

A 2D3S4L MODEL: DOES GENERATIVE AI ENHANCE ENGLISH LANGUAGE TEACHING AND LEARNING IN LESOTHO?

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Abstract

As Generative AI integration in education is gaining momentum, investigating its feasibility to enhance educational practices in Lesotho secondary schools cannot be overstated, particularly in the English language classrooms. This study investigates the integration of a generative AI to support English teaching and learning in Lesotho's secondary schools. Underpinned by TPACK and Social Constructivism, this study employed the two-dimension, three-stage, four-loop (2D3S4L) framework. This model views AI-supported instruction through two interfacing dimensions (the teacher and the student), three instructional stages (pre-class, in-class, post-class), and four pedagogical loops (analysis, design, implementation, evaluation) to examine how generative AI can possibly support teaching English across the pre-class, in-class, and post-class phases. This study adopted a mixed-methods approach, where survey and interviews were used to collect data. Data was analysed using descriptive statistics and SWOT analysis. The results reveal Generative AI tools used in teaching English, and unveiled the potential of AI to enhance English language instruction. Guided and ethical use of Generative AI is recommended for sustainability purposes.

Keywords: *Generative AI, education, 2D3S4L model, English, Lesotho.*

1. Introduction

The emergence of generative artificial intelligence (AI) has brought in a new era for education, with significant implications for English Language teaching and learning. Generative AI tools can produce text, audio, images, that are similar to those produced by humans, the use of these tools are gaining momentum for their efficacy (Bán, 2024). Their potential to change the way in which educational practices have been conducted is significant in contexts such as Lesotho (Theodorio et al., 2024; Ayanwale, 2023), where teachers and learners often face challenges of limited resources and large classroom sizes (Lekhetso, 2013). As adoption of these tools continues to grow, understanding how generative AI can enhance English Language teaching and learning in Lesotho is important. Since the introduction and growing use of tools such as ChatGPT and Copilot, generative AI has gained a lot of attention from teachers, policymakers and researchers. These tools are believed to have capacity to generate content that is relevant in specific contexts and also offer strategies of personalised learning to meet individual students' need, support assessment, and assist teachers in lesson planning (Ghimire et al., 2024; Kong & Yang, 2024; Tafazoli, 2024; Zaim et al., 2024).

Capitalising on the effective use of generative AI is beneficial. According to Kong & Wang (2024), it enables the teachers to develop learning materials that are current, and designed to meet the different learning style and needs of learners (Mittal et al., 2024). For example, teachers can use AI to plan the lesson, create study materials, grammatical exercises and engaging tasks, which in turn can save their time (Lodge et al., 2023). Nevertheless, using generative AI raises several concerns that cannot be overlooked. One major issue is the readiness of teachers to effectively integrate AI tools in their teaching practice (Wang et al., 2013). In their studies, Akanzire et al. (2025) and Moorhouse (2024) indicate that many teachers expressed their lack of confidence and lack of preparedness in bringing in generative AI into their teaching. Apart from that, challenges related to authentic and non-misleading content generated through the use of generative AI; the risk of depending on Generative AI; the potential to plagiarise and digital divide have been identified (Lodge et al., 2023). This emphasises the need to acquire relevant professional development.

In Lesotho, the potential influence of generative AI on English Language teaching and learning is promising. It is worthy to highlight that in Lesotho, English is the main language of instruction and a fundamental requirement to survive in academia and professional settings (Mphatsoane, 2024; Thamae, 2023). However, teachers frequently encounter challenges such as huge class sizes, limited access to teaching resources, and differing degrees in levels of student proficiency. In this case, generative AI provides a potential solution to these problems by making it possible to create customised teaching resources, which are tailored to meet different learners' learning styles (Anderson et al., 2023).

