

Redefining Teacher-Learner Interaction Through AI Tools: A Case Study of Writing Instruction in Secondary Language Classrooms

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Abstract

The rise of advanced digital technologies, particularly AI-tool applications like chat-bots and virtual learning platforms, has ushered a transformative era in education. These innovations are reshaping how students engage with learning, encouraging more self-directed and personalized educational experiences. As AI becomes increasingly integrated into academic environments, traditional teacher-led models in foreign-language writing classrooms are being reconsidered. This shift reflects a broader pedagogical transition towards more student-centered learning, where technology plays a key role in supporting learners' autonomy. This study investigates how AI influences teacher-learner interaction in secondary-level foreign-language writing, drawing from final classes case study. The findings highlight that while AI offers significant instructional support, the teacher's role as a facilitator, mentor, and critical guide remains indispensable. The study involved two third year high school student groups consisting of 30 learners, engaged in argumentative essay writing in a foreign language. One group followed traditional teaching methods, while the other engaged in AI-enhanced pedagogy supported by teacher guidance and agency. The study assessed writing improvements, student perceptions and teachers' reflections in a digitally integrated environment. Results indicate that AI contributes to improved writing performance and greater learner autonomy in completing writing tasks. However, it also brings challenges, such as reduced teacher visibility and concerns over diminished critical thinking and over-dependence on technology. The research concludes by stressing the importance of continuous teacher training and curriculum reforms that ensure AI is used ethically and effectively within secondary language-writing instruction. It advocates for a balanced integration of human instruction and AI technologies, adopting a blended learning approach that enhances flexibility and accessibility while mitigating the drawbacks of overreliance on technology.

Keywords: Artificial Intelligence in education; teacher-learner interaction; secondary language writing; learners' autonomy; traditional Vs AI enhanced pedagogy; blended learning approach.

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Introduction

The emergence of Artificial Intelligence (AI) has profoundly transformed the landscape of education, the era in which digital tools are increasingly integrated into the teaching and learning process with its potential benefits to expand access to knowledge, generate outcomes and evaluate feedback, especially in language education where feedback and learner autonomy are pivotal. This transformation invites a critical comparison between traditional classrooms typically characterized by teacher-centered instruction, fixed curricula, and digitally enhanced environments, where learning is often collaborative, adaptive, and mediated through platforms, applications, and intelligent tools. In this digital shift, the roles of both teachers and learners are being redefined. Central to this conversation is the concept of teacher–learner interaction, which encompasses the verbal, direct, and emotional exchanges that shape learning experiences. As AI tools take part in these interactions, questions arise regarding agency, engagement, and the evolving role of educators. This study is guided by the following research questions:

- 1- How can digital tools influence the shift from teacher–centered instruction to students-centered learning classrooms?
- 2- What attitudes do students show when integrating AI tools into their learning process?
- 3- What implications does this shift hold for future teacher roles and instructional design?

1. Literature Review

1.1 Definition of teaching theories

Teaching theory has served as the cornerstone of educational systems, providing a framework of principles that shape knowledge transmission, instructional tools, and assessment design to foster effective learning environments. Theories for teaching must address how to create kinds of learning opportunities in which students are able to construct their own knowledge, as well as how to create a social environment for learning, establish classroom norms, and reach shared understanding (Cobb, 1994). In this context, Cobb believes learning happens when students create understanding through thought and collaboration. Other elements of classroom experience might motivate theories for teaching that address the nature of instructional tasks or the characteristics of classroom discourse (Hiebert & Wearne, 1993; Stein & Lane, 1996). Similarly, Stein and Lane (1996) highlight that well-designed tasks and thoughtful teacher questions help create a productive classroom atmosphere. Ultimately, each of these educational principles is fundamentally built of the aim to improve the teaching-learning process. In essence, theories for teaching can provide essential information about what is worth trying, what is unlikely to work, and whether an instructional design is based on theoretically sound principles because such research is deliberately framed to guide or shape teaching (Burkhardt & Schoenfeld, 2020).

