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INTEGRATION OF AI TOOLS IN TEACHING GRAMMAR

The article explores the integration of AI tools in teaching grammar within the context of language education. It discusses the challenges and opportunities of incorporating AI-driven technologies into grammar instruction.

Focusing on Wayne Holmes' work it highlights the importance of critically examining AI's role in teaching and learning. Holmes and Tuomi's taxonomy categorizes AI applications into institution-focused, student-focused, and teacher-focused, emphasizing the diverse possibilities and challenges they present. The article specifically analyzes teacher-focused AI applications, emphasizing their role in empowering educators to create innovative exercises and enhance teaching practices.

The main research material of the article revolves around the practical implementation of AI tools in grammar teaching, particularly focusing on ESL students. Utilizing the 3P learning model – Presentation, Practice, and Production – the article outlines a structured approach to lesson planning. Through the integration of AI-driven tools such as ChatGPT 3.5, Quizgecko, LearnCube, Taskade AI, and HomeworkAI, various tasks are introduced to facilitate different stages of the learning process. These tasks include interactive exercises, virtual classroom management, content creation, and homework assignment, all aimed at enhancing grammar instruction and student engagement.

The article highlights the benefits of AI integration in grammar education, emphasizing its potential to streamline teaching processes, foster student learning, and make the educational experience more interactive and engaging. Despite some limitations, such as restricted access to certain tools without subscription, the overall conclusion is that AI-driven tools have a positive impact on the educational process by making it more creative, efficient, and enjoyable for both teachers and students.

Key words: *AI-driven tools, ESL students, taxonomy, teacher-focused AIED, the 3P learning model.*

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ІНТЕГРАЦІЯ ІНСТРУМЕНТІВ ШТУЧНОГО ІНТЕЛЕКТУ У ВИКЛАДАННЯ ГРАМАТИКИ

У статті досліджується інтеграція інструментів штучного інтелекту у викладання граматики в контексті мовної освіти. У ній обговорюються виклики та можливості впровадження технологій, керованих штучним інтелектом, у навчання граматики.

Зосереджуючись на роботі Вейна Холмса, вона підкреслює важливість критичного підходу до ролі ШІ у викладанні та навчанні. Таксономія Холмса і Туомі поділяє додатки зі штучним інтелектом на орієнтовані на навчальні заклади, орієнтовані на студентів і орієнтовані на викладачів, підкреслюючи різноманітні можливості та виклики, які вони створюють. У статті детально проаналізовано додатки штучного інтелекту, орієнтовані на вчителя, та підкреслено їхню роль у розширенні можливостей педагогів створювати інноваційні вправи та вдосконалювати методiku викладання.

Основний дослідницький матеріал статті стосується практичного застосування інструментів штучного інтелекту у викладанні граматики, зокрема для студентів, які вивчають англійську мову як іноземну. Використовуючи модель навчання 3P (*Presentation, Practice, and Production*), у статті викладено структурований підхід до планування уроку. Завдяки інтеграції інструментів зі штучним інтелектом, таких як *ChatGPT 3.5, Quizgecko, LearnCube, Taskade AI* та *HomeworkAI*, впроваджуються різноманітні завдання для полегшення різних етапів навчального процесу. Ці завдання включають інтерактивні вправи, управління віртуальним класом, створення контенту та домашніх завдань, спрямованих на покращення викладання граматики та залучення студентів.

У статті висвітлюються переваги інтеграції штучного інтелекту в процес навчання граматики, підкреслюється його потенціал для впорядкування навчального процесу, стимулювання навчання учнів і надання освітньому процесу більш інтерактивного та цікавого характеру. Незважаючи на деякі обмеження, такі як обмежений доступ до певних інструментів без передплати, загальний висновок полягає в тому, що інструменти на основі штучного інтелекту позитивно впливають на освітній процес, роблячи його більш творчим, ефективним і цікавим як для вчителів, так і для учнів.

Ключові слова: викладання та навчання за допомогою штучного інтелекту, інструменти зі штучним інтелектом, модель навчання 3P, студенти, які вивчають англійську як другу мову, таксономія.

Statement of the problem in a general form and its connection with important scientific or practical tasks.