2. Theoretical framework

In this inquiry, the integration of generative AI in English Language teaching was studied through the philosophical lenses of two theories: Technological Pedagogical Content Knowledge (TPACK) (Mishra & Koehler, 2006) and Social Constructivism (Vygotsky, 1986). TPACK place emphasis on the importance of teachers' ability to combine their technological, pedagogical and content knowledge to create effective learning experiences (Ghimire et al., 2024; Mishra & Koehler, 2006). In this study's context, this means that English language teachers should not only understand how to use AI tools, but how to integrate them meaningfully into their lesson design and classroom practice. On the other hand, Social Constructivism advocates for learner-centred classrooms where learners are active and participate fully (Vygotsky, 1986). This suggests that use of AI should allow learners to construct knowledge through participatory activities. As mentors and facilitators, English language teachers are responsible to empower their learners to own their language development while leveraging Generative AI (Sari, 2025; Thamae & Matee, 2024). Supplementarily, a Two-Dimension, Three-Stage, Four-Loop (2D3S4L) model served as a blueprint for this study. This model is an educational framework that advocates for Diverse, Student-centred and sustainable learning across Four Learning Levels: (2D3S4L) model. This model views AI-supported instruction through two interfacing dimensions (the teacher and the student), three instructional stages (pre-class, in-class, post-class), and four pedagogical loops (analysis, design, implementation, evaluation). Contextually, it provided a structure for evaluating how generative AI tools support different English language lesson planning; personalised English language learning experiences, and established a long-term educational growth for the participants.

3. Research questions

- What generative AI tools do teachers use in English Language lesson planning, content generation, and assessment?
- What are the perceptions of teachers and learners regarding the integration of generative AI tools in teaching and learning English?

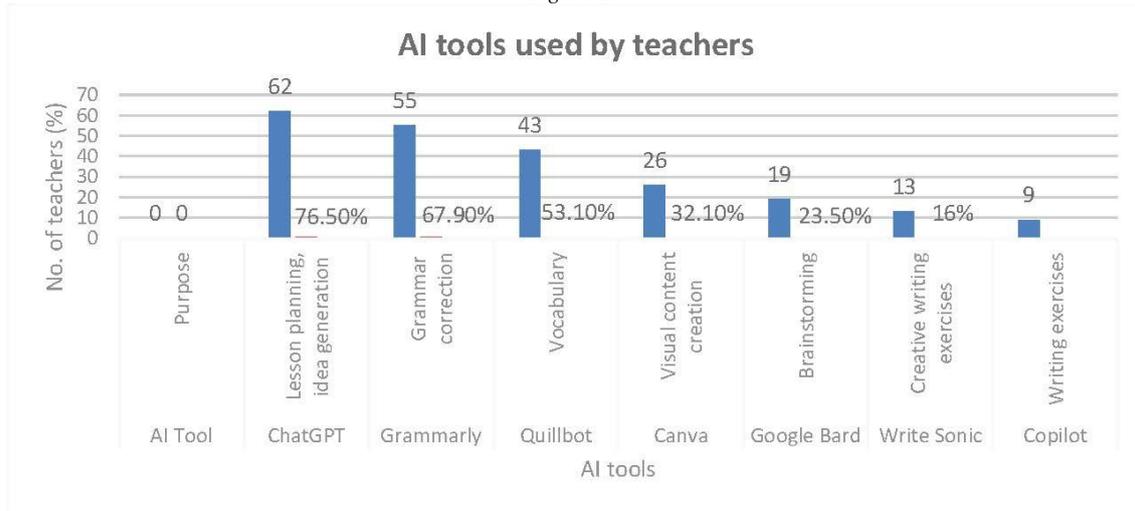
4. Methodology

This study adopted an explanatory sequential design of the mixed-methods research approach; quantitative data was collected first (Creswell & Creswell, 2017) through an administered survey (Johnson & Onwuegbuzie, 2004). Afterwards, qualitative data followed-up (Dawadi & Giri, 2021), and it was generated by virtual focus group discussion (FGD). Since the participants were geographically scattered, the FGDs were partitioned into three sessions. For Mahlangu (2024), this enables the researchers to draw rich insights from the participants' lived experiences and perceptions. English Language teachers (n=81) were purposively sampled to take part in this study; they were teachers who teach English language using Generative AI tools at both primary and secondary school levels. Additionally, English language learners (n=16) were sampled conveniently to participate in this study, a survey, through Google Forms was administered to the teachers, the collected data was analysed using descriptive statistics. Meanwhile, qualitative data was analysed thematically by SWOT analysis.