1.2. Traditional approaches

1.2.1. Teacher-centered learning

The teacher’s role has long been fundamental to education, characterized by his responsibility to deliver instructions and navigate the complexities of the learning process. Traditionally, this role aligns with pedagogical content knowledge approaches, where learning follows a teacher-centered model structured around a fixed curriculum and a direct transmission of knowledge from teacher to student Shulman (1987). In this context, Danielson positions the teacher as a strategic decision-maker designing instructional experiences to enhance learning through deliberate planning and reflection. She emphasizes that “Teachers make purposeful choices in their instructional strategies, always with an eye toward student engagement and understanding”. (Danielson, Charlotte.2007, p.47). Understanding the pivotal role of the teacher in guiding the learning process leads naturally to explore how traditional approaches have been historically grounded in schools and basically rooted in teacher- centered approaches. An article discussing the authoritarian teaching notes: "An authoritarian teaching style is a traditional approach to education that places the teacher in a position of authority and control over the learning process. In this style, the teacher is seen as the sole source of knowledge and power, while students are expected to passively receive information and follow instructions without question."(Aydinov Kamaran,2023, p.26).

1.2.2 Instructional-based approach

Instructional based approach is the most widely used method in education, centered on direct instruction and clear objective-setting by the teacher, who serves as the authoritative figure in the classroom. As Robenshine note: “Direct instruction is based on the principle that all students can learn if taught correctly and effectively through explicit, systematic instruction.” (Rosenshine, 1987, p.34). Furthermore, the instructional-based approach allows teachers to monitor students’ progress closely and make immediate adjustments to ensure mastery before moving to new concepts. While often viewed as teacher- centered, effective direct instruction also involves interactive questioning, guided practice, and gradual release of responsibility to students, which supports active engagement and confidence building. Thus, this approach balances explicit guidance with opportunities for independent learning.

1.2.3 Inquiry-Based Instruction

Inquiry-based instruction emphasizes student exploration and questioning, guiding learners to construct knowledge through investigation, it does mean that students pose questions, collect data, analyze results, and build understanding, often in science and social studies contexts. “Inquiry-based learning is a constructivist approach where students actively construct their own understanding by exploring real-world problems and questions.” (Bell, R., Smetana, L., & Binns, I. 2005). This approach shifts the teacher’s role from a transmitter of information to a facilitator who supports students in developing critical thinking and problem-solving skills. According to (Pedaste et al.,2015), effective inquiry learning typically follows a cyclic process of orientation, conceptualization, investigation, conclusion, and discussion, allowing learners to engage deeply with content while reflecting on their own reasoning. Inquiry-based instruction fosters autonomy and intrinsic motivation by encouraging students to make decisions about their learning pathways. It also promotes collaboration, as learners often work in groups to test ideas and evaluate evidence.

1.2.4 Textbook- centered learning

The traditional approach consists of textbooks, is the primary guide for teaching driven - content, relies on structured lessons and evaluating students’ progress are mainly recipients of knowledge rather than co- constructors. It focuses on achieving specific learning outcomes through lectures, and preparing for writing tests. It lacks personalization for different learning abilities. Consequently, it restricts students’ innovation, creativity. For instance, Apple in his book Curriculum Control said: “Textbooks are not neutral conveyors of knowledge; they are social constructions shaped by cultural and political forces”. Same, Apple critically warns that relying solely on textbooks limits diverse perspectives and reinforces dominant ideologies in education. (Apple, Michael W Christian-Smith, Linda K – 1991). While traditional pedagogical approaches have long anchored the educational landscape, they have some limitations that call for change in the heart of classroom learning systems.

