0.70), indicating strong convergent validity and internal consistency:

- **Usability (US):** AVE = 0.669, CR = 0.924, $\sqrt{\text{AVE}} = 0.818$
- **Effectiveness (EF):** AVE = 0.739, CR = 0.944, $\sqrt{\text{AVE}} = 0.860$
- **Engagement (EG):** AVE = 0.748, CR = 0.947, $\sqrt{\text{AVE}} = 0.865$

Discriminant validity was evaluated using the Fornell–Larcker criterion. As shown in Table 2, the square roots of the AVEs for Usability (0.818), Effectiveness (0.860), and Engagement (0.865) were all greater than their corresponding inter-construct correlations. This indicates that each construct shares more variance with its own items than with other constructs, thereby supporting discriminant validity of the measurement model.

Table 2

Discriminant Validity

Construct	Usability	Effectiveness	Engagement
Usability	0.818	0.695	0.632
Effectiveness	0.695	0.860	0.838
Engagement	0.632	0.838	0.865

Overall, the evidence from both convergent and discriminant validity analyses confirms the construct validity of the instrument.

3.6. Ethics

Ethical considerations were addressed throughout the study. Participation was voluntary, and informed consent was obtained from all participants prior to completing the questionnaire. Participants were informed of the study purpose, the approximate time required, and their right to discontinue at any time without penalty. No personally identifying information was collected; responses were treated as anonymous and were reported in aggregate form. To ensure confidentiality, access to the dataset was restricted to the research team, and the data were stored securely on password-protected devices. The study procedures were conducted in accordance with HUFLIT university research ethics guidelines.

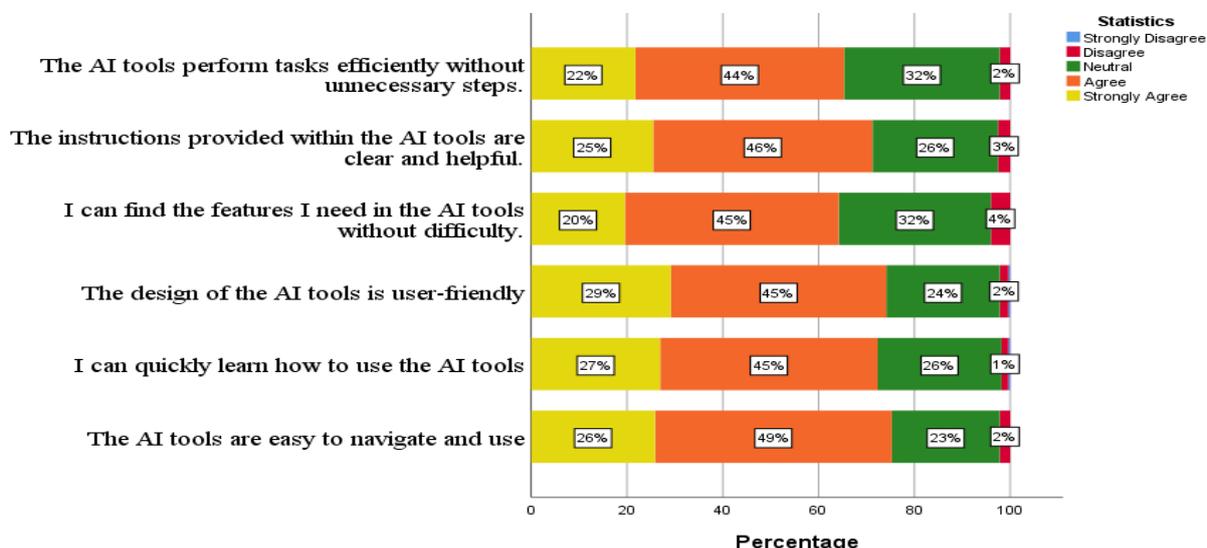
4. Results

4.1. Perceived Usability

Most respondents rated the tools positively on ease of navigation, learnability, and user-friendly interface. The design facilitated efficient task execution with clear instructions.

Figure 3

User Feedback on Usability of TARI AI Tools



The statement “*The AI tools are easy to navigate and use*” received the highest level of agreement, with 49% of respondents selecting *Agree* and 23% selecting *Strongly Agree*. This indicates that a substantial majority of users find the interface and layout of the tools intuitive and accessible. Similarly, “*The AI tools perform tasks efficiently without unnecessary steps*” garnered high agreement levels, with 44% choosing *Agree* and 32% *Strongly Agree*. Although the proportion of *Strongly Agree* responses is comparatively modest, the overall trend suggests that the tools are perceived as functionally effective.