The integration of Artificial Intelligence (AI) tools in language education, particularly in the teaching of grammar, presents a multifaceted set of challenges and opportunities. As society increasingly relies on technology for various aspects of daily life, education has also embraced digital tools to enhance teaching and learning processes. Within the realm of language education, the teaching of grammar holds particular significance as it forms the foundation for effective communication and language proficiency. However, traditional approaches to grammar instruction often face limitations in terms of individualization, feedback provision, and adaptability to diverse learner needs.

The advent of AI technologies offers promising solutions to address these challenges by providing personalized learning experiences, adaptive feedback mechanisms, and innovative pedagogical approaches. AI-driven tools such as natural language processing (NLP) algorithms, machine learning models, and chatbots have demonstrated potential in facilitating grammar instruction by offering tailored exercises, instant feedback, and interactive learning environments. Moreover, the integration of AI in grammar teaching aligns with broader educational goals of fostering critical thinking, problem-solving skills, and digital literacy among learners.

Despite the potential benefits, the effective integration of AI tools in teaching grammar requires addressing various scientific and practical tasks. These include understanding the pedagogical implications of AI technologies, ensuring equitable access to digital resources, addressing ethical considerations such as data privacy and algorithmic bias, and provid-

ing adequate training and support for educators to use AI tools effectively.

Analysis of the latest research and publications.

Before delving into our analysis of the integration of AI tools in grammar teaching, we analysed some recent works of the researchers in the field of AI and education, such as “Artificial Intelligence in Higher Education: A Roadmap and Future Perspectives” (Holmes et al, 2021), “Teachers, AI Grammar Checkers, and the Newest Literacies: Emending Writing Pedagogy and Assessment” (Tonicic, 2020), “Incorporating AI in foreign language education: An investigation into ChatGPT’s effect on foreign language learners” (Karatas et al, 2024), and focused our attention on the work “The Unintended Consequences of Artificial Intelligence and Education” by Wayne Holmes (Holmes, 2023). He points out that in exploring the integration of AI tools in teaching, it is essential to approach the subject with a critical perspective, acknowledging the intricate relationship between AI and education (Miao et al, 2021). To facilitate comprehension, it proves beneficial to delineate between two distinct yet interrelated ingredients: the application of AI in education, which is called teaching and learning with AI (AIED), and teaching and learning about AI, (AI Literacy). This article focuses primarily on the former, delving into the ways AI augments teaching and learning processes.

Holmes and Tuomi (Holmes et al, 2022) present a taxonomy delineating more than twenty variations of AIED, categorized into institution-focused, student-focused, and teacher-focused applications. Each category offers unique possibilities and challenges, with some applications raising ethical, pedagogical, or educational concerns.

In our article we analysed teacher-focused AIED, which aims to assist educators and not to just supplant their roles. This approach empowers teachers to use AI tools in creating innovative exercises that extend beyond traditional instructional materials.

By incorporating AI into grammar lessons, English language educators can explore modal verbs expressing necessity and absence of necessity across diverse contexts. This article seeks to elucidate how such tools can enhance pedagogical practices, fostering deeper engagement and learning outcomes among students.

Formulation of the goals of the article, setting of tasks. This paper aims to explore the integration of AI tools in teaching grammar within the context of the PPP method, in particular to work out a lesson plan with the tasks, generated with the help of AI-driven tools.

Presentation of the main research material. The theoretical analysis in this field allows us to assume that the implementation of AI tools in grammar class would be of great benefit to teachers. Having tried out some of the programs we managed to develop a lesson plan for the ESL students, that is based on the 3P learning model. This model encompasses three core elements Presentation, Practice, and Production. As the PPP method is widely used for teaching grammar, we decided to build our lesson according to its principles. In the first stage we will introduce new grammar material to the students through explanations and examples. In the second – students will be engaged in exercises to reinforce understanding, and in the third – students are encouraged to apply the newly learned grammar rules in authentic contexts, such as writing essays, engaging in debates, or completing creative exercises. This allows them to internalize the grammar structures and use them accurately and fluently in real-life communication. The emphasis is on students independently using the grammar in meaningful ways to express themselves effectively.