1.3. The shift from traditional approaches to AI enhanced classroom learning

1.3.1 Fostering Artificial Intelligence in Education

Artificial intelligence (AI) is poised to revolutionize higher education (academia), ushering in advancements in learning across a spectrum of applications. By evaluating individual learning styles, preferences, and strengths, AI facilitates the creation of personalized learning experiences. This involves adaptive learning platforms that dynamically adjust content difficulty and pace based on individual performance. (Hooda, M.; Rana, C.; Dahiya, O.; Rizwan, A.; Hossain, M.S. 2022). AI has transitioned from the periphery to the center of the educational landscape, since its integration is becoming more and more common, “Artificial Intelligence is no longer a futuristic concept confined to research labs-it is now at the heart of educational transformation.” (Holmes, W., Bialik, M., & Fadel, C. 2019). Accordingly, in Timms (2016) views, Artificial Intelligence is no longer confined to experimental use but has become an essential component driving change in how schools design learning, evaluate progress, and support student development. As educational institutions strive to meet the diverse and evolving needs of learners in a rapidly changing world, AI emerges as a powerful tool capable of redefining traditional teaching and learning paradigms. (Gocen, A., & Aydemir, F. (2020). Fostering AI in the sphere of education means more than inviting new tools; it involves rethinking pedagogical goals, classroom practices, and maintain the principal role of teachers in the digital era.

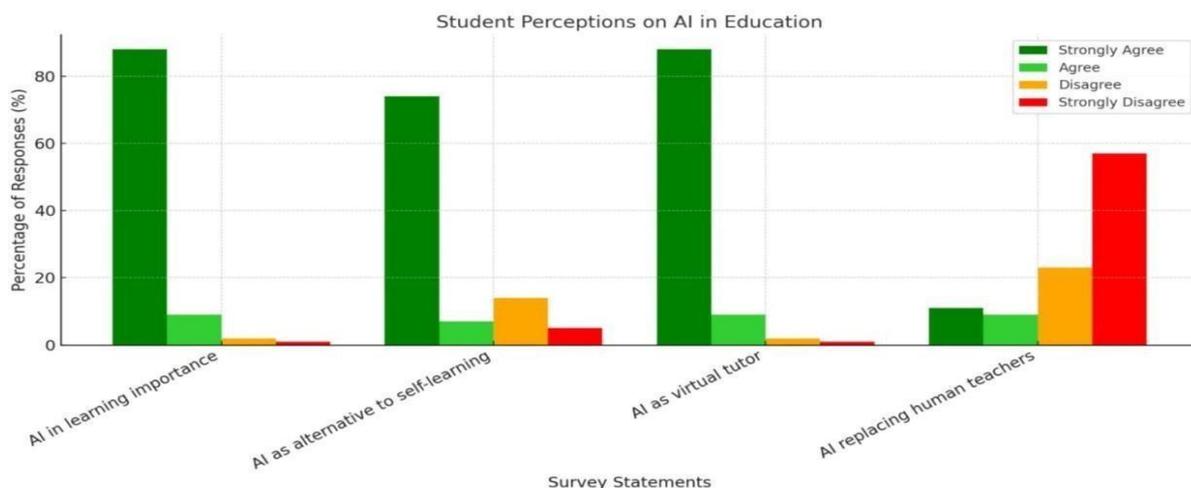
As Holmes et al. (2019) argue: AI has the potential to “amplify human intelligence rather than replace it,” suggesting a collaborative model where technology supports rather than supplants educators. AI technology in education addresses potential benefits for students to become more independent and autonomous learners and encourages them to engage as personalized rather than passive receivers using digital-driver data instead of adhering to direct instructions and relying on textbook activities. According to Vygotsky’s sociocultural theory (1978), learners progress at different rates within their own zone of proximal development, making it essential to adapt instruction to individual needs. In this perspective, the teacher’s role shifts from that of a direct instructor to a facilitator who scaffolds and supports students’ learning. For instance, Apps such as intelligent tutoring systems (ITS) and chatbots help students boost their problem-solving skills and self-efficacy by providing instant support (Bahroun et al., 2023; Wu & Yu, 2024). In other words, AI applications perform operations at speed far beyond human capacity, this advantage allows learners to save time and productivity gains in generating outcomes, improving their language skills through intelligent tutoring systems and adaptive learning platforms.

1.3.2 limitations

While Artificial Intelligence (AI) offers transformative benefits in education, it also presents significant limitations that educators and learners may address. One major concern is the risk of over-reliance on AI tools, which can lead to diminished critical thinking and creativity among students, difficulties in terms of brainstorming their ideas which leads to weakening students individual learning styles. As highlighted by McArdle (2025), "AI poses a greater challenge by enabling students to bypass foundational learning altogether," potentially undermining the development of original thought and critical thinking. Another limitation concerns how students understand and use AI tools. Kelly et al. (2023) observed that, although many learners are enthusiastic about these technologies, they often lack the confidence and awareness needed to use them thoughtfully and responsibly. This highlights the need to include guidance and awareness training whenever AI tools are introduced into classroom learning.