Regarding the learnability of the tools, the statement “*I can quickly learn how to use the AI tools*” reflects a relatively high level of user confidence, with 45% selecting *Agree* and 26% *Strongly Agree*. However, this also indicates that a notable proportion of users (27%) remained neutral, suggesting a potential area for enhancement in user support and onboarding strategies. Perceptions related to instructional support show a similar trend. In response to the statement “*The instructions provided within the AI tools are clear and helpful,*” 46% of participants responded with *Agree* and 26% with *Strongly Agree*, while 25% remained neutral. This pattern points to an opportunity to improve the clarity and comprehensiveness of instructional guidance provided within the tools.

With respect to design, the item “*The design of the AI tools is user-friendly*” received 45% *Agree* and 24% *Strongly Agree*, accompanied by 29% neutral responses. This suggests that although the design is generally well-received, there remains room for refinement to enhance the overall user experience. Likewise, the item “*I can find the features I need in the AI tools without difficulty*” indicates a slightly broader distribution of responses, with 45% indicating *Agree*, 32% *Strongly Agree*, and 20% remaining neutral.

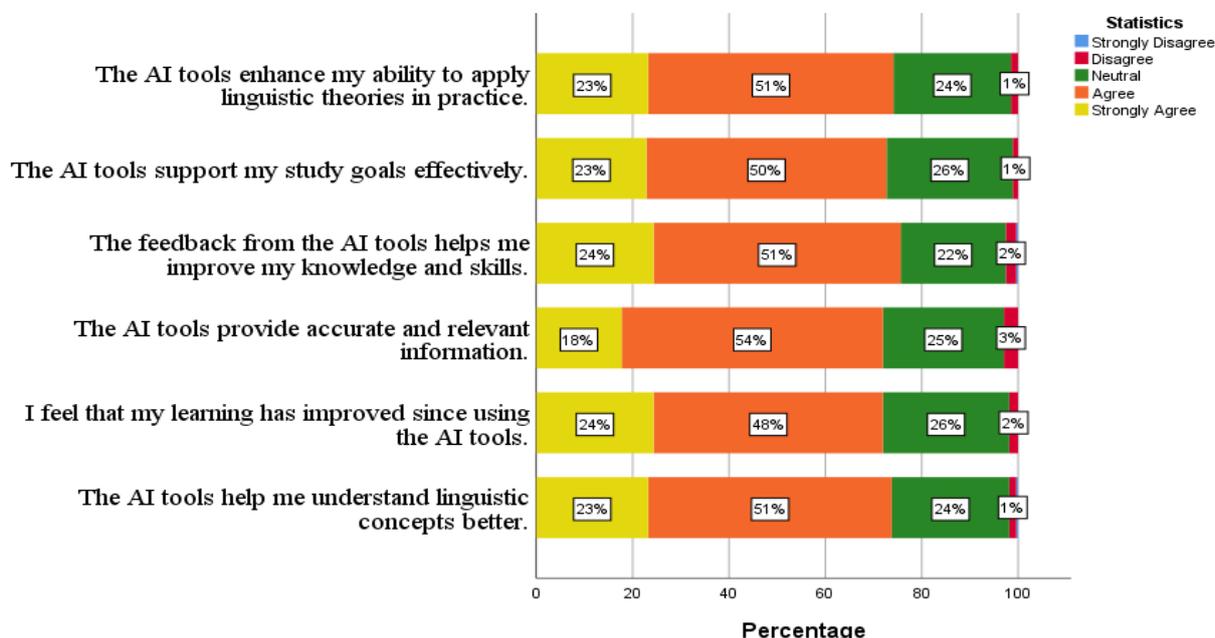
Negative responses across all items are consistently very low (1–3%), suggesting that serious usability issues are rare and that the majority of users encounter minimal barriers when interacting with the tools.

4.2. Perceived Effectiveness

The tools were perceived to aid conceptual clarity and practical application of linguistic theories. Users reported improved learning outcomes and better academic performance.

