


An Innovative AI-Supported Technique in Enhancing Grammar Accuracy in English Medium Education at a University in Vietnam

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Abstract

To address English Medium Education (EME) biotechnology students' grammar concerns in specialized writing, an innovative technique combining Murray's Process Approach Theory (1972) and Willis's (1996) and Ellis's (2003) Task-Based Language Teaching Method was implemented. An 8-week ChatGPT intervention on grammar accuracy was conducted with EME biotechnology freshmen at a Ho Chi Minh City university. A quantitative study of 42 participants included an experimental group using ChatGPT for writing assignments and a control group receiving conventional writing instruction. Both groups' grammatical competence was assessed via pre- and post-tests; the experimental group's attitudes were explored through an English-Vietnamese questionnaire. Findings showed the experimental group's grammar accuracy significantly outperformed the control group. Questionnaire data revealed positive behaviours, including higher self-efficacy and motivation for learning writing grammar. These findings suggest ChatGPT improves grammar as an effective writing assistant in EME contexts, offering real-time feedback and promoting autonomous learning to overcome grammar anxiety. The study also suggests educators address over-reliance and technology knowledge gaps for EME scenarios. Finally, limitations such as small sample size, focus only on grammar, and limited generalizability were reported and expected to be fulfilled in the future.

Keywords AI-driven approach, ChatGPT, EME, grammar accuracy, writing skills

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INTRODUCTION

The global shift towards English Medium Education (EME) in higher education is a defining characteristic of internationalization agendas worldwide (Macaro et al., 2018). In Vietnam, this trend is particularly pronounced in STEM fields, where proficiency in English is viewed as a critical gateway to cutting-edge research, global academic collaboration, and enhanced graduate employability (Nguyen et al., 2015). However, the implementation of EME often reveals a stark disconnect between students' general English proficiency and the advanced, discipline-specific linguistic demands of their academic programs (Kuteeva & Airey, 2014). For students in rigorous fields like biotechnology, this challenge crystallizes in the domain of academic writing, where complex reporting, lab analyses, and research documentation require not only technical vocabulary but also a high degree of grammatical accuracy.

Grammar, often perceived as a foundational yet daunting aspect of language learning, becomes a source of significant anxiety for many EME learners (Horwitz et al., 1986). Inaccurate syntax, article

misuse, or erroneous tense application can obscure meaning, undermine the credibility of scientific work, and lead to negative evaluation (Hinkel, 2004). Traditional grammar instruction in EME settings, which may rely on decontextualized drills or corrective feedback that is delayed and not always actionable, often fails to meet learners' needs for immediate, contextualized support within the writing process (Truscott, 1996; Ferris, 2006).

Concurrently, the advent of sophisticated generative Artificial Intelligence (AI) models, such as OpenAI's ChatGPT, presents unprecedented opportunities for language education. These tools offer the potential for instantaneous, interactive, and seemingly intelligent feedback on linguistic output (Kasneci et al., 2023). Yet, their pedagogical integration remains largely uncharted, especially in specific contexts like EME in Vietnam. Merely providing access to AI is insufficient; its use must be scaffolded within sound pedagogical frameworks to transform it from a crutch into a catalyst for autonomous learning (Dang, 2025; Zawacki-Richter et al., 2019).

This study, therefore, addresses a critical gap by designing, implementing, and evaluating an innovative AI-supported technique aimed at enhancing grammatical accuracy in writing for EME biotechnology students. It is grounded in the synthesis of two established pedagogical approaches: Murray's (1972) Process Approach, which emphasizes writing as a recursive cycle of planning, drafting, and revising, and Task-Based Language Teaching (TBLT) (Willis, 1996; Ellis, 2003), which uses meaningful tasks as the central unit for language learning and teaching. Within this framework, ChatGPT is positioned as a dynamic writing assistant, intervening at key stages of the process to provide grammar-focused support on authentic, discipline-relevant writing tasks. The research questions guiding this study are (1) To what extent does the integration of ChatGPT within a Process and TBLT framework improve the grammatical accuracy in writing of EME biotechnology freshmen compared to conventional instruction? And (2) What are the participants' attitudes regarding the use of ChatGPT as a tool for learning grammatical accuracy in writing?