Additionally, AI systems often lack the emotional intelligence inherent in human teachers, making it challenging to provide the empathy and moral guidance essential for effective teaching. As noted by Dillon (2020), the impersonal nature of AI-driven learning may weaken teacher–student relationships, reducing social interaction and empathy in educational environments. Effectively, this idea raises questions concerning the effective role of the teacher in the classroom that couldn’t be replaced by machines. Bias in AI algorithms is another critical issue; because AI systems may make unfair or unbalanced decisions due to trained data that reflect certain stereotypes and inequalities, they negatively affect students’ feedback. Another challenge is the lack of transparency in AI decision-making processes can make it difficult for educators and students to understand or challenge the outcomes, which produced by these systems. Consequently, leading to a mistrust in educational assessments. Correspondingly, the integration of AI into education requires educators to be ready to engage with these technologies effectively. Many educators express their lack of knowledge about AI and its applications, which can be a barrier to the successful implementation of AI tools in the classroom (Kwak et al., 2022).

A research study done by (Pratama et al.,2022), the number of participants taken in this study was 29 students of educational technology classes A1 and A2; explores how artificial intelligence is transforming education by offering personalized learning paths, boosting student engagement, and enhancing overall educational outcomes. The figure below illustrates insights into the perceptions of AI in education:



Source : (Pratama et al., 2022)

A striking 88% of students strongly recognized the importance of AI in education, with another 9% agreeing—leaving just a marginal number dissenting. When asked whether AI could serve as a substitute for self-learning. 74% expressed strong support and 7% agreed, though 14% disagreed and 5% strongly opposed the idea. The idea of AI functioning as a virtual tutor or intelligent assistant was equally popular, receiving 88% strong agreement and 9% agreement, with very few students in disagreement. However, attitudes shifted dramatically when it came to AI potentially replacing human teachers. Only 11% strongly supported this concept and 9% agreed, while 23% disagreed and a dominant 57% strongly rejected the idea—clearly emphasizing the enduring value of human educators in the learning process.

1.4 Redefining teacher’s role

The integration of artificial intelligence in the educational landscape has significantly reshaped the role of the teacher. Based on the results of the study done by (Pratama et al.,2022) above where the majority of students emphasize the enduring value of human educators in the learning process; luckin at al. (2016) in this context declared: AI is not designed to replace educators but to enhance their capacity to meet individual learners needs, shifting the teacher’s role from traditional content deliverer to learning facilitator. Similarly, scholars (Tsai et al.,2020) emphasize the role of the teacher’s importance to facilitating and helping students critically engage in classroom lessons with AI output, refine their draft, and develop meta-cognitive awareness of the writing process, personalize learning pathways, and design meaningful learning experiences. It comes to say that without proper pedagogical guidance, students may misuse AI- generated content; becoming passive consumers of knowledge.

1.4.1 Learner-based method

With the rise of digital literacy, education will be no more flexible, Artificial Intelligence invades the world with its emerging force especially in educational technology, invites great transformative opportunities for personalized learning, and fosters learners’ engagement to be more dynamic and cooperative contrasting with the traditional one. This shift does not diminish the value of traditional approaches nor the role of teachers, but rather incorporating new tools that draw innovation, creativity and effectiveness. Besides, it supports teachers in delivering adaptive instruction. However, adapt to meeting the needs of learners in a rich, digitally connected environment, focusing basically on learner- centered approach where students interact actively with content with the support of AI and teacher guidance and that is the main focus of the study which does not signify replacing teachers’ roles, but the transition prompts a more encouraging, collaborative classroom environment.

