

USING ARTIFICIAL INTELLIGENCE FOR ENHANCED LESSON PLANNING AND MATERIAL DEVELOPMENT: TRANSFORMING TEACHING PRACTICES

Cette étude visait à démontrer comment les enseignants en formation utilisent les outils basés sur l'intelligence artificielle (IA) dans leurs pratiques pédagogiques. L'étude a porté sur soixante-huit enseignants d'anglais en formation initiale, en troisième année au département d'enseignement des langues étrangères d'une université d'État. L'analyse s'est concentrée sur les outils d'intelligence artificielle utilisés par les participants dans leurs plans de cours lors du micro-enseignement dans le cadre du cours obligatoire « Teaching Language Skills » (enseignement des compétences linguistiques). Les résultats indiquent que l'outil d'IA a aidé les participants à générer du contenu, notamment en leur permettant de lancer des idées, de développer du matériel et des activités attrayants et de gagner du temps pour créer et simplifier le matériel. Cependant, plusieurs questions ont été soulevées concernant la qualité du contenu et l'éthique.

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Introduction

The rapid developments and the emergence of new tools in artificial intelligence (AI) have begun to reshape various sectors, especially education. AI tools are integrated into educational practices and support administrative tasks, enhancing classroom engagement and language learning practices (Ahn et al., 2024; Bonner et al., 2023; Kılıçkaya, 2023). There has also been a growing public interest and increase in AI use in teaching and learning (Cardona et al., 2023; Walton Family Foundation, 2024). In addition to language learning, AI has the potential in language teaching to help teachers design lessons based on the needs and levels of the learners. This short article explores how pre-service language teachers used AI tools as a source of material development in their lesson planning in a teaching methodology course.

AI integration

There is a plethora of research on AI in education, which investigates how AI tools can support teaching and learning, such as producing texts regarding lesson planning and assessment (e.g., Ahn et al., 2024; Kic-Drgas & Kılıçkaya, 2024). The expansion and the rapid emergence of AI tools with various features have led to integrating these tools into language teaching and learning in various aspects, such as writing, chatbots, and machine translation (e.g., Godwin-Jones et al., 2024; Hockly, 2024). It is not an exaggeration to say that there is now an AI-based tool for almost any teacher and learner-related task in the field, from creating images to lesson planning and generation (e.g., Kılıçkaya, 2023). In line with the expansion of AI and AI tools, there is a growing body of research on the potential and uses of AI that can help teachers with tasks such as creating materials that will allow them to focus more on instructional design and student engagement (Dizon, 2024). For example,

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Hong (2023) discusses how ChatGPT can be used as a tool for learning and to support learning by practicing the four skills in a language and support teaching, such as creating lesson plans and exercises. In addition to these promising benefits, it is also highlighted that the drawbacks of using AI tools such as ChatGPT include plagiarism and the lack of accuracy of the outputs (Kohnke et al., 2023; Sparks et al. (2024).

The current study focuses on how pre-service language teachers benefited from AI tools in their lesson plans for micro-teaching in a required skills course at a state university.

Methodology

The research design of the study consisted of a content analysis of the lesson plans as well as reflective journals and peer feedback created by the participants of the Teaching Language Skills II course for pre-service language teachers, who were enrolled in the Department of Foreign Language Education at a state university in Türkiye. In this course, the participants were encouraged, but not forced, to use AI tools to create materials as input in their lesson plans, which they would use for micro-teaching.

Participants

The participants of the study were 68 pre-service English teachers in their third year at the Department of Foreign Language Education. Of the participants, 29 were male, while the rest were female. The participants' ages were between 21 and 25.

Data collection

At the beginning of the semester, the participants were introduced to the course, during which they would discuss various ways to teach grammar, reading, and writing and practice these language components and skills via micro-teaching sessions. The participants were also asked to form groups of 4 (or 3, exceptionally, subject to the lecturer's approval) to prepare 35-minute microteaching in the skills and language components presented and discussed in the course. The participants were also required to submit the revised and improved version of their lesson plan during the final exam based on the feedback provided by their

classmates and the lecturer. As for the policy on AI use, the researcher informed the participants that their use of AI tools (e.g., ChatGPT, Magic School and Tweek) was permitted and encouraged, but not mandatory, in their lesson planning for the following activities: Generating ideas, editing, and improving ideas; drafting outlines to organize their thoughts; preparing and simplifying texts for classroom activities; creating audio-visual aids; grammar and style checking. The participants were also asked to indicate their work and the output created by any AI tool.