By answering these questions, this research aims to contribute empirical evidence to the burgeoning discourse on AI in language education, offering a replicable model for EME practitioners and highlighting both the transformative potential and the pragmatic considerations of AI integration.

LITERATURE REVIEW

Grammatical Accuracy in EME and Writing

The role of grammar in EME, particularly in science disciplines, is contentious yet undeniably important. While communicative approaches have rightly prioritized fluency and meaning, the formal written genres of academia place a premium on accuracy (Hyland, 2016). In scientific writing, grammatical errors can lead to ambiguity, misinterpretation of procedures or results, and a perception of unprofessionalism (Manchón, 2011). For EME learners, whose primary focus is content mastery, grammar often becomes a secondary burden, leading to anxiety and avoidance strategies (Woodrow, 2011). This "grammar anxiety" is compounded in contexts like Vietnam, where prior English instruction may have emphasized rote learning and examination skills over authentic, process-oriented writing practice (Pham, 2008). Consequently, there is a pressing need for instructional techniques that address grammar not in isolation, but as an integral, manageable component of the discipline-specific writing process.

Pedagogical Foundations in Process Writing and TBLT

Murray's (1972) Process Approach revolutionized writing instruction by shifting focus from the final product to the cognitive and recursive stages writers undergo: prewriting, drafting, revising, and editing. This approach empowers learners, positioning them as active decision-makers (Graham & Sandmel, 2011). In an EME context, it allows grammar instruction to be embedded naturally during the revision and editing stages, where it is most relevant and contextualized.

Complementing this, Task-Based Language Teaching (TBLT) provides a framework for designing activities that mirror real-world language use. Willis's (1996) model of pre-task, task cycle, and language focus, and Ellis's (2003) emphasis on focused tasks, allow for the intentional design of writing assignments that necessitate the use of specific grammatical forms. For biotechnology students, a task might involve "writing a methods section for a lab report on PCR amplification," which inherently requires the use of the past passive voice and precise adverbial phrases. Combining Process Writing and TBLT creates a powerful pedagogy where grammar is learned through cycles of use, feedback, and refinement on meaningful tasks.

AI in Language Learning: Promise and Peril

The integration of AI, particularly Natural Language Processing (NLP) tools, into language education has evolved from simple spell-checkers to complex interactive systems (Godwin-Jones, 2022). Intelligent Tutoring Systems (ITS) and automated writing evaluation (AWE) tools like Grammarly have shown promise in providing timely feedback and increasing learner engagement (Stevenson & Phakiti, 2014). However, these tools often operate with limited explanatory power and may not engage learners in deep cognitive processing.

Generative AI models like ChatGPT represent a paradigm shift. They can not only identify errors but also generate explanations, provide multiple corrected versions, and engage in dialogic interaction about language choices (Barrot, 2023). This aligns with Vygotskian sociocultural theory, where learning is mediated by tools and social interaction; ChatGPT can act as a more capable peer or a 24/7 tutor within a learner's Zone of Proximal Development (Vygotsky, 1978). However, significant concerns exist: the potential for fostering over-reliance, the propagation of biases or inaccuracies in the AI's responses, issues of academic integrity, and the digital divide in access and literacy (Bender et al., 2021; Rudolph et al., 2023). Effective integration, therefore, requires careful pedagogical design that encourages critical engagement with AI feedback rather than passive acceptance.

While studies on AWE tools in ESL writing are plentiful, research on the pedagogical use of generative AI in specific EME contexts is nascent. Few studies have examined how tools like ChatGPT can be systematically woven into a coherent pedagogical framework (Process and TBLT) to address a precise learning objective (grammatical accuracy) for a defined learner group (EME biotechnology freshmen in Vietnam). This study seeks to fill this gap by providing a contextualized, empirical investigation.

METHODOLOGY

Research Design

This study employed a quasi-experimental design with a pre-test/post-test control group structure. Quantitative data on grammatical accuracy were collected through standardized writing assessments. Supplementary qualitative data on learner attitudes were gathered via a post-intervention questionnaire administered to the experimental group, following a sequential explanatory approach (Creswell & Plano Clark, 2018).