Firstly, we addressed an AI-driven tool based on natural language processing (NLP) technology – ChatGPT 3.5. Our request was the following:

<Hi Chat! Could you act as an ESL teacher and suggest a lesson plan? The topic is modal verbs that are contrasted in the meaning of “necessity” – “absence of necessity”. Use the 3P method in teaching. >

The response was detailed, contained the timing and even examples of the tasks:

<Sure! Here’s a lesson plan using the 3P method (Presentation, Practice, Production) to teach modal verbs contrasting necessity and absence of necessity:

Lesson Plan: Modal Verbs Contrasting Necessity

Objective: Students will understand and correctly use modal verbs expressing necessity and absence of necessity in various contexts.

Level: Intermediate to Advanced ESL learners

Duration: 60 minutes

Materials Needed:

- Whiteboard or flip chart
- Markers
- Handouts with exercises (optional)

1. Presentation (20 minutes):

Warm-up: Begin with a discussion about responsibilities and obligations. Ask students about things they must do in their daily lives and things they don’t have to do.

Introduce the concept of modal verbs expressing necessity and absence of necessity (must, have to, need to for necessity; don’t have to, don’t need to for absence of necessity).

Write examples on the board for each category:

Necessity: “You must study for the exam.”

Absence of necessity: “You don’t have to study tonight.”

Provide explanations and clarify any questions.

Drill pronunciation and intonation of the modal verbs.

2. Practice (20 minutes):

Sentence Completion: Give students sentences with gaps where they need to choose the correct modal verb expressing necessity or absence of necessity. For example:

I ___ finish this report by tomorrow.

You ___ bring an umbrella. It’s not raining today.

She ___ go to the doctor. She’s feeling fine.

(Answers: 1. must; 2. don’t have to; 3. doesn’t need to)

Role-plays: Pair students and give them scenarios where they must decide if something is necessary or not, and respond accordingly. For example:

Student A: You need to finish your homework by tomorrow.

Student B: I don’t have to finish it tonight, do I?

Group Discussion: Divide students into groups and give them different scenarios. They discuss whether the actions are necessary or not and why. Then, they report their findings to the class.

3. Production (20 minutes):

Writing Task: Ask students to write a short paragraph describing a typical day for them, using modal verbs expressing necessity and absence of necessity.

Speaking Task: In pairs, students share their paragraphs and discuss any differences in their daily routines regarding what they must do and what they

don't have to do. Encourage them to ask follow-up questions.

Closure (5 minutes):

Recap the lesson by reviewing key points about modal verbs expressing necessity and absence of necessity.

Address any remaining questions or concerns.

Homework (optional):

Assign exercises from the textbook or provide additional practice worksheets focusing on modal verbs expressing necessity and absence of necessity.

Note: Throughout the lesson, provide feedback and correction as needed to ensure students grasp the concepts effectively. Encourage active participation and engagement from all students.>

Secondly, having a so-called “frame” of the lesson we decided to add the tasks for the second stage – Practice. On this purpose we used such AI-driven tool as *Quizgecko*, *LearnCube* and *Taskade AI*.

Quizgecko is a great platform that can generate quizzes, exams and tests. Using it in your class you have the ability to export content, embed it, and distribute quizzes online for anyone to access. Afterwards, you can receive reports and statistics detailing the outcomes. This platform gives you the option to generate multiple choice, true or false, short answer, and fill-in-the-blank questions using any text. After generating the initial set of questions, you can further expand your quiz by clicking “Add” to include additional questions. It also has a large set of sample quiz questions on different subjects and topics.

For our lesson we've chosen the topic “modal verbs: expressing necessity and absence of necessity”. As for the question type, we chose “short answer”, level of difficulty – “medium”. As a result,

we've got 8 theoretical questions with the slots for answers (<https://quizgecko.com/quiz/modal-verbs-expressing-necessity-and-absence-of-necessity-v2ev6j>). We consider this task to be a great variant to drill the theory, presented at the beginning of the lesson.

LearnCube is another great platform, which is a virtual classroom where you can add the students and work during the lesson, using previously created tasks on a whiteboard. It also offers features such as live video and audio support, interactive whiteboards, text chat, scheduling tools, media sharing capabilities, and online assessment features like quizzes and tests. *LearnCube* is designed to facilitate effective online education by providing a range of tools for communication, collaboration, and content delivery. To create the task, we added the needed information into the slots: title, description, category, language and level. Then we chose the option “include answer key” to check the correctness. After the task is ready, it's possible to paste it on the whiteboard. As it's a virtual class you can't share it with the link, only invite students.