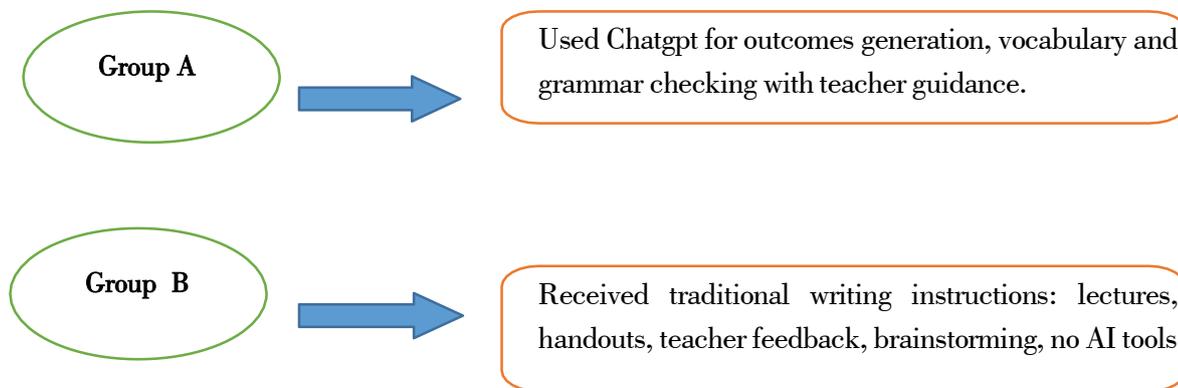
The following table provides a comparative overview of traditional teaching-learning interaction and AI- enhanced tools in educational settings. It highlights key differences and the transformative roles of both educators and learners:

Aspects	Traditional methods	AI-Enhanced in classroom
Role of Teacher	Central figure, solely source of knowledge and content deliverer	Facilitator, monitor , using AI tools to support personalized learning
Student Engagement	Passive receivers of knowledge	Active and motivated participants with AI digital platforms, dynamic , autonomous
Feedback	Delayed, provided after class assessments	Instant, adaptive feedback, progress in real time
Visuals	Textbook and lecture-based human direct instructions	Digital data-driven and interactive, content delivery aims to meet each learner needs
Evaluation	Standardized	Continuous tracking of Students' progress
Collaboration	Collaboration and interaction are limited	Enhanced via digital platforms and AI collaboration tools

TABLE 1: Traditional Vs. AI-enhanced teaching-learning interactions

2. Methodology

This section involves the case study design, data collection and data analysis which mainly follows a mixed approach to quantify the impact of AI on learning outcomes also qualitative data (interview, observation) based on Brawn, and Clarke’s (2006) thematic analysis or the TPACK framework. It focuses on comparative case study design and aims to explore the effects of AI assisted versus traditional instruction on students’ writing performance in second language and its complexities, thus understanding how AI integration reshapes their basic. The participants consist of 30 third year high school students divided into two groups.



Evaluation

Both groups submitted their final papers that were evaluated under the same rubric (academic structure, grammar, vocabulary) to ensure fairness and objectivity.

Data collection

Measurement in writing skills, semi-structured interviews, and observation protocols based on Brawn and Clarke’s (2006) to gain in-depth and dependable insights into the educational context.

This section presents a table comparing students’ performance between those using AI tools and those following traditional instruction. The qualities include grammar accuracy, vocabulary use, structural accuracy, and coherence. The results are based on average point differences:

Skills	AI-Assisted Instruction (Avg. Score)	Traditional Instruction (Avg. Score)
Grammar Accuracy	85	70
Vocabulary Use	80	75
Structural Accuracy	75	85
Coherence	72	80

Table 2: Students’ writing performance in AI-Assisted Vs Traditional Instruction

2.1 Quantitative insight

The findings show that students using AI tools like Chatgpt performed better in almost all writing skills, especially in grammar and reveal that AI tools improve their writing qualities and language acquisition. Notably, students who use AI tools scored 15 points higher on average in grammar accuracy which indicates their deeper engagement with grammar check application in their revision, 05 points higher on average in vocabulary use which indicates that AI tools enable their constant iterative feedback as they argue the learners’ autonomy and personalized learning of language. While the traditional approach offers differences in terms of structure or academic essay organization with 10 points high average which indicates the power to navigate the teacher’s direct instruction in preparing writing essays during sessions effectively besides 08 excessive points in coherence. This quantitative finding reinforces the argument that: “When educators thoughtfully integrate AI tools into instructional design, they do not replace the teacher but rather enhance the learning experience, creating dynamic, responsive educational environments that adapt to learners’ needs.”(Homles, et al.,2019).