Participants

The participants were 42 first-year undergraduate students (22 male, 20 female, aged 18-19) enrolled in the Biotechnology program at a major university in Ho Chi Minh City, Vietnam. All were enrolled in a mandatory EME academic writing course. Participants were selected via convenience sampling and randomly assigned to either the experimental group (EG, n=21) or the control group (CG, n=21). All participants had a B1 level on the Common European Framework of Reference for Languages (CEFR) as per the university's placement test, indicating an intermediate level where grammatical accuracy in writing is a common struggle.

The Intervention: AI-Supported Process/TBLT Technique

The intervention lasted 8 weeks, integrated into the regular writing course schedule. Both groups covered the same core content: writing key sections of a biotechnology lab report (Introduction, Methods, Results, Discussion). The CG received conventional instruction: teacher-led grammar explanations, textbook exercises, peer review, and teacher feedback on drafts.

The EG underwent the innovative technique, structured as follows for each writing task:

Pre-task (TBLT phase)

The teacher introduced the writing task (e.g., "Describe an experimental procedure") and highlighted target grammatical structures (e.g., passive voice, sequence adverbs). Students were trained on how to formulate prompts for ChatGPT (e.g., "Check the grammar in this sentence and explain any errors: 'We add the enzyme to the mixture.'").

Task cycle and process writing integration

Planning/Drafting (Process): Students drafted their text individually.

Revising/Editing with AI (Process/TBLT focus on form): Students engaged in iterative cycles with ChatGPT. They pasted paragraphs or sentences into the tool with specific prompts: "Is the grammar correct here?", "Suggest a more accurate way to write this sentence," or "Why is my use of the article 'the' wrong in this context?" Students were instructed to critically evaluate ChatGPT's suggestions, not to accept them blindly.

Teacher-led review session: The teacher conducted workshops analysing both strong and problematic examples of AI feedback, fostering critical digital literacy.

Language focus (TBLT Phase): After task completion, the teacher led a session consolidating the grammatical points addressed, using examples from student interactions with ChatGPT.

Instruments and Data Collection

Writing tests

A pre-test and post-test were administered. Each test required students to write a 250-word description of a simple biotechnology process like gel electrophoresis, based on a given diagram and data. This ensured task equivalence.

Scoring for grammatical accuracy

Essays were anonymized and scored using an analytical rubric focused solely on grammatical accuracy. The rubric, adapted from Polio (1997), quantified errors per 100 words (error rate) across categories: verb tense/aspect, subject-verb agreement, articles, prepositions, and sentence structure. A lower error rate indicated higher accuracy. Inter-rater reliability between two trained scorers was high (Cohen's $\kappa = .86$).

Questionnaire

A 20-item, 5-point Likert-scale questionnaire (1=Strongly Disagree, 5=Strongly Agree) was administered to the EG post-intervention. It explored perceptions of *usefulness*, *self-efficacy*, *motivation*, and *anxiety reduction* regarding grammar learning with ChatGPT. It included two open-ended questions for additional comments. The questionnaire was presented in English and Vietnamese to ensure comprehension.

Data Analysis

Quantitative data from the pre-/post-tests were analysed using SPSS version 26. Descriptive statistics (mean, standard deviation) were calculated. Assumptions of normality (Shapiro-Wilk test) and homogeneity of variance (Levene's test) were met. To compare improvement between groups, an independent samples t-test was conducted on the gain scores (post-test score minus pre-test score) for grammatical accuracy. Questionnaire data were analysed using descriptive statistics (means, frequencies) for the Likert-scale items and thematic analysis for open-ended responses.

RESULTS

Quantitative Findings: Grammatical Accuracy

Table 1. *The Descriptive Statistics for Grammatical Error Rates*

Group	Test	N	Mean (M)	Standard Deviation (SD)
Experimental	Pre	21	18.24	3.41
	Post	21	9.67	2.58
Control	Pre	21	17.89	3.12
	Post	21	14.32	2.97

A lower mean indicates fewer errors and higher accuracy. Both groups showed improvement from pre- to post-test. However, the reduction in errors was markedly greater for the Experimental Group (M reduction = 8.57) compared to the Control Group (M reduction = 3.57).

To determine if this difference in improvement was statistically significant, an independent samples t-test was performed on the gain scores (see Table 2).