Taskade AI is a flexible tool designed to aid in writing, editing, and proofreading various documents within the project editor. It also serves as a platform for brainstorming ideas, arranging and ranking tasks, and condensing lengthy content, all facilitated through user-friendly AI commands. It's possible to communicate with the AI Assistant that can be of great help as grammar exercises generator.

We typed the idea of the task: < *Write a story about pastime using the modal verbs in the meanings of necessity and absence of necessity – must, have to, be to, need. The Level of English is B1.*>

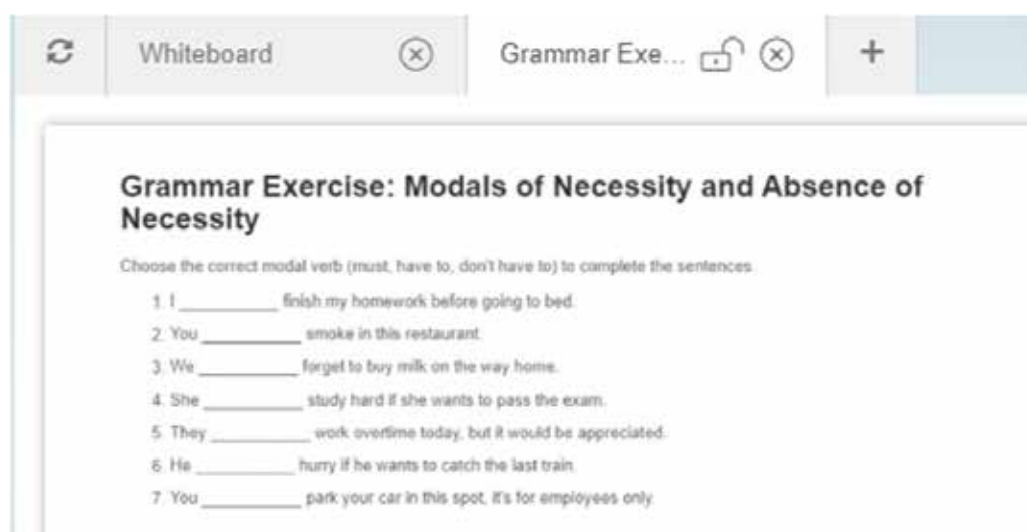


Table 1. The example of the task, generated by LearnCube

The response was the following:

<Taskade AI

Here is a story about pastime using modal verbs in the meanings of necessity and absence of necessity, incorporating 'must,' 'have to,' 'be to,' and 'need' at a B1 English level:

Title: A Camping Adventure

Once upon a time, Sarah and her friends decided to go camping in the woods. They knew they _____ choose a safe spot to set up their tent, so they carefully selected a flat area away from the river.

Sarah suggested, "We _____ start a campfire to cook our meals. We _____ collect dry wood and use our camping stove as a backup." Her friends agreed and went to gather wood for the fire.

As they prepared for the night, Sarah realized they _____ bring flashlights. "It will get dark soon, and we _____ see our way around the campsite," she said. The group quickly searched their bags and found the flashlights.

While they were cooking dinner, Sarah noticed that they _____ hurry to finish before it got too late. "We _____ eat before it gets dark, or we might attract unwanted nighttime visitors," she warned.

After dinner, they sat around the campfire telling stories. Suddenly, Sarah exclaimed, "Look at the stars! We _____ stargaze tonight. It's so beautiful." They all gazed up at the night sky in awe.

As the night grew colder, Sarah said, "We _____ stay warm. Let's put on extra layers and gather more firewood for the night." They followed her advice and huddled closer to the campfire.

Eventually, it was time to sleep. Sarah reminded everyone, "We _____ be quiet when we go to bed.

Noise travels far in the woods, and we _____ respect the peacefulness of nature."

With the crackling fire beside them, Sarah and her friends nestled into their sleeping bags, feeling grateful for their adventure in the great outdoors.

This story showcases the use of modal verbs 'must,' 'have to,' 'need,' and 'be to' in the context of a camping trip, reflecting both necessity and the absence of necessity, suitable for a B1 English level. Feel free to adapt the story further as needed.