Figure 4

User Feedback on Effectiveness of TARI AI Tools



The statement “*The AI tools help me understand linguistic concepts better*” demonstrates strong support, with 51% of respondents selecting *Agree* and 24% *Strongly Agree*. This suggests that the tools are perceived to enhance conceptual clarity, a core component in linguistics education. Similarly, “*I feel that my learning has improved since using the AI tools*” received 48% *Agree* and 26% *Strongly Agree*, reflecting perceived progress in users’ academic performance.

The perception of informational accuracy is also noteworthy. The statement “*The AI tools provide accurate and relevant information*” yielded 54% *Agree* and 25% *Strongly Agree*, making it one of the highest-rated items in terms of user confidence in content reliability. This reflects the tools’ ability to deliver credible linguistic knowledge, which is crucial for academic use. Furthermore, “*The feedback from the AI tools helps me improve my knowledge and skills*” was endorsed by 51% of participants as *Agree* and 22% as *Strongly Agree*. This affirms the tools’ role in facilitating formative assessment and self-directed learning. Likewise, the item “*The AI tools support my study goals effectively*” received 50% *Agree* and 26% *Strongly Agree*, indicating that users perceive the tools as aligned with their broader educational objectives.

The statement “*The AI tools enhance my ability to apply linguistic theories in practice*” elicited slightly lower agreement compared to other items, with 51% indicating *Agree* and 24% *Strongly Agree*. Although still largely positive, this may suggest that while the tools are effective in theoretical understanding, their application in practical scenarios may be an area for further development.

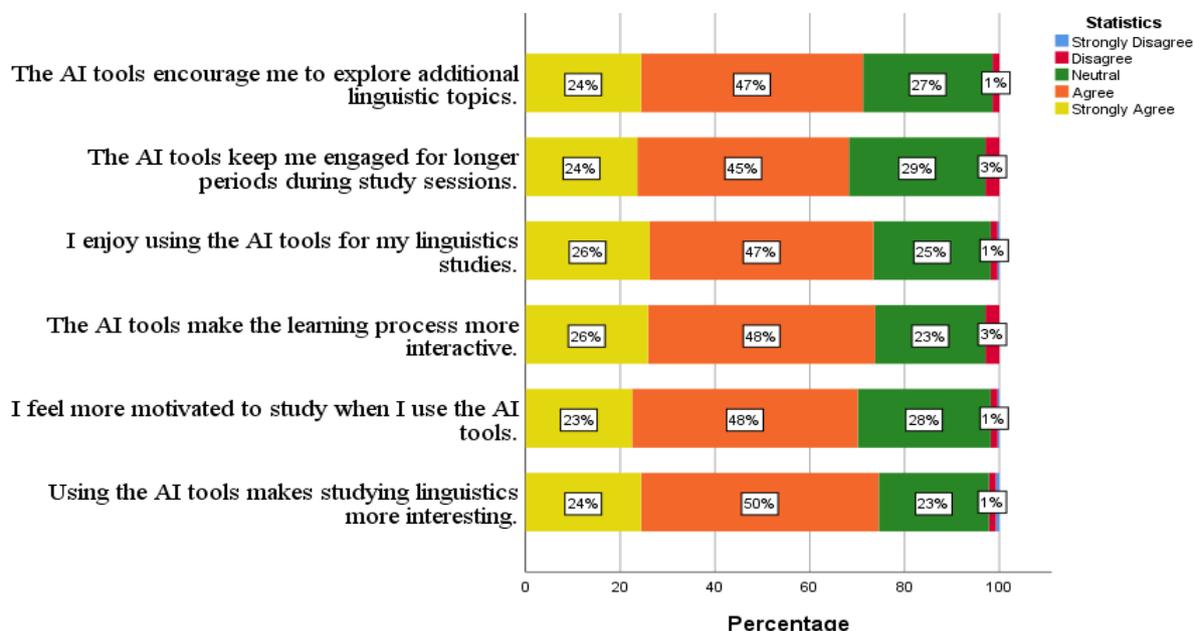
Negative responses across all items remained very low (1–3%), suggesting strong overall effectiveness and minimal barriers in practical use.

4.3. Perceived Engagement

Participants found the tools engaging, noting increased motivation and interest in linguistics. Interactivity and responsiveness were cited as strengths.