5. Results

RQ1: What generative AI tools do teachers use in English Language lesson planning, content generation, and assessment?

Figure 1.



The above graph demonstrates that most teachers (74.1%) use ChatGPT, Google Bard and Copilot to plan their different English language lessons; for content generation, 65.4% of the teachers prefer ChatGPT, Canva and Writesonic; for assessment-related tasks, they use Grammarly, Quillbot and ChatGPT (again).

RQ2: What are the perceptions of teachers and learners regarding the integration of generative AI tools in teaching and learning English?

Table 1.

SWOT categories	Perceptions
Strengths	Enhanced efficiency in teachers’ lesson planning Vocabulary support for learners
Weaknesses	Inadequate digital literacy among teachers Learners’ dependancy on AI generated content Misaligned with integrated curriculum
Opportunities	Teachers’ digital skills development Learners’ self-assessment
Threats	Misinformation Ethical concerns such as Plagiarism Internet access

The table above indicates that Generative AI tools enhance efficiency and creativity in English Language teaching and learning. However, it is acknowledged that challenges such as over-dependency on AI persist. Opportunities that come with using these tools are accompanied by threats.

6. Discussion

As per the research questions, Generative AI tools that the English language teachers in Lesotho use were established; these include but are not limited to ChatGPT, Canva, Quillbot. This buttresses Ghimire et al. (2024) and Tafazoli (2024)’s findings that use of these tools are gaining momentum in teaching English. As the 2D3S4L model indicates within the 3S dimension (pre-class, during class and post class), the teachers use these tools for different stages of their teaching. For example, the results showed that the teachers relied on the use of ChatGPT, Google Bard and Copilot to plan their different lessons (pre-class); to generate content, the English language teachers prefer ChatGPT, Canva and Writesonic (pre and during class); for assessment-related tasks, they use Grammarly, Quillbot and ChatGPT (post-class). This is supported by Mittal et al. (2024) who claim that teachers leverage these tools for different educational reasons. As a principle of Social Constructivism, an advantage of using mediated tools is that it promotes active participation in teaching and learning (Vygotsky, 1986). Other than that, SWOT analysis revealed strengths and opportunities including efficiency and personalised teaching and learning; this aligns with Zaim et al. (2024) findings that use of these tools allows customisation. Conversely, these findings

refute those of Moorhouse (2024), who claims that use of Generative AI comes with setbacks. Nonetheless, owing to the nature of SWOT analysis, weaknesses and threats were also established. The teachers and learners acknowledged that over-dependence and misinformation that comes with using these tools are disadvantageous. Akanzire et al. (2025) concurs that there are risks that emanate from use of these tools such as plagiarism. By extension, the TPACK framework suggests that this is bound to happen; in cases where teachers fail to apply their technological knowledge or lack technical skills, learners operate on their own and are bound to make mistakes.

7. Conclusion, ethical considerations and limitations

Conclusively, the SWOT analysis unearthed potential and challenges of integrating Generative AI tools in teaching English, thereby indicating that in as much as these tools may enhance pedagogical practices in this subject, guided and ethical use of these tools is needed for a balanced situation. The study ensured voluntary participation, anonymity and digital privacy in AI use. This study has some limitations, the findings are based on perceptions, which did not capture actual classroom practices. Thus, we recommend that the study of this nature should be conducted adopting action research and quasi-experimental designs.

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