Table 2. Independent Samples T-Test on Gain Scores

Variable	Group	M Gain	SD	t(40)	p	Cohen's d
Error Reduction	Experimental	8.57	3.05	5.732	.000	1.77
	Control	3.57	2.88			

The t-test revealed a statistically significant difference in gain scores between the groups, $t(40) = 5.732$, $p < .001$. The large effect size (Cohen's $d = 1.77$) indicates that the AI-supported intervention had a substantial positive impact on improving grammatical accuracy compared to conventional instruction.

Qualitative Findings on Learners' Attitudes

Questionnaire results from the EG ($n=21$) revealed strongly positive attitudes (Overall $M = 4.42$, $SD = 0.51$). Key dimensions included:

Usefulness: Participants highly rated ChatGPT's utility for instant grammar feedback ($M = 4.62$) and its role in explaining grammar rules ($M = 4.48$).

Self-Efficacy: Students reported increased confidence in their ability to identify and correct their own grammar mistakes ($M = 4.33$).

Motivation: The interactive nature of the tool made grammar practice more engaging and less tedious ($M = 4.29$).

Anxiety Reduction: A significant finding was the reported decrease in anxiety about making grammar mistakes while writing ($M = 4.52$).

Thematic analysis of open-ended responses reinforced these findings. Students frequently used terms like "helpful assistant," "available anytime," and "learn from my own mistakes." One student noted that "*before, I was afraid to write long sentences because I knew they would be wrong. Now, I can try, and ChatGPT helps me fix them immediately, so I learn the pattern.*" Another stated that "*it's like having a patient tutor who never gets tired of my questions.*" These responses suggest that students valued not only the immediate corrective feedback but also the supportive and non-judgmental learning environment created by AI-assisted interaction. Many participants indicated that instant feedback encouraged them to experiment with more complex grammatical structures and become more confident in expressing their ideas. The qualitative data also revealed that students perceived ChatGPT as a tool for autonomous learning, allowing them to review mistakes independently and monitor their own progress over time. However, a few cautionary notes emerged, with one student commenting that "*sometimes I don't understand its explanation, so I just accept the change. I need to learn how to ask better questions.*" This finding implies that while ChatGPT

can facilitate grammar learning, its effectiveness depends on students' ability to critically interpret AI-generated feedback and formulate appropriate prompts, highlighting the need for explicit instruction on AI literacy and reflective learning strategies in English language classrooms.”

DISCUSSIONS

The findings of this study provide compelling evidence for the efficacy of a pedagogically structured AI intervention in enhancing grammatical accuracy within an EME context. The significant outperformance of the experimental group (Research question 1) suggests that ChatGPT, when integrated within a Process and TBLT framework, acts as a powerful mediator for language learning. This aligns with and extends previous research on the benefits of timely feedback (Stevenson & Phakiti, 2014) and dialogic interaction in writing development (Hyland, 2016).

The success of the intervention can be attributed to several synergistic factors rooted in the theoretical framework. First, the Process Approach was operationalized through the iterative drafting and revising cycles with AI. Unlike delayed teacher feedback, ChatGPT provided immediate, on-demand assistance during the critical editing stage, allowing for real-time hypothesis testing and correction (Murray, 1972). Second, the TBLT foundation ensured that grammar work was not abstract but arose from the demands of authentic, discipline-specific writing tasks (Ellis, 2003). Students were not learning the passive voice in a vacuum; they were using it to accurately describe a lab procedure, with the AI supporting that precise, contextualized need. This relevance likely contributed to the high levels of motivation reported (Dang, 2024).

The positive attitudes explored in Research Question 2, highlighting increased self-efficacy and reduced anxiety, are perhaps as significant as the accuracy gains. Grammar anxiety is a well-documented barrier to writing fluency (Horwitz et al., 1986). By providing a private, non-judgmental space for experimentation and error, ChatGPT may lower the affective filter (Krashen, 1982), encouraging students to engage more deeply with complex structures they might otherwise avoid. The tool's role in promoting autonomous learning is paramount; students learned to identify problems and seek solutions independently, a skill crucial for lifelong learning in an EME and professional context.

However, this study also echoes concerns in the literature. The student's remark about sometimes blindly accepting AI suggestions points to the risk of over-reliance and superficial processing (Bender et al., 2021). This underscores the irreplaceable role of the teacher in the model. The teacher-led sessions on prompt engineering and critical evaluation of AI feedback were essential components, moving students from passive consumers to critical interlocutors with the technology. Furthermore, the “gaps in technology knowledge” alluded to in the original summary highlight a digital literacy imperative. Successful AI integration requires training not just on how to use the tool, but on how to use it *wisely and effectively*.

