Generative AI and Students' Understanding of Language Variation in a Sociolinguistics Course: Evidence from UIN Raden Intan Lampung

Kartika S

Email : kartika@radenintan.ac.id*
[1] UIN Raden Intan Lampung, Indonesia

ABSTRACT

Generative AI (GenAI) has increasingly been incorporated into higher education and language learning because of its potential to provide immediate explanations, examples, and interactive support. In Sociolinguistics, however, limited research has examined how Generative AI supports students' understanding of language variation concepts, particularly in Indonesian higher education contexts. To address this gap, this study investigated how students used Generative AI in a Sociolinguistics course and the extent to which it enhanced their understanding of language variation concepts at UIN Raden Intan Lampung. This study employed an explanatory sequential mixed-methods design. The participants were 32 undergraduate students enrolled in a Sociolinguistics course. The instruments consisted of a language variation concept test, a GenAI use questionnaire, weekly learning logs, and semi-structured interviews. Data were collected over six weeks through pretest and posttest administration, questionnaire distribution, learning-log documentation, and follow-up interviews with selected students. Quantitative data were analyzed using descriptive statistics and a paired-samples t-test, while qualitative data were analyzed thematically. The findings showed that students' posttest scores ($M = 69.75$, $SD = 10.81$) were significantly higher than their pretest scores ($M = 58.84$, $SD = 7.24$), $t(31) = 6.45$, $p < .001$, with a large effect size (Cohen's $dz = 1.14$). The qualitative findings revealed that students mainly used Generative AI to simplify difficult concepts, generate contextualized examples, refine their understanding through follow-up prompts, and verify AI-generated responses. Overall, Generative AI functioned as a supportive learning resource in Sociolinguistics, although its effectiveness depended on students' critical and strategic use.

Keywords:
Generative AI; language variation; Sociolinguistics; student learning; undergraduate students

INTRODUCTION

The rapid spread of Generative AI (GenAI) tools such as ChatGPT has begun to reshape higher education, including English language teaching and learning. In ESL/EFL contexts, recent research shows that GenAI has been used for writing support, speaking practice, feedback, and general language assistance (Lo et al., 2024). Systematic reviews

also report several pedagogical affordances, such as personalized learning, expanded learning opportunities, and teacher support, while noting recurring concerns about inaccurate information, privacy risks, and academic dishonesty (Zhai & Wibowo, 2023). At the same time, adoption studies suggest that students often view ChatGPT as useful, interactive, and motivating, which explains its growing presence in university learning environments (Qu & Wu, 2024). However, the current evidence base remains uneven, and more context-specific studies are still needed to determine how GenAI supports learning beyond general language practice.

Within this broader development, the teaching of sociolinguistics deserves particular attention. Understanding language variation is central to sociolinguistics because linguistic forms do not only convey referential meaning; they also carry social meaning (Campbell-Kibler, 2009). Variation in pronunciation, grammar, lexis, style, and code choice can index identity, education, stance, region, and social positioning. For that reason, students need more than definitional knowledge: they need to interpret how language works in context. This need is especially relevant in contemporary language education, where monolingual and native-speaker assumptions have increasingly been questioned, and where sociolinguistically informed perspectives are considered essential for understanding language in real social life.

Yet learning language variation concepts is often demanding for university students because it requires them to connect abstract theories with authentic, socially situated examples. Existing work in linguistics pedagogy has therefore explored technology-supported approaches to make such concepts more visible and meaningful. For example, Marcos Miguel showed that corpus tools can help students explore language variation in an introductory linguistics course (Marcos Miguel, 2022), while George and Barrios demonstrated that digital storytelling can support students in linking language attitudes to identity, voice, and heritage in an applied linguistics classroom (George & Barrios, 2024). These studies indicate that technology-mediated pedagogy can enrich conceptual engagement in linguistics-related courses, but they also show that the field has thus far relied more on corpora and reflective digital tasks than on GenAI-based learning.