2.2 Qualitative insight

Qualitative data are gathered from semi-structured interviews and observation protocols to understand students’ reflections and perceptions about how they felt during the writing process (e.g: confidence, anxiety, motivation). The interview allows open-ended responses with the use of AI tools and without; teacher feedback. The duration time takes (10-20 minutes) conducted in-person with group B. The data is based on Braun and Clarke’s (2006) thematic analysis or TPACK framework. This approach as outlined by Virginia Braun and Victoria Clarke (2006) includes mainly six key steps:

2.2.1 Familiarization with Data

Ideas are transcribed and reviewed several times; they were taken to capture initial impressions, especially regarding how students described their motivation and experiences with writing under different instructional approaches.

2.2.2 Generating Initial Codes

Initial Codes are short labels or tags that highlight important features in the data, they were coded.

Codes were applied to both teacher and student responses.

2.2.3 Searching for Themes

Related codes were grouped under broader concepts. They capture meaningful or important concepts about research questions.

2.2.4 Reviewing Themes

Themes were cross-checked against the entire dataset. Overlap between teacher and student perspectives confirmed theme coherence. Observational notes reinforced classroom behaviors reflecting these themes.

2.2.5 Defining and Naming Themes

Now, the themes were refined and clearly labeled. Each theme was defined based on data examples and related literature.

2.2.6 Producing the Report

Themes were written up and supported by participant quotes and classroom observation excerpts.

These were interpreted through relevant theoretical lenses and integrated into the findings section.

2.3 Research focus

The table below summarizes a thematic analysis that naturally leans toward group B only (the AI assisted tools group), focuses on their responses because thematic analysis is used to extract rich qualitative approach, regarding the integration of AI tools in the process of essay writing. Group A which was not integrated. Several themes emerged, including empowerment through personalized feedback, initial resistance followed by digital adaptability, and redefining the role of teacher from knowledge deliverer to facilitator.

2.4 Summary of identified themes

Theme	Description	Students reflections	Data Source	Scholarly Reference
Motivation and Engagement	Students demonstrated higher enthusiasm and active participation when using AI tools, with positive teacher feedback on classroom energy.	"I feel more motivated to write when I use AI tools, it's like having someone support me while I think"	Interviews, Observations	Ryan & Deci (2000)
Writing Progress	Technology – supported writing, develop deeper understanding of writing process	"Chatgpt helped me how to organize my ideas better than I could alone".	Interviews, Observations	Wars chuer & Grimes (2007)
Teacher Support	Despite AI use, teacher support remained crucial in guiding student understanding and use of digital tools.	"Our teacher still had to explain how to build strong arguments".	Interviews	Mishra & Koehler (2006)
Ethical concerns, digital dependency and inconsistent access to AI tools	Students occasionally struggled with understanding or trusting AI- generated content.	"I wasn't sure if what Chatgpt wrote was even correct and safe."	Interviews, Observations	Selwyn (2016)

Table 3: Thematic Analysis of Interview Responses

2.4 Discussion

2.4.1 Motivation and Engagement

Students' Views: Learners expressed greater interest and enjoyment in writing tasks when AI tools were incorporated.

Teachers' Views: Educators noticed increased student involvement and AI heightened sense of curiosity during AI-supported activities. This reflects the principles of Ryan and Deci's (2000) Self- Determination Theory, which underscores how autonomy and engagement enhance motivation. By giving students control over their drafts and revising processes.

2.4.2 Writing progress

Students' Views: Students acknowledged effective improvement in writing skills and particularly revision and organization when aided by AI.

Teachers' Views: Instructors verified an improvement in students' language proficiency. These observations align with the insights of Warschauer and Grimes (2007), who argue that technology-mediated instruction can effectively support language acquisition by providing lexical scaffolding and grammar reinforcement.

2.4.3 Role of Teacher Support

Students' Views: Learners valued the important role of teacher guidance in navigating and explaining AI tools.

Teachers' Views: Teachers emphasized the necessity of continuous pedagogical

intervention to ensure meaningful AI integration. Mishra and Koehler's (2006) TPACK framework supports this, highlighting that technological tools alone are insufficient without informed pedagogical guidance to anchor them within relevant learning contexts.