CONCLUSION

This study demonstrates that the strategic integration of generative AI, specifically ChatGPT, within a sound pedagogical framework combining the Process Approach and Task-Based Language Teaching, can significantly enhance grammatical accuracy in writing for EME biotechnology

students in Vietnam. The technique effectively addressed learner anxiety, boosted self-efficacy, and fostered valuable autonomous learning habits. While the results are promising, they come with the crucial caveat that technology is a tool, not a teacher. Its success depends on thoughtful pedagogical design that emphasizes critical engagement, complements human instruction, and develops essential digital literacies. As AI continues to evolve, so too must our approaches to language education, ensuring we harness its potential to empower EME learners while safeguarding the depth and integrity of the learning process. This research offers one step on that path, providing evidence and a model for a more responsive, effective, and learner-centred EME writing pedagogy.

For EME practitioners, this study offers a practical, replicable model. The key is not to replace the teacher with AI, but to redefine the teacher's role as a designer of AI-mediated tasks, a facilitator of critical digital literacy, and a guide for higher-order conceptual and disciplinary thinking. Curriculum designers should consider embedding similar AI-supported writing assistants into EME programs, accompanied by explicit instruction on their ethical and effective use (Ho & Dang, 2019).

This study acknowledges several limitations. First, the small sample size (N=42) from a single discipline and institution limits the generalizability of the findings. Second, the short intervention period (8 weeks) raises questions about the long-term retention of grammar gains and the sustainability of positive attitudes. Third, the exclusive focus on grammatical accuracy, while addressing a clear need, provides a narrow view of writing competence. Improvements in accuracy did not necessarily correlate with enhancements in rhetorical structure, lexical sophistication, or overall coherence. Finally, the study did not control for the amount of time students spent on writing tasks outside class, a potential confounding variable.

Future studies should address these limitations by (1) Conducting large-scale, longitudinal studies across multiple disciplines and institutions; (2) Investigating the impact of AI support on other aspects of writing like organization, argumentation, disciplinary voice; (3) Exploring the differential effects of AI feedback on learners with varying proficiency levels and learning styles; (4) Developing and validating frameworks for assessing the quality of student-AI interaction and the critical evaluation of AI feedback; and (5) Examining the evolving role of the EME teacher in an AI-augmented classroom.

REFERENCES

- Barrot, J. S. (2023). Using ChatGPT for second language writing: Pitfalls and potentials. *Assessing Writing*, 57, 1-6. <https://doi.org/10.1016/j.asw.2023.100745>
- Bender, E. M., Gebru, T., McMillan-Major, A., & Shmitchell, S. (2021). On the dangers of stochastic parrots: Can language models be too big? In *Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency* (pp. 610-623). Association for Computing Machinery. <https://doi.org/10.1145/3442188.3445922>
- Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). SAGE Publications.
- Dang, T. T. (2024). Cultural and situational constraints on undergraduate students' performance of learner autonomy in EFL learning. *Journal of Language Teaching & Research*, 15(6). <https://doi.org/10.17507/jltr.1506.04>
- Dang, T. T. (2025). AI tools for language learners: The promotion of learning independence or reliance. In Pham, V. P. H., Lian, A., Lian, A., White, J. (Eds.), *Empowering educators:*