Figure 5

User Feedback on Engagement of TARI AI Tools



The statement *“Using the AI tools makes studying linguistics more interesting”* shows strong positive responses, with 50% of respondents selecting *Agree* and 23% *Strongly Agree*. This suggests that the tools effectively contribute to enhancing the appeal of linguistics study, aligning with broader educational goals of increasing learner interest in the subject matter. Similarly, *“I feel more motivated to study when I use the AI tools”* received 48% *Agree* and 28% *Strongly Agree*, underscoring the motivational benefits of AI integration in educational contexts.

The tools are also perceived to promote interactive learning environments. The item *“The AI tools make the learning process more interactive”* was endorsed by 48% *Agree* and 23% *Strongly Agree*, confirming that interactivity is a significant strength of the AI tools. This finding is further supported by the statement *“I enjoy using the AI tools for my linguistics studies”*, where 47% responded *Agree* and 25% *Strongly Agree*, emphasizing the role of enjoyment and emotional engagement in learning outcomes.

Moreover, the item *“The AI tools keep me engaged for longer periods during study sessions”* revealed a similar trend, with 45% selecting *Agree* and 29% *Strongly Agree*. This indicates that the tools not only enhance momentary engagement but also help sustain students’ attention and focus over extended study sessions. Finally, *“The AI tools encourage me to explore additional linguistic topics”* received 47% *Agree* and 27% *Strongly Agree*, suggesting that the tools stimulate intellectual curiosity and promote further exploration beyond standard coursework.

Negative responses across engagement items remained very low (1–3%), confirming that most learners found the tools enjoyable, interactive, and motivating in their study of linguistics.

4.4. Students’ Perceptions of TARI AI Tools

One of the most prominent themes that emerged is the tools’ capacity for efficient data processing and time-saving functionalities. Respondents repeatedly emphasized how AI tools facilitate large-scale data handling and provide quick feedback. For example, S5 noted, *“It suggests various options to deal with my given tasks”*, while S78 emphasized, *“I like the AI*

tools' ability to quickly analyze and generate linguistic data, then give me the clear and detailed answers, allowing me to save a lot of time". This sentiment is echoed across numerous responses, with many students describing AI tools as *"fast, efficient, and accurate"* (S142) and *"real-time saving tools"* (S93).

Another dominant theme involves research support and linguistic analysis enhancement. Students appreciated that AI tools provide state-of-the-art computational methods for linguistic inquiry. As S21 articulated, *"AI tools like NLTK and spaCy provide comprehensive, easy-to-use interfaces for a wide range of NLP tasks"*. S29 added that such tools *"significantly enhance research capabilities in understanding language phenomena and developing computational models"*. Many students cited applications such as syntactic parsing, semantic analysis, corpus linguistics, sentiment analysis, and speech recognition as critical academic utilities.

The accessibility and personalization of learning emerged as another valued aspect. Students highlighted how tools adapt to individual learning levels and needs. S16 wrote, *"Language learning apps tailor lessons to my level"*, while S150 mentioned, *"I can practice my speaking when I use AI tools in my phone"*. Several others valued the ability to interact with tools such as chatbots, podcast features, and translation tools, which provide flexible, learner-centered experiences. Respondents also described AI tools as increasing academic confidence and motivation. For instance, S33 stated, *"They reduce my anxiety about understanding linguistic concepts"*, and S71 shared that the tools *"foster a deeper interest in the field of linguistics"*. This positive affective impact suggests that AI tools play a supportive role not only in learning outcomes but also in student well-being and engagement.

A few responses provided a more philosophical or critical perspective. For example, one participant noted, *"An AI can give the meaning of love, but they do not, and most likely never will possess the capacity to express it as a human being can"*. While still recognizing the usefulness of AI in linguistics studies, such reflections hint at an underlying tension between technological reliance and humanistic concerns. Respondents also appreciated the diversity of tools and functionalities, including Tari Chat Box, Text-to-Speech, Speech-to-Text, mood analysis tools, grammar checkers, question generators, debate chatbots, and lesson plan generators. Tools such as ChatGPT, Gemini, and Perplexity were frequently cited as preferred platforms. As one student summarized: *"Quick response, relevant responses, easy to use, various AI tools meeting my needs"* (S80).

Finally, many students acknowledged the ability of AI tools to uncover patterns and insights that are not easily accessible through manual analysis. S39 remarked, *"The AI tools can process and analyze vast amounts of linguistic data quickly... invaluable for tasks like corpus analysis, syntactic parsing, and phonetic transcription"*.