In principle, GenAI appears promising for sociolinguistics instruction because it can provide immediate explanations, generate multiple examples of language use across settings, and allow students to refine their questions iteratively at their own pace. Such

affordances may help learners compare dialectal, stylistic, or register-based differences more actively and independently(Lo et al., 2024). Nevertheless, recent scholarship also warns that GenAI should not be treated as a neutral or automatically reliable learning partner (Wang & Wang, 2025). In language education, GenAI outputs may oversimplify complex issues, reproduce ideological bias, or present inaccurate sociolinguistic generalizations (Darvin, 2025). For this reason, the educational value of GenAI depends not only on access to the tool itself but also on students' critical AI literacy, including their awareness of limitations, strategic prompting, and ability to evaluate AI-generated responses.

This tension is particularly important in a Sociolinguistics course, where biased or decontextualized explanations of language variation may distort the relationship between language and society. Although GenAI research in language education is growing rapidly, major reviews show that it has focused predominantly on writing and general learner or teacher perceptions (George & Barrios, 2024; Lo et al., 2024; Marcos Miguel, 2022). By contrast, research in linguistics pedagogy has more often examined non-GenAI tools such as corpus resources or digital storytelling. This pattern suggests a clear gap: there is still limited empirical evidence on how university students use GenAI to understand disciplinary concepts in sociolinguistics, and even less on whether such use actually enhances their understanding of language variation. This gap appears especially visible in the context of Indonesian higher education, including Islamic universities, where internationally visible research on GenAI-supported sociolinguistics learning remains limited. Against this background, the present study investigates the use of Generative AI to support students' understanding of language variation concepts in a Sociolinguistics course at UIN Raden Intan Lampung. Specifically, this study addresses the following research questions:

1. How is Generative AI used by students to support their understanding of language variation concepts in a Sociolinguistics course?
2. To what extent does the use of Generative AI enhance students' understanding of language variation concepts in a Sociolinguistics course?

RESEARCH METHOD

Research Design

This study employed an explanatory sequential mixed-methods design grounded in a pragmatic orientation (Fetters et al., 2013). This design was appropriate because the study sought to answer two complementary questions: the second research question required quantitative evidence of the extent to which GenAI supported students' understanding of language variation concepts, while the first research question required qualitative explanation of how students actually used GenAI in the learning process. In explanatory sequential designs, researchers first collected and analyzed quantitative data and then used qualitative data to explain, elaborate on, or contextualize the initial numerical results. Such a design was particularly suitable when learning outcomes needed to be measured while also capturing students' experiences, strategies, and meaning-making processes.

Within this mixed-methods framework, the quantitative phase adopted a one-group pretest-posttest design to examine changes in students' understanding of language variation concepts after a GenAI-supported learning sequence. This phase was followed by a qualitative phase consisting of learning-log analysis and semi-structured interviews. The integration of the two phases allowed the study not only to determine whether improvement occurred, but also to identify the kinds of GenAI use, prompting practices, and verification strategies associated with that improvement.

Research Setting and Participants

The study was conducted in the Sociolinguistics course offered to undergraduate students in the English Education program, Faculty of Tarbiyah and Teacher Training, UIN Raden Intan Lampung. The participants consisted of students enrolled in the course who agreed to participate and provided informed consent. All consenting students joined the quantitative phase, while a smaller subset was selected for the qualitative phase through purposeful sampling. To obtain rich and contrasting accounts, interview participants were chosen based on variation in posttest gains, frequency of GenAI use, and the quality of their interaction with the tool, as reflected in their learning logs.

Instruments

The study used four instruments. First, a language variation concept test was developed based on the Sociolinguistics course syllabus. The test measured students' understanding of key concepts such as dialect, register, style, code-switching, code-mixing, speech community, and the relationship between linguistic choice and social meaning. To assess both conceptual knowledge and applied understanding, the test combined selected-response items with short analytical tasks based on brief language examples. The test blueprint was reviewed by two lecturers with expertise in sociolinguistics and language education to ensure content relevance and clarity.