The microteaching sessions aimed to provide the participants with a practical setting for implementing lesson plans, allowing both the lecturer and the participants to observe the effectiveness of their lesson plans and the tools they used in practice. Following these sessions, students were asked to submit reflective journals detailing their own experiences with lesson planning and AI as well as peer feedback, which provided qualitative data on the perceived benefits and limitations of AI in lesson planning.

Data analysis

The data, consisting of the lesson plans, peer feedback forms based on the microteaching and reflective journals, were subject to content analysis in order to investigate the participants' use of AI tools in lesson planning and the potential benefits and challenge. The data was manually classified according to the codes and the categories by following the method by Saldaña (2009).

Benefits regarding content creation uses made	Benefits regarding efficiency and time management	Challenges and limitations
<ul style="list-style-type: none"> – Brainstorming of lesson activities: <ul style="list-style-type: none"> • Role play activities for EFL classrooms • Culturally relevant reading materials • as leveled texts and resources (e.g., Diffit) – AI tools (e.g., Dall-E, Suno) were used to create interactive visuals and multimedia resources. – AI-based routine tasks (e.g., grammar and language check, formatting). 	<ul style="list-style-type: none"> – Easy to use – Saving time and effort to allow for reflection on pedagogical aspects 	<ul style="list-style-type: none"> – Quality of Output: AI-generated content must often be checked for accuracy and content. – Cost: Some advanced features require a paid (expensive) version. – Ethical Concerns: Issues of originality and potential plagiarism regarding AI-generated content. – Lack of clear guidelines and sufficient support regarding the use of AI, academic integrity

Table 1
Summary of the outcomes of the content analysis

Findings and Discussion

The content analysis of the lesson plans, the feedback and the reflective journals produced during the *Teaching Language Skills* course yielded two key categories of benefits as well as a set of potential challenges of the use of AI tools used for lesson planning (Table 1).

The table summarizes the outcome of the content analysis deploying three evaluation criteria: 1. Benefits regarding content creation: uses made, 2. Benefits regarding efficiency and time management, and 3. Challenges and limitations associated with integrating artificial intelligence (AI) tools in lesson plans. The use of tools such as ChatGPT exemplified how AI facilitated brainstorming and content creation by enriching lesson plans and educational resources, e.g., role-play scenarios. It was also observed that the role of AI in content creation extended beyond text production. Tools such as DALL-E and Suno enabled the production of interactive visuals and multimedia resources such as songs for learner engagement. Most participants used AI tools like Diffit to benefit from differentiated instruction by providing leveled texts and resources for learners' varying proficiency levels. In addition to content creation, another significant benefit was the efficiency and time management afforded by AI tools. The user-friendly nature of these applications simplified routine educational tasks, such as grammar checking and language improvement. By automating these basic,

yet time-consuming tasks and creating exercises, AI saved participants time and effort.

However, adopting AI in these lesson plans also had its challenges and limitations. One of the primary concerns was the need for the participants to verify the appropriateness and quality of AI-generated content. While these tools could generate content such as exercises and simplified texts, they did not always guarantee appropriate and quality content, necessitating careful oversight. Furthermore, the cost associated with advanced AI features posed a barrier to access, as some functionalities required the paid versions. Ethical considerations also played a critical role in the discussion surrounding the participants' activities, such as the issues of originality and plagiarism regarding AI-generated content.

The findings indicated that the most notable benefit of integrating AI in lesson plans was to generate ideas and materials for activities. Participants frequently reported that AI tools, particularly ChatGPT, helped them create lesson activities and exercises. One example included the AI-assisted development of role-play activities for micro-teaching, which simulated real-life communication challenges in EFL classrooms, enabling students to practice their speaking and problem-solving skills within a controlled environment. The following prompt was used to create a role-play:

Create a role-play scenario for A2-level English learners. The scenario should involve one learner playing a lost traveler at an airport who needs to ask for directions and another playing an airport staff member who gives simple directions and asks for information about the flight. The dialogue should include polite questions, basic directions (e.g., 'turn left,' 'go straight'), and simple responses suitable for A2-level learners." ChatGPT produced the following output:

Role-play Example:

"At the Airport – Asking for Directions"

Scenario:

You are at the airport and cannot find the gate for your flight. You need to

ask an airport staff member for directions. The staff member will give directions and ask questions about your flight.

Roles:

1. Student A (Traveler): You are lost in the airport and need to find your gate. You speak basic English and need help from the airport staff.
2. Student B (Airport Staff): You work at the airport information desk. You need to ask travelers for flight details (e.g., gate number and flight time) and give them simple directions.