5. Discussion

The findings of this study reveal a strong positive perception of TARI AI tools among users in the context of linguistics education. The consistently high scores across the three constructs — Usability, Effectiveness, and Engagement — demonstrate that the tools are not only well-designed and accessible but also pedagogically impactful.

The usability dimension, with a Cronbach's Alpha of $\alpha = 0.880$, indicates that learners generally found the tools easy to navigate, quick to learn, and functionally efficient. This aligns with existing literature emphasizing the critical role of user-friendly interfaces in promoting educational technology adoption (Albdarani & Al-Shargabi, 2023; Luckin & Cukurova, 2019).

Although most users responded favorably, the presence of neutral responses regarding instructional clarity suggests an opportunity to further enhance guidance and onboarding experiences to ensure inclusive access for learners of varying digital literacy levels.

The effectiveness construct, with $\alpha = 0.903$, also received strong endorsement, indicating that learners view the AI tools as contributing meaningfully to their linguistic knowledge, application of theory, and academic performance. These findings are consistent with research asserting that AI-powered platforms can personalize learning experiences and enhance conceptual understanding through adaptive feedback and content delivery (Liu et al., 2024; Zhou & Hou, 2024). However, slightly lower agreement levels regarding the application of linguistic theory suggest that while theoretical learning is well supported, practical integration into real-world tasks remains an area for further development.

The highest internal consistency emerged in the engagement construct ($\alpha = 0.914$), reflecting that learners felt more motivated, enjoyed using the tools, and found their study sessions more interactive. This supports existing research asserting that interactivity and personalization are central to fostering emotional and cognitive engagement in language learning (Wang, 2022; Anoir et al., 2024). The results also suggest that AI tools serve not merely as passive learning platforms but as dynamic systems that promote deeper immersion and learner autonomy.

Qualitative responses reinforce the quantitative findings. Users frequently cited benefits such as time-saving capabilities, efficient data analysis, and personalized support. The tools were praised for enhancing research competencies and making linguistic content more approachable and engaging. Additionally, students highlighted increased confidence, reduced anxiety, and motivation as emotional gains from AI use — further emphasizing the affective dimensions of AI-supported learning.

Nonetheless, a few participants raised philosophical concerns about the limitations of AI in capturing the humanistic and emotional depth of language. These comments reflect a nuanced understanding of the balance between technological efficiency and the irreplaceable aspects of human experience in language education. They also align with findings from the study by Nguyen (2025) claiming that the use of AI may carry risks, including mechanical copying, plagiarism, reduction of independent thinking, and memory loss.

6. Conclusion

This study has provided a comprehensive evaluation of the TARI AI tools developed by HUFLIT University, focusing on their usability, effectiveness, and ability to engage learners in linguistics education. The findings demonstrate overwhelmingly positive user perceptions, with high levels of agreement across all constructs. The tools were found to be user-friendly, pedagogically effective, and highly engaging, supporting both theoretical understanding and practical language application.

The strong reliability scores and favorable user feedback suggest that AI tools, when thoughtfully designed and contextually adapted, can play a transformative role in enhancing language learning experiences. Moreover, qualitative insights from participants reinforced the value of these tools in fostering autonomy, motivation, and deeper interest in linguistic studies. While the results highlight significant strengths, they also point to areas for further refinement, particularly in enhancing instructional clarity and expanding real-world application features. These findings offer valuable implications for educators, developers, and institutions seeking to integrate AI into language curricula more effectively.

As AI technologies continue to evolve, ongoing research and user-centered development will be essential to ensure that such tools remain inclusive, adaptive, and pedagogically sound. The success of TARI AI tools at HUFLIT University provides a promising model for other institutions aiming to harness AI to advance language education in a rapidly changing digital landscape.