Second, a GenAI use questionnaire was administered after the intervention. The questionnaire was adapted from recent higher education and language-learning studies on ChatGPT and GenAI that examined dimensions such as frequency of use, perceived usefulness, ease of use, attitudes toward AI-supported learning, and concerns related to learning and responsible use (Stöhr et al., 2024a; Strzelecki, 2024; Vo & Nguyen, 2024).

Third, students completed a weekly learning log or prompt portfolio. In this log, they documented the prompts they used, the purposes of those prompts, the responses generated by GenAI, and their reflections on whether the output was helpful, accurate, or in need of revision. This instrument was important because it captured actual patterns of use rather than relying only on retrospective self-report.

Fourth, semi-structured interviews were conducted with selected students to explore in greater depth how they used GenAI to understand language variation concepts, what strategies they found effective, what difficulties they encountered, and how they checked the reliability of AI-generated explanations. The interview data provided the explanatory layer needed to interpret the quantitative findings.

Data Collection

Data collection took place over approximately six weeks during the Sociolinguistics course. In the first week, students completed the pretest and received a brief orientation on the pedagogically acceptable use of GenAI for course learning. The orientation emphasized that GenAI should be used as a support tool for exploring concepts, generating examples, comparing language forms, and clarifying sociolinguistic terminology, rather than as a substitute for independent thinking. Students were also introduced to basic

verification practices, such as cross-checking AI output with lecture materials, course readings, and lecturer feedback.

During the intervention period, students engaged in a series of GenAI-supported learning tasks related to language variation. For example, they asked GenAI to explain the difference between dialect and register, generate examples of code-switching in multilingual settings, compare formal and informal variants in specific contexts, or critique AI-generated examples that oversimplified social meaning. After each task, students completed their learning log. At the end of the intervention, students completed the posttest and questionnaire. Interview participants were then selected and interviewed individually. This sequence enabled the qualitative phase to build directly on the quantitative findings.

Data Analysis

The quantitative data from the pretest and posttest were analyzed using descriptive statistics and an inferential comparison of the two sets of scores. If the score distribution met parametric assumptions, a paired-samples t-test was used to determine whether the difference between pretest and posttest scores was statistically significant; if not, a non-parametric alternative such as the Wilcoxon signed-rank test was applied. In addition, effect size was calculated to show the magnitude of the observed change. Questionnaire data were summarized descriptively to identify students' reported patterns of GenAI use and their perceptions of its usefulness in learning language variation concepts.

The qualitative data from the learning logs and interviews were analyzed using thematic analysis (Braun & Clarke, 2021). The analysis followed a recursive process of data familiarization, initial coding, category development, theme generation, and theme refinement. First, the researchers read the logs and interview transcripts repeatedly to gain familiarity with the data. Next, relevant segments were coded according to students' purposes for using GenAI, types of prompts, verification practices, perceived benefits, and encountered difficulties. These codes were then grouped into broader themes that explained how GenAI was used to support students' understanding of language variation concepts.

Finally, the findings from both phases were integrated during interpretation. The quantitative results showed the extent of students' improvement, while the qualitative

findings explained how students interacted with GenAI and what learning processes may have contributed to that improvement. This integration strengthened the interpretation of the findings by linking measurable learning outcomes with students' actual practices and experiences.

FINDINGS

This section presents the findings in relation to the two research questions. In line with the explanatory sequential mixed-methods design, the quantitative findings are presented first to show the extent to which Generative AI enhanced students' understanding of language variation concepts, followed by the qualitative findings to explain how students used Generative AI in the Sociolinguistics course.