- Integrating AI tools for personalized language instruction*, (pp. 263-280). Springer Nature.
https://doi.org/10.1007/978-3-032-01348-4_11
- Ellis, R. (2003). *Task-based language learning and teaching*. Oxford University Press.
- Ferris, D. R. (2006). Does error feedback help student writers? New evidence on the short- and long-term effects of written error correction. In K. Hyland & F. Hyland (Eds.), *Feedback in second language writing: Contexts and issues* (pp. 81-104). Cambridge University Press.
<https://doi.org/10.1017/CBO9781139524742.007>
- Godwin-Jones, R. (2022). Partnering with AI: Intelligent writing assistance and instructed language learning. *Language Learning & Technology*, 26(2), 5-24.
<https://doi.org/10.64152/10125/73474>
- Graham, S., & Sandmel, K. (2011). The process writing approach: A meta-analysis. *The Journal of Educational Research*, 104(6), 396-407. <https://doi.org/10.1080/00220671.2010.488703>
- Hinkel, E. (2004). *Teaching academic ESL writing: Practical techniques in vocabulary and grammar*. Lawrence Erlbaum Associates. <https://doi.org/10.4324/9781410609427>
- Ho, N. B. & Dang, T. T. (2019). Impacts of online formative assessment on EFL students' writing achievement. *Journal of Science Ho Chi Minh City Open University*, 9(1), 55-69.
<https://doi.org/10.46223/HCMCOUJS.soci.en.9.1.271.2019>
- Horwitz, E. K., Horwitz, M. B., & Cope, J. (1986). Foreign language classroom anxiety. *The Modern Language Journal*, 70(2), 125-132. <https://doi.org/10.1111/j.1540-4781.1986.tb05256.x>
- Hyland, K. (2016). *Teaching and researching writing* (3rd ed.). Routledge.
<https://doi.org/10.4324/9781315717203>
- Kasneji, E., Sessler, K., Küchemann, S., Bannert, M., Dementieva, D., Fischer, F., Gasser, U., Groh, G., Günemann, S., Hüllermeier, E., Krusche, S., Kutyniok, G., Michaeli, T., Nerdel, C., Pfeffer, J., Poquet, O., Sailer, M., Schmidt, A., Seidel, T., . . . Kasneji, G. (2023). ChatGPT for good? On opportunities and challenges of large language models for education. *Learning and Individual Differences*, 103, 1-13. <https://doi.org/10.1016/j.lindif.2023.102274>
- Krashen, S. D. (1982). *Principles and practice in second language acquisition*. Pergamon Press.
- Kuteeva, M., & Airey, J. (2014). Disciplinary differences in the use of English in higher education: Reflections on recent language policy developments. *Higher Education*, 67(5), 533-549. <https://doi.org/10.1007/s10734-013-9660-6>
- Macaro, E., Curle, S., Pun, J., An, J., & Dearden, J. (2018). A systematic review of English medium instruction in higher education. *Language Teaching*, 51(1), 36-76.
<https://doi.org/10.1017/S0261444817000350>
- Manchón, R. M. (Ed.). (2011). *Learning-to-write and writing-to-learn in an additional language*. John Benjamins Publishing Company. <https://doi.org/10.1075/llt.31>
- Murray, D. M. (1972). Teach writing as a process not product. *The Leaflet*, 71(3), 11-14.
- Nguyen, H. T., Fehring, H., & Warren, W. (2015). EFL teaching and learning at a Vietnamese university: What do teachers say? *English Language Teaching*, 8(1), 31-43.
<https://doi.org/10.5539/elt.v8n1p31>
- Pham, T. H. T. (2008). The roles of teachers in implementing educational innovation: The case of implementing cooperative learning in Vietnam. *Asian Social Science*, 4(1), 3-9.
<https://doi.org/10.5539/ass.v4n1p3>
- Polio, C. (1997). Measures of linguistic accuracy in second language writing research. *Language Learning*, 47(1), 101-143. <https://doi.org/10.1111/0023-8333.31997003>

- Rudolph, J., Tan, S., & Tan, S. (2023). ChatGPT: Bullshit spewer or the end of traditional assessments in higher education? *Journal of Applied Learning & Teaching*, 6(1), 342-363. <https://doi.org/10.37074/jalt.2023.6.1.9>
- Stevenson, M., & Phakiti, A. (2014). The effects of computer-generated feedback on the quality of writing. *Assessing Writing*, 19, 51-65. <https://doi.org/10.1016/j.asw.2013.11.007>
- Truscott, J. (1996). The case against grammar correction in L2 writing classes. *Language Learning*, 46(2), 327-369. <https://doi.org/10.1111/j.1467-1770.1996.tb01238.x>
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.
- Willis, J. (1996). *A framework for task-based learning*. Longman.
- Woodrow, L. (2011). College English writing affect: Self-efficacy and anxiety. *System*, 39(4), 510-522. <https://doi.org/10.1016/j.system.2011.10.017>
- Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education - where are the educators? *International Journal of Educational Technology in Higher Education*, 16(1), 1-27. <https://doi.org/10.1186/s41239-019-0171-0>