References

- AlAfnan, M. A. (2025). Artificial intelligence and language: Bridging Arabic and English with technology. *Journal of Ecohumanism*, 4(1), 240-256. <https://doi.org/10.62754/joe.v3i8.4961>
- Albrani, R., & Al-Shargabi, A. (2023). Investigating the effectiveness of ChatGPT for providing personalized learning experience: a case study. *International Journal of Advanced Computer Science and Applications*, 14(11), 1208-1213. <https://doi.org/10.14569/ijacsa.2023.01411122>
- Alghabban, W., & Hendley, R. (2022). Perceived level of usability as an evaluation metric in adaptive e-learning. *Sn Computer Science*, 3(3), 238. <https://doi.org/10.1007/s42979-022-01138-5>
- Anoir, L., Chelliq, I., Khaldi, M., & Khaldi, M. (2024). Design of an intelligent tutor system for the personalization of learning activities using case-based reasoning and multi-agent system. *International Journal of Computing and Digital Systems*, 15(1), 459–469. <https://doi.org/10.12785/ijcnds/160136>
- Asad, S. (2016). Instructional strategies to manage cognitive load in orthodontics. *Annals of King Edward Medical University*, 22(1), 35. <https://doi.org/10.21649/akemu.v22i1.794>
- Atiomo, W., Ennab, F., Stanley, A., & Ezimokhai, M. (2024). Evaluating an obstetrics and gynecology teaching program for medical students incorporating simulation-based education underpinned by cognitive load theory. *Frontiers in Medicine*, 11. <https://doi.org/10.3389/fmed.2024.1304417>
- Bai, L., Liu, X., & Su, J. (2023). ChatGPT: the cognitive effects on learning and memory. *Brain-x*, 1(3). <https://doi.org/10.1002/brx2.30>
- Dahleez, K., El-Saleh, A., Alawi, A., & Abdelfattah, F. (2021). Higher education student engagement in times of pandemic: the role of e-learning system usability and teacher behavior. *International Journal of Educational Management*, 35(6), 1312–1329. <https://doi.org/10.1108/ijem-04-2021-0120>
- Daulay, I. (2024). English teachers' perceptions of technological pedagogical and content knowledge (TPACK) and its application in English language teaching: post-covid-19. *JPP (Jurnal Pendidikan Dan Pembelajaran)*, 31(1), 1. <https://doi.org/10.17977/jpp.v31i1.50794>
- Dong, L., Mohammed, S., Ibrahim, K., & Rezai, A. (2022). Fostering EFL learners' motivation, anxiety, and self-efficacy through computer-assisted language learning- and mobile-assisted language learning-based instructions. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.899557>
- Douali, L., Selmaoui, S., & Bouab, W. (2022). Artificial intelligence in education: fears and faiths. *International Journal of Information and Education Technology*, 12(7), 650–657. <https://doi.org/10.18178/ijet.2022.12.7.1666>
- Gümüş, M., Kukul, V., & Düzenli, Ö. (2023). Mapping the research on educational technology: an overview through text mining. *Kastamonu Eğitim Dergisi*, 31(2), 202–217. <https://doi.org/10.24106/kefdergi.1271474>
- Gwizdka, J. (2010). Distribution of cognitive load in web search. *Journal of the American Society for Information Science and Technology*, 61(11), 2167–2187. <https://doi.org/10.1002/asi.21385>
- Hamari, J., Shernoff, D., Rowe, E., Coller, B., Asbell-Clarke, J., & Edwards, T. (2016). Challenging games help students learn: an empirical study on engagement, flow and immersion in game-based learning. *Computers in Human Behavior*, 54, 170–179. <https://doi.org/10.1016/j.chb.2015.07.045>
- Huang, F., Peng, D., & Teo, T. (2025). AI affordances and EFL learners' speaking engagement: the moderating roles of gender and learner type. *European Journal of Education*, 60(1). <https://doi.org/10.1111/ejed.70041>
- Islam, A., Mok, M., Gu, X., Spector, J., & Hai-Leng, C. (2019). Ict in higher education: an exploration of practices in Malaysian universities. *IEEE Access*, 7, 16892–16908. <https://doi.org/10.1109/access.2019.2895879>
- Kadaruddin, K. (2023). Empowering education through generative ai: innovative instructional strategies for tomorrow's learners. *International Journal of Business Law and Education*, 4(2), 618–625. <https://doi.org/10.56442/ijble.v4i2.215>