Quantitative Findings: The Extent to Which Generative AI Enhanced Students' Understanding

To address the second research question, students' pretest and posttest scores were compared to determine whether their understanding of language variation concepts improved after the GenAI-supported learning activities. As shown in Table 1, the mean pretest score was 58.84 (SD = 7.24), whereas the mean posttest score increased to 69.75 (SD = 10.81). The mean gain score was 10.91 points, indicating an overall improvement in students' conceptual understanding following the intervention. A paired-samples t-test showed that the difference between the pretest and posttest scores was statistically significant, $t(31) = 6.45$, $p < .001$. The effect size was large (Cohen's $dz = 1.14$), suggesting that the use of Generative AI had a substantial effect on students' understanding of language variation concepts.

Table 1. Pretest and Posttest Results (N = 32)

Measure	Mean	SD
Pretest	58.84	7.24
Posttest	69.75	10.81
Mean gain	10.91	—

A closer examination of the test results across concept areas revealed that students made the greatest gains in understanding code-switching and code-mixing, followed by

distinguishing dialect and accent, and identifying register and style. By contrast, the smallest gain was found in explaining social meaning and identity, indicating that students still found the more interpretive aspects of sociolinguistic analysis challenging.

Table 2. Students' Scores by Concept Area

Concept area	Pretest Mean	Posttest Mean	Gain
Distinguishing dialect and accent	11.6	14.5	2.9
Identifying register and style	12.4	14.8	2.4
Understanding code-switching and code-mixing	12.9	15.6	2.7
Relating language choice to social context	10.8	12.9	2.1
Explaining social meaning and identity	11.1	11.9	0.8

These results suggest that Generative AI was particularly helpful in supporting students' understanding of more concrete and example-driven concepts, such as dialect, register, and code-switching. However, students appeared to need further support in interpreting deeper sociolinguistic meanings related to identity and social positioning.

The questionnaire results further supported the test findings. Overall, students reported positive perceptions of GenAI as a learning tool. The highest mean scores were found for the items "I used follow-up prompts to get clearer explanations" (M = 4.34, SD = 0.59) and "GenAI helped me understand difficult sociolinguistic terms" (M = 4.31, SD = 0.64). Similarly, students agreed that GenAI provided useful examples of language variation (M = 4.25, SD = 0.68) and supported their understanding of differences among dialect, register, and style (M = 4.06, SD = 0.72). At the same time, students also acknowledged some limitations. They agreed that some GenAI explanations were too general (M = 3.78, SD = 0.83), and several noted that some examples were inaccurate or oversimplified (M = 3.41, SD = 0.88).

Table 3. Questionnaire Results on Students' Perceptions of GenAI Use

Item	Mean	SD	Agree/Strongly Agree
GenAI helped me understand difficult sociolinguistic terms.	4.31	0.64	28/32
GenAI made it easier to compare dialect, register, and style.	4.06	0.72	24/32
GenAI provided useful examples of language variation.	4.25	0.68	27/32
I used follow-up prompts to get clearer explanations.	4.34	0.59	29/32
I checked AI answers against lecture notes or class materials.	3.97	0.77	23/32

Some GenAI explanations were too general.	3.78	0.83	21/32
Some GenAI examples were inaccurate or oversimplified.	3.41	0.88	16/32
I would like GenAI to be integrated into similar courses.	4.09	0.74	25/32

Therefore, the quantitative findings indicated that Generative AI had a positive and statistically significant impact on students' understanding of language variation concepts, although its benefits varied depending on the conceptual complexity of the topic.

Qualitative Findings: How Students Used Generative AI to Support Their Understanding

To answer the first research question, the learning logs were analyzed to identify how students used Generative AI during the six-week learning period. A total of 192 learning-log entries were examined. The analysis revealed four main patterns of use: requesting simplified explanations of concepts, asking for contextual examples of language variation, refining prompts through follow-up questions, and verifying or questioning AI-generated responses.