2.4.2 Identified Challenges

Students' Views: Some students reported difficulties with technical aspects and a tendency to overly-rely on AI-generated content.

Teachers' Views: Concerns were raised about diminishing critical engagement and the lack of scrutiny in verifying AI-provided information. These concerns echo Selwyn's (2016) caution against the unquestioning use of educational technology, emphasizing the importance of fostering digital literacy and reflective engagement with AI tools.

2.5 Future Recommendations: AI Integration in Education

2.5.1 Raise Awareness of AI Tools

Since AI is increasingly integrated in the educational sphere, teachers and students should be introduced to how AI works in learning without depending on it entirely. More studies then should look at how AI affects students' motivation, creativity, and independence leading to passive receivers of knowledge due to over-reliance on AI enhanced tool. Selwyn (2016) emphasizes about the importance of questioning the values that drive the implementation of digital tools in education, highlighting the necessity for thoughtful and deliberate use of technology rather than uncritical acceptance.

2.5.2 Advocate the indispensable role of teacher

The final results of the study done by (Pratama et al.,2022) show that learners assume at:” without the teacher consistent efforts, guidance and monitoring, AI should engage in schools as helpful support, not replacement for teachers”. When teachers integrate AI in providing feedback; plan for lessons structure and gamification for instance, (students watch video games and do active performance in class based on the teacher instructions). This method gives way to the blended pedagogical model to prevail: “Blended learning is not merely a combination of traditional and digital tools; it is a thoughtful integration of both to support effective learning and teaching outcomes”. (Garrison & Vaughan, 2008). Moreover, all students can access and use AI tools, this makes the learning environment more encouraging and motivating to absorb knowledge. According to(Luckin et al., 2016)“AI works best when it complements human teaching”.

2.5.3 Support Teachers Training and digital pedagogical literacy

Teachers need to invest in development programs that empower them with skills and digital literacy to keep up with new AI technologies, to support student learning and adapt teaching to individual needs.

Conclusion

To sum up, the present study investigates the transformative impact of artificial intelligence (AI) in third year level foreign-language writing classrooms, particularly in redefining teachers-learners' dynamics. It provides insights on traditional classroom interaction that has been predominantly teacher-centered, with the educator positioned as the primary authority of knowledge, while students assumed a largely passive role, confined to rote learning and textbook-bound exercises. The shift then moves to a new era where the advent of AI marks a paradigmatic transition towards more interactive, personalized, and learner-centered pedagogies. The study was conducted based on mixed-approach design. A quantitative method measures reflections and experiences of students in the process of writing an argumentative essay in second language, divided into two groups, between those using AI tools under teacher guidance and those following traditional instructions. The results demonstrate that integrating AI tools into writing instruction can significantly improve students' performance, autonomy, and engagement. Learners who worked with AI-supported feedback showed greater confidence and awareness of their writing process compared with those taught through traditional methods. While the other group who followed the traditional approach offering differences in terms of structure or essay academic organization which indicates the power to navigate the teacher direct instruction in preparing writing essays during sessions; effectively emphasizing the pivotal role of the teacher in the educational landscape. Besides, a thematic analysis that derived from a qualitative method focusing mainly on interviews and observations just after the writing task, grounded in Braun and Clarke's (2006) framework to show teachers' perceptions of their changing role with AI integration and students' experiences (group B) who engaged with AI-assisted platforms monitored by their teacher. The results were narrowed down between those who were motivated in using AI tools in improving their outcomes, and facilitating rapid access to reduce time, and those who misused engaging in AI applications without teachers' direct instruction. However, the learners strike to brainstorm their ideas because the over-reliance on digital tools that create truly passive learners. The final outcomes reveal that AI integration in the core of pedagogical settings holds significant benefits meanwhile it is not impervious to critique also addressing drawbacks and limitations that need to be but reconsidered with future expectations and recommendations for instance, there is adapted blended learning theory which allows students to learn through online modules while still benefiting from face-to-face guidance and the need for teachers to maintain AI professional training to cope with digital agency while emphasizing the continuous role of educators in progressing the educational systems.

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