- Krejtz, K., Duchowski, A., Niedzińska, A., Biele, C., & Krejtz, I. (2018). Eye tracking cognitive load using pupil diameter and micro saccades with fixed gaze. *Plos One*, *13*(9), e0203629. <https://doi.org/10.1371/journal.pone.0203629>
- Kristiawan, D., Bashar, K., & Pradana, D. (2024). Artificial intelligence in English language learning: a systematic review of AI tools, applications, and pedagogical outcomes. *The Art of Teaching English as a Foreign Language*, *5*(2), 207–218. <https://doi.org/10.36663/tatefl.v5i2.912>
- Kusaini, E., Mahamod, Z., & Mohammad, W. (2022). Integration of technological pedagogical content knowledge components and inventive skills among Malay language teachers. *International Journal of Academic Research in Business and Social Sciences*, *12*(9). <https://doi.org/10.6007/ijarbss/v12-i9/14584>
- Lai, T. K. L., & Trinh, H. L. (2025). The effects of ChatGPT on academic writing proficiency among English-major undergraduates at a university. *VNU Journal of Foreign Studies*, *41*(3), 92-109. <https://doi.org/10.63023/2525-2445/jfs.ulis.5514>
- Liu, G., Zou, M., Soyoof, A., & Chiu, M. (2024). Untangling the relationship between ai-mediated informal digital learning of English (ai-idle), foreign language enjoyment and the ideal I2 self: evidence from Chinese university EFL students. *European Journal of Education*, *60*(1). <https://doi.org/10.1111/ejed.12846>
- Luckin, R., & Cukurova, M. (2019). Designing educational technologies in the age of ai: a learning sciences-driven approach. *British Journal of Educational Technology*, *50*(6), 2824–2838. <https://doi.org/10.1111/bjet.12861>
- Nguyen, Q. H. (2025). The impact of Artificial Intelligence (AI) applications on students' motivation, learning methods, and outcomes in foreign language acquisition. *VNU Journal of Foreign Studies*, *41*(5), 102-116. <https://doi.org/10.63023/2525-2445/jfs.ulis.5547>
- Padmavathi, M. (2017). Preparing teachers for technology-based teaching-learning using TPACK. *I-Manager S Journal on School Educational Technology*, *12*(3), 1-9. <https://doi.org/10.26634/jsch.12.3.10384>
- Rodríguez-Abitia, G., Pérez, S., Soledad, M., & López-Caudana, E. (2020). Digital gap in universities and challenges for quality education: a diagnostic study in Mexico and Spain. *Sustainability*, *12*(21), 9069. <https://doi.org/10.3390/su12219069>
- Shu, X. (2016). An action research on TPACK's influence on teachers of national open university: exemplified with an English teacher of Zhejiang radio and tv university. *Oalib*, *3*(1), 1–6. <https://doi.org/10.4236/oalib.1102336>
- Teng, J., Wan, F., Kong, Y., & Kim, J. (2023). Machine learning-based cognitive load prediction model for AR-HUD to improve OSH of professional drivers. *Frontiers in Public Health*, *11*. <https://doi.org/10.3389/fpubh.2023.1195961>
- Tlili, A., Shehata, B., Adarkwah, M., Bozkurt, A., Hickey, D., Huang, R., others, & Agyemang, B. (2023). What if the devil is my guardian angel: ChatGPT as a case study of using chatbots in education. *Smart Learning Environments*, *10*(1). <https://doi.org/10.1186/s40561-023-00237-x>
- Vall, R., & Araya, F. (2023). Exploring the benefits and challenges of AI-language learning tools. *The International Journal of Social Sciences and Humanities Invention*, *10*(1), 7569–7576. <https://doi.org/10.18535/ijsshi/v10i01.02>
- Wang, X. (2022). Enhancing Chinese EFL students' academic engagement: the impact of I2 enjoyment and academic motivation. *Frontiers in Psychology*, *13*. <https://doi.org/10.3389/fpsyg.2022.914682>
- Willis, V. (2024). The role of artificial intelligence (AI) in personalizing online learning. *Journal of Online and Distance Learning*, *3*(1), 1–13. <https://doi.org/10.47941/jodl.1689>
- Yu, H., Guo, Y., Yang, H., Zhang, W., & Dong, Y. (2024). Can ChatGPT revolutionize language learning? Unveiling the power of AI in multilingual education through user insights and pedagogical impact. *European Journal of Education*, *60*(1). <https://doi.org/10.1111/ejed.12749>
- Zainuddin, M. (2024). Teachers' perceptions of AI tools in enhancing student engagement for English language learning. *RSELTL*, *2*(6), 367–380. <https://doi.org/10.62583/rseltl.v2i6.64>
- Zhou, C., & Hou, F. (2024). Can AI empower L2 education? Exploring its influence on the behavioural, cognitive and emotional engagement of EFL teachers and language learners. *European Journal of Education*, *59*(4). <https://doi.org/10.1111/ejed.12750>