So, we even got the explanation to the task about the modal verbs that are to be used in brackets. Afterwards, we asked to provide us with keys to the task, and we got the text with the correct answers, used in bold. To use the task, you have only one option – first, to copy it, and then to paste in the document.

Thirdly, we managed to find the tool, that can produce homework for the learners – HomeworkAI. This tool is very simple in usage but very helpful. To make up a task you need to type in the exercise subject, language and the difficulty level.

When the task is ready, you can share it via the link (<http://homeworkai.com.br/contents/view/236eea08-e6c5-4385-a7fb-b793fcfc2bc8/c84b5b10-b56e-4adb-8237-dc8fe3d72256>).

As a tool for the home assignment, it's very informative, as it contains a brief theoretical part with the examples and a quiz. After completing the task, it gives you the right answers.

These tools are definitely beneficial for the educational process as they help teachers not only to save up time, but make the learning process more creative and entertaining. The only disadvantage that we've found is that to generate more tasks you need

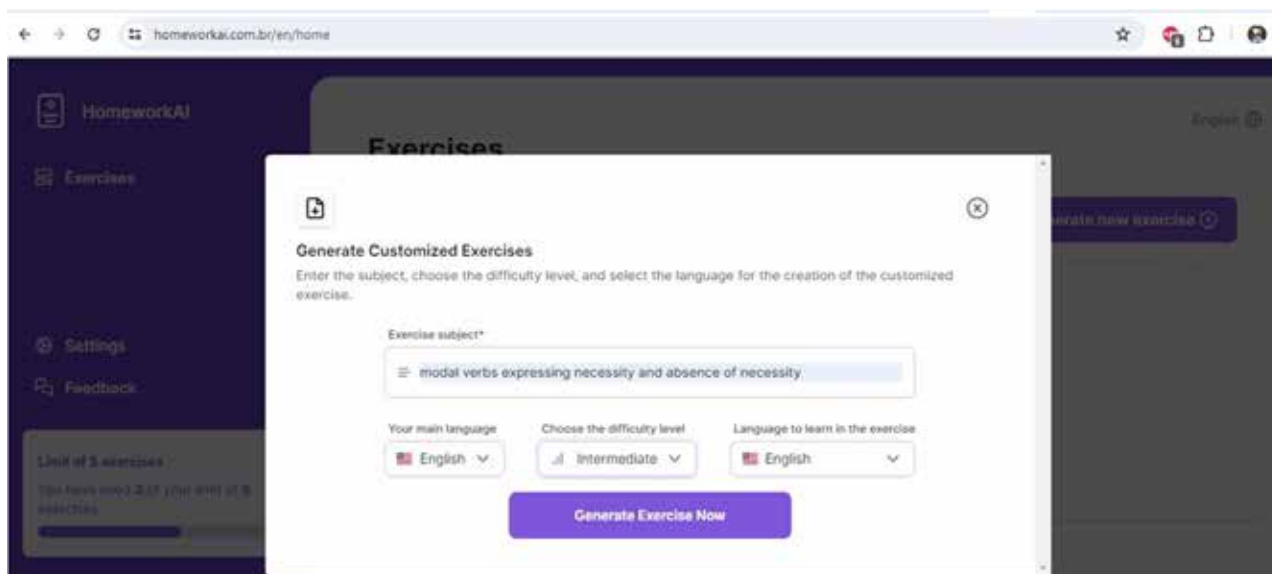


Table 2. The interface of the tool HomeworkAI

to pay for the tool on a monthly or yearly basis. If using them for free, you have a limited number of tasks.

Conclusions from this study and prospects for further research in this direction. The article sets out to explore the utilization of AI tools in teaching grammar within the context of language education, with a specific focus on devising a lesson plan integrated with tasks generated through AI assistance. Leveraging the 3P learning model (Presentation, Practice, Production), the lesson plan is structured to facilitate the understanding and application of gram-

mar rules among ESL students. The main research material presents an AI-driven approach, with ChatGPT 3.5 providing a detailed lesson plan encompassing timing and task examples, tailored for teaching modal verbs contrasting necessity and absence of necessity. Additionally, AI tools like Quizgecko, LearnCube, Taskade AI, and HomeworkAI are introduced as valuable aids in generating practice tasks, virtual classroom management, content creation, and homework assignment, respectively, further enriching the grammar learning experience for students.

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