As shown in Table 4, the most frequent use of GenAI was requesting simplified explanations of sociolinguistic concepts (64 entries, 33.3%). Students often used the tool when course materials were perceived as too abstract or theoretical. The second most common use was asking for contextual examples of language variation (58 entries, 30.2%), such as examples of code-switching, formal versus informal language, and variations across different social settings. The third category involved refining prompts and asking follow-up questions (42 entries, 21.9%), showing that students did not simply accept the first AI response but interacted with the tool iteratively. The least frequent but still important pattern was verifying or questioning AI-generated responses (28 entries, 14.6%), indicating that some students critically evaluated the reliability of the output.

Table 4. Themes from Learning Logs (192 Entries)

Theme	Frequency	Percentage	Theme
Requesting simplified explanations of concepts	64	33.3%	Requesting simplified explanations of concepts
Asking for contextual examples of language variation	58	30.2%	Asking for contextual examples of language variation
Refining prompts and asking follow-up questions	42	21.9%	Refining prompts and asking follow-up questions

Verifying or questioning AI-generated responses	28	14.6%	Verifying or questioning AI-generated responses

The learning-log entries illustrated these patterns clearly. For instance, students used prompts such as “Explain the difference between dialect and register in simple English,” “Give three examples of code-switching among Indonesian university students,” and “Compare formal and informal English in classroom and WhatsApp contexts.” These examples suggest that students used GenAI not only to receive definitions, but also to connect theoretical concepts with real or familiar communicative situations.

The findings also showed that students’ use of GenAI was interactive rather than passive. Many students refined their prompts to obtain clearer or more targeted answers, particularly when the initial response was too broad. This iterative use of prompting appeared to help students gradually develop a more precise understanding of sociolinguistic concepts. At the same time, the presence of verification-related entries suggested that some students recognized the limitations of GenAI and cross-checked the information against lecture notes or other course materials.

When the quantitative and qualitative findings were considered together, a consistent pattern emerged. The significant improvement in posttest scores appeared to be associated with the ways students used GenAI during the course. Students seemed to benefit most when they used the tool to simplify difficult concepts, generate contextualized examples, and refine their understanding through repeated prompting. These strategies likely helped bridge the gap between abstract sociolinguistic theory and actual language use in social contexts. However, the findings also indicate that GenAI was not equally effective for all aspects of sociolinguistic learning. While it was useful for clarifying definitional and example-based concepts, it was less effective in helping students interpret deeper issues of social meaning and identity. In addition, the questionnaire and learning-log data suggest that students were aware of the limitations of GenAI, especially when explanations were too general or examples were oversimplified. Therefore, the pedagogical value of GenAI appeared to depend not only on access to the tool but also on students’ ability to use it critically and strategically.

DISCUSSION

The present study found that students' posttest scores were significantly higher than their pretest scores, with a large effect size, suggesting that Generative AI can support conceptual learning in a Sociolinguistics course. This pattern is consistent with recent review evidence showing that ChatGPT-based interventions generally improve academic performance and affective-motivational outcomes, especially in university settings and in language-related education (Andewi et al., 2025; Waziana et al., 2025). It also aligns with broader syntheses indicating that AI chatbots can have a strong positive effect on student learning outcomes, particularly in higher education (Trinovita et al., 2025).

The questionnaire findings, which showed that students generally perceived GenAI as useful for understanding difficult concepts and generating examples, also resonate with previous research on student acceptance and perceptions of ChatGPT. Strzelecki found that students' behavioral intention and actual use of ChatGPT in higher education were strongly tied to acceptance-related factors. Similarly, Stöhr, Ou, and Malmström reported broad awareness and use of ChatGPT among university students, with positive views closely linked to familiarity and frequency of use (Stöhr et al., 2024b). Blahopoulou and Ortiz-Bonnin likewise found that students valued ChatGPT for its constant accessibility and time-saving benefits, while also calling for training and regulation to support responsible academic use (Blahopoulou & Ortiz-Bonnin, 2025).