Instructions:

- Student A should ask polite questions like: “Excuse me, where is Gate 12?” or “Can you help me find my flight to London?”
- Student B should respond with clear, simple directions: “Go straight and turn left.” They should also ask for more information: “What time is your flight?” or “Which airline are you flying with?”

Similarly, AI was used to create linguistically relevant reading materials tailored to students’ interests, backgrounds, and levels in the lesson plan. One participant in his reflective journal indicated that he could level the linguistically complex text to the learners’ level (A2 as indicated in the lesson plan) and added that by using the AI tool (Diffit), he and his group members quickly adapted the text of the reading passage that they had taken from a coursebook and customized questions and vocabulary by checking the vocabulary and grammar.

The journals and lesson plans showed that the participants employed tools like Dall-E, Twee, and MagicSchool to generate input for learners, such as interactive visuals and quizzes, to be incorporated into lesson plans. The participants believed that this use of AI could enrich their lesson content. In one of the lesson plans, for example, the participants used AI-generated images to present various grammar rules to offer concrete representations of abstract concepts, which would otherwise not have been found on the internet or would have required much time. These examples and specific uses of AI in lesson plans and reflective journals underscore the role of AI in producing materials for language teaching

and customizing these materials for different levels. However, teachers’ expertise was considered important in checking the content, and these tools cannot replace the critical posture of teachers.

Using AI tools in lesson planning also provided several advantages in checking the content for grammar and language enhancement. In this way, participants stated that they obtained more time for pedagogical reflection and refinement of their lesson plans, such as selecting appropriate teaching strategies and exercises. This was found particularly valuable given the time constraints of the course. The following prompt was used to create a vocabulary activity:

Create a matching activity for A1-level learners in an EFL classroom. On the left side, list personality adjectives such as “punctual,” “angry,” and “helpful.” On the right side, provide clear and straightforward definitions for each adjective. Make sure the definitions are accessible to A1-level learners. The task should challenge students to match each adjective with its correct definition. Ensure that the definitions are distinct enough to avoid confusion and that the language aligns with their proficiency level. Include about 8-10 adjectives in total.

Based on this prompt, the following exercise was created.

Matching Activity:

Instructions: Match each word on the left with its correct definition on the right. Draw a line to connect the word and its meaning.

Adjectives	Definitions
1. Punctual	a) Nice and easy to talk to
2. Angry	b) Feels nervous when talking to new people
3. Helpful	c) Not afraid, ready to do dangerous things
4. Kind	d) Makes people laugh
5. Lazy	e) Does not want to work or do anything
6. Funny	f) Nice and caring
7. Quiet	g) Likes to help others
8. Friendly	h) Feeling very mad
9. Brave	i) Doesn't talk much
10. Shy	j) Always on time

Despite these benefits, using AI output in lesson planning also presented several challenges, as indicated by the participants. One limitation was the quality of the output generated by AI tools, which, according to the participants, often lacked depth and required content checking. This issue highlighted that AI tools could help the participants in materials design in various ways, such as text creation and exercise; however, it would not replace the need for teachers' critical thinking and expertise to check the appropriateness of the content.

The participants also voiced ethical concerns regarding the originality of the output generated by AI tools and potential plagiarism, as AI tools might benefit from the information available on the Internet. They were concerned about the authorship and originality of the created activities and lesson plans. These considerations emphasized the need for clear guidelines and policies set by the institutions on the responsible use of AI in educational settings. They underscored the importance of maintaining academic integrity.

Conclusion and suggestions

This study may indicate the potential to revolutionize lesson planning by offering pre-service teachers innovative tools to enhance their instructional practices. **As suggested in the current study, AI can support teachers in generating creative ideas, developing engaging materials, and saving time on creating and simplifying materials. However, integrating AI in lesson planning and materials creation also requires careful consideration of content as well as of ethical aspects.** AI-generated content must be carefully checked and critically assessed, which may require that both learners and teachers receive the necessary support (cfr. e.g., Baradel; Alloatti & Montemarano; Cotelli Kureth et al.; Ferris et al., this issue). Further research can be conducted on how access to AI-based tools (or the lack thereof) might affect the digital divide among learners. Although there are AI-based tools that offer free access to certain features, in the same classroom some learners might have access to paid versions with full features, while others may only have limited access.

Declaration of the use of generative AI

The manuscript has been proofread for language issues as well as the organization of the paper using Grammarly and ChatGPT.

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