A central finding of this study was that students most often used GenAI to obtain simplified explanations of sociolinguistic concepts and to generate contextualized examples of language variation. This supports Xiao and Zhi's qualitative study, which showed that EFL learners viewed ChatGPT as a valuable learning partner that could provide immediate feedback and personalized learning experiences, while also helping them complete language-related tasks more effectively (Xiao & Zhi, 2023). The present result also fits longer-standing work in linguistics pedagogy showing that technology-supported exploration can make language variation more accessible to students. In particular, Marcos Miguel's study on corpus tools in an introductory linguistics course highlights the pedagogical value of technology for helping learners engage with variation as a meaningful topic in linguistics education (Marcos Miguel, 2022).

Another important finding was that students often refined their prompts and asked follow-up questions rather than simply accepting the first AI response. This iterative use of GenAI is strongly in line with Sawalha's et al. study, which found that students

developed different prompting strategies and that reformulated prompting and multiple-question prompting produced more accurate responses than simple copy-and-paste prompting (Sawalha et al., 2024). It is also consistent with Xiao and Zhi's (2023) observation that learners modified prompts to maximize learning benefits, suggesting that effective learning with ChatGPT depends not only on access to the tool but also on how strategically students interact with it. In this sense, the present findings reinforce the argument that prompting is not merely a technical action but an emerging academic literacy that shapes response quality and, ultimately, learning quality.

At the same time, this study found that students did not fully trust all GenAI outputs and often checked them against lecture notes or course materials. That result is important because it suggests a degree of evaluative judgment rather than passive dependence. This echoes Xiao and Zhi's (2023) finding that students showed critical judgment when evaluating ChatGPT's ideas and outputs. It also matches recent work on language education showing that learners may use ChatGPT extensively while still expressing mixed evaluations of its reliability (Hastomo et al., 2025). More broadly, systematic review evidence in ESL/EFL education has already warned that ChatGPT offers clear affordances but also significant risks, including incorrect information and academic dishonesty (Lo et al., 2024). Therefore, these studies support the interpretation that the value of GenAI in sociolinguistics depends heavily on critical use, not mere use.

The weakest improvement in this study occurred in the area of social meaning and identity, which is theoretically plausible. Students appeared to improve more easily on conceptually concrete topics such as dialect, register, style, and code-switching/code-mixing than on deeper interpretation of how variation indexes identity and social positioning. This pattern can be explained by prior sociolinguistic learning research. Chappell and Kanwit argued that before learners can connect variation with regional and social characteristics, they must first learn to recognize different variants as belonging to a single variable (Chappell & Kanwit, 2022). In other words, identifying formal categories tends to come earlier than interpreting their social meanings. This helps explain why GenAI was effective for definitional clarification and example generation in the present study, yet less effective for the more interpretive dimensions of sociolinguistic analysis.

These findings also carry pedagogical implications. The results suggest that GenAI may be most useful in Sociolinguistics when it is positioned as a guided support tool for

concept clarification, example generation, and exploratory questioning, rather than as an unquestioned source of disciplinary knowledge. This recommendation is consistent with recent higher education research emphasizing that students need structured support, ethical guidance, and AI literacy training in order to use ChatGPT responsibly and effectively. Blahopoulou and Ortiz-Bonnin (2025) highlighted students' interest in institutional guidance and training, while recent work on AI governance in education argues for integrating digital literacy and AI ethics into the curriculum so that students can engage with AI critically rather than accept machine-generated output unreflectively (Alfiras et al., 2025).

Overall, the present study extends the growing literature on GenAI in language education by showing that its value is not limited to writing or general language practice. In this study, GenAI also functioned as a conceptual scaffold for learning sociolinguistic content. However, the findings likewise confirm the caution raised in earlier research: GenAI is most beneficial when students are taught to question, refine, and verify its output. For a course such as Sociolinguistics, where interpretation of language variation requires sensitivity to context, identity, and social meaning, human guidance remains essential even when AI support is pedagogically useful.

CONCLUSION

This study concluded that the use of Generative AI contributed positively to students' understanding of language variation concepts in a Sociolinguistics course. The quantitative findings showed a statistically significant improvement between the pretest and posttest scores, while the qualitative findings revealed that students mainly used GenAI to simplify difficult concepts, generate contextualized examples, refine their understanding through follow-up prompts, and verify information against course materials. These findings indicate that GenAI functioned as a valuable conceptual scaffold, particularly for helping students understand more concrete sociolinguistic topics such as dialect, register, style, and code-switching. Pedagogically, the study implies that GenAI can be meaningfully integrated into Sociolinguistics instruction when it is used to support explanation, example generation, and guided inquiry rather than as a substitute for independent thinking or lecturer input.

However, the study also found that GenAI was less effective in supporting students' interpretation of deeper sociolinguistic dimensions, particularly those related to social meaning and identity, and that some AI-generated explanations were still perceived as too general or oversimplified. These results highlight an important limitation of the study, namely its use of a one-group design in a single course context with a relatively small sample, which may limit the generalizability of the findings. Future studies are therefore recommended to involve larger and more diverse samples, include comparison groups, and examine longer-term learning outcomes across different linguistic and pedagogical contexts. In addition, lecturers are encouraged to incorporate explicit instruction on critical AI literacy, prompting strategies, and response verification so that students can use GenAI more critically, strategically, and responsibly in sociolinguistics learning.

REFERENCES

Alfiras, M. I. I., Emran, A. Q., & Mohamed, A. M. (2025). Ethics and governance of generative AI in education: a systematic review on responsible adoption. *Discover Education*, *5*(1), 37. https://doi.org/10.1007/s44217-025-01051-y

Andewi, W., Waziana, W., Wibisono, D., Putra, K. A., Hastomo, T., & Oktarin, I. B. (2025). From prompting to proficiency: A mixed-methods analysis of prompting with ChatGPT versus lecturer interaction in an EFL classroom. *Journal of Studies in the English Language*, *20*(2), 210–238. https://so04.tci-thaijo.org/index.php/jsel/article/view/282318

Blahopoulou, J., & Ortiz-Bonnin, S. (2025). Student perceptions of ChatGPT: benefits, costs, and attitudinal differences between users and non-users toward AI integration in higher education. *Education and Information Technologies*, *30*(14), 19741–19764. https://doi.org/10.1007/s10639-025-13575-9

Braun, V., & Clarke, V. (2021). *Thematic analysis: A practical guide.* Sage Publications.

Campbell-Kibler, K. (2009). The nature of sociolinguistic perception. *Language Variation and Change*, *21*(1), 135–156. https://doi.org/10.1017/S0954394509000052

Chappell, W., & Kanwit, M. (2022). Do Learners Connect Sociophonetic Variation With Regional and Social Characteristics? *Studies in Second Language Acquisition*, *44*(1), 185–209. https://doi.org/10.1017/S0272263121000115

Darvin, R. (2025). The need for critical digital literacies in generative AI-mediated L2 writing. *Journal of Second Language Writing*, *67*, 101186. https://doi.org/10.1016/j.jslw.2025.101186

Fetters, M. D., Curry, L. A., & Creswell, J. W. (2013). Achieving Integration in Mixed Methods Designs—Principles and Practices. *Health Services Research*, *48*(6pt2), 2134–2156. https://doi.org/10.1111/1475-6773.12117

George, A., & Barrios, H. (2024). Teaching language attitudes through digital storytelling projects. *Canadian Journal of Linguistics/Revue Canadienne de Linguistique*, *69*(3), 333–354. https://doi.org/10.1017/cnj.2024.25

Hastomo, T., Widiati, U., Ivone, F. M., & Zen, E. L. (2025). EFL teachers' self-efficacy in using AI tools: A comparative study in Indonesia. *Advanced Education*, *19*(27), 103–123. https://doi.org/10.20535/2410-8286.335502

Lo, C. K., Yu, P. L. H., Xu, S., Ng, D. T. K., & Jong, M. S. (2024). Exploring the application of ChatGPT in ESL/EFL education and related research issues: a systematic review of empirical studies. *Smart Learning Environments*, *11*(1), 50. https://doi.org/10.1186/s40561-024-00342-5

Marcos Miguel, N. (2022). Exploring the Use of Corpus Tools for Teaching Language Variation to L2 Spanish Majors. *Language*, *98*(2), e80–e107. https://doi.org/10.1353/lan.2022.0001

Qu, K., & Wu, X. (2024). ChatGPT as a CALL tool in language education: A study of hedonic motivation adoption models in English learning environments. *Education and Information Technologies*, *29*(15), 19471–19503. https://doi.org/10.1007/s10639-024-12598-y

Sawalha, G., Taj, I., & Shoufan, A. (2024). Analyzing student prompts and their effect on ChatGPT's performance. *Cogent Education*, *11*(1). https://doi.org/10.1080/2331186X.2024.2397200

Stöhr, C., Ou, A. W., & Malmström, H. (2024a). Perceptions and usage of AI chatbots among students in higher education across genders, academic levels and fields of study. *Computers and Education: Artificial Intelligence*, *7*, 100259. https://doi.org/10.1016/j.caeai.2024.100259

Stöhr, C., Ou, A. W., & Malmström, H. (2024b). Perceptions and usage of AI chatbots among students in higher education across genders, academic levels and fields of study.

Computers and Education: Artificial Intelligence, *7*, 100259. https://doi.org/10.1016/j.caeai.2024.100259

Strzelecki, A. (2024). Students' Acceptance of ChatGPT in Higher Education: An Extended Unified Theory of Acceptance and Use of Technology. *Innovative Higher Education*, *49*(2), 223–245. https://doi.org/10.1007/s10755-023-09686-1

Trinovita, D., Nurchurifiani, E., Hastomo, T., Andewi, W., & Hasbi, M. (2025). Exploring the Influence of Generative AI on Self-Regulated Learning: A Mixed-Methods Study in the EFL Context. *Jurnal Iqra' : Kajian Ilmu Pendidikan*, *10*(2), 301–316. https://doi.org/10.25217/ji.v10i2.6389

Vo, T. K. A., & Nguyen, H. (2024). Generative Artificial Intelligence and ChatGPT in Language Learning: EFL Students' Perceptions of Technology Acceptance. *Journal of University Teaching and Learning Practice*, *21*(06). https://doi.org/10.53761/fr1rkj58

Wang, C., & Wang, Z. (2025). Investigating L2 writers' critical AI literacy in AI-assisted writing: An APSE model. *Journal of Second Language Writing*, *67*, 101187. https://doi.org/10.1016/j.jslw.2025.101187

Waziana, W., Andewi, W., Wibisono, D., Hastomo, T., & Muslihudin, M. (2025). Exploring ChatGPT's impact on critical, creative, and reflective thinking skills: A mixed-methods study in an Indonesian EFL classroom. *Applied Research on English Language*, *14*, 77–114. https://doi.org/10.22108/are.2025.145896.2564

Xiao, Y., & Zhi, Y. (2023). An Exploratory Study of EFL Learners' Use of ChatGPT for Language Learning Tasks: Experience and Perceptions. *Languages*, *8*(3), 212. https://doi.org/10.3390/languages8030212

Zhai, C., & Wibowo, S. (2023). A systematic review on artificial intelligence dialogue systems for enhancing English as foreign language students' interactional competence in the university. *Computers and Education: Artificial Intelligence*, *4*, 100134. https://doi.org/10.1016/j.caeai.2023.100134