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AI-based learning: a new dimension in language teaching

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Abstract: The emergence of artificial intelligence (AI) has brought a significant paradigm shift in education, particularly in language teaching. This article demonstrates how AI can be effectively integrated into language instruction, opening new dimensions for personalized learning and competency development. It emphasizes not only the enhancement of language skills but also the development of other workforce-relevant competencies and skills, taking into account the European Qualifications Framework (EQF). Through AI-based learning, students become active participants in their own learning process, while also improving their critical thinking, problem-solving abilities, and technological affinity. The aim of this article is to explore the methodological possibilities and benefits of AI-based learning in language education and to highlight how AI fosters students' autonomy and creativity.

Key words: AI, language teaching, skills, develop skills, AI-based learning

1. Introduction: AI in the education

In 2019, the Beijing Consensus[2] issued a forward-looking recommendation for countries to establish comprehensive guidelines for the integration of artificial intelligence (AI) into their educational systems. This call for action highlighted the potential of AI to revolutionize teaching and learning processes across all levels of education. Supporting this, a detailed Chinese study[3] has demonstrated the multifaceted benefits of AI in education, revealing that it not only enhances student motivation but also significantly improves academic performance across various subjects. The study found that AI-driven educational tools can adapt to individual learning styles, offering personalized learning experiences that foster deeper engagement with the material. These AI systems provide instant feedback, adjust to the pace of learning, and create a more interactive and dynamic classroom environment, leading to higher retention rates and improved problem-solving skills. Furthermore, the study underscores that AI can reduce educational inequalities by providing access to high-quality resources and teaching, even in underprivileged areas.

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[2] https://unesdoc.unesco.org/ark:/48223/pf0000368303 last download: 17th August 2024

[3] LI Kaj Fu: AI 2041 Ten Vision for our Future pp. 147 (Hungarian translation)

As highlited by Nagy[4], the use of AI in education holds promise for both high schools and even elementary schools, offering significant support in learning. However, Nagy also emphasizes the importance of carefully considering the purpose and extent to which students rely on AI. While it undeniably stimulates imagination and creativity, unchecked reliance on AI risks fostering passivity and dependency. Therefore, balancing AI integration with creative and hands-on activities is crucial, particularly in secondary education, as these experiences play a vital role in socialization and personal development.

2. Method

According to my experiences, many developers approach AI in education primarily through the development of specialized educational applications. Over the past few years, there has been a notable increase in personalized language learning apps, as well as a proliferation of tools designed to support the acquisition of scientific knowledge, including modeling and simulations.

Nevertheless, I believe that as educators, we must evolve and adapt to these technological advancements in several important ways.

First, it is essential to recognize the rapidly shifting role of teachers in an increasingly technology-driven educational landscape and actively adjust to these new dynamics. As AI becomes more integrated into classrooms, we must consider not only the evolving demands of the labor market but also anticipate future skill sets, preparing our students to navigate and thrive in this changing environment. Furthermore, rather than perceiving AI as a potential source of academic dishonesty, it should be embraced, legitimized, and woven into the fabric of everyday educational practices in a meaningful way.

Integrating AI-based applications into the classroom must extend beyond simply streamlining teaching tasks—such as generating lesson plans or grading. Instead, educators should design constructive, critical-thinking tasks for students that not only prevent skill erosion but also foster deeper engagement. These tasks should encourage students to explore the full potential and limitations of AI platforms, stay informed about ongoing technological developments, and become adept at effectively interacting with AI systems in a manner that enhances their learning experience.

Moreover, nurturing critical thinking skills remains a fundamental priority in this context. Educators must actively highlight the risks and challenges posed by AI, encouraging students to approach AI-generated content with a critical mindset, always verifying its accuracy. Ultimately, our goal should be to cultivate in students the ability to synergize AI's capabilities with their own knowledge, creativity and experience, enabling them to develop thoughtful and well-rounded solutions to complex problems.

Building on the aforementioned theoretical frameworks, I implemented AI-based language instruction in the English lessons I deliver. The intervention was carried out at Kodály Zoltán Primary and Secondary School, involving students from grades 3, 4, 5, 6, 7, 9, and 11 (from the age of 9 to 17). A total of 90 students, evenly distributed between boy and girl students, took part in the experiment. Most kids had four English lessons per week, with the exception of those in the 3rd and 4th grades, who were provided with two lessons per week.

[4] Nagy Konrád Ákos (2023): „A legjobb a globális szabályozás lenne". Világpolitika és a Közgazdaságtan, 2 (4). pp. 66-68.

(„The best solution would be global regulation." World Politics and Economics)

The integration of AI was systematically incorporated into the instructional process at least once per week during in-class sessions, supplemented by its use in carefully structured homework assignments. My approach also involved encouraging students to engage with AI tools for homework tasks, which necessitated a substantial rethinking of traditional homework practices. This shift towards AI-enhanced language learning represents a significant pedagogical innovation, aimed at not only enhancing linguistic competence but also fostering critical engagement with AI technologies in a controlled, educational context. Such an approach underscores the need for a nuanced understanding of how AI can be leveraged to complement traditional instructional methods while promoting deeper cognitive engagement among students.

Figure 1 AI-based learning during the English lesson in 2023.

2. What is AI-based learning?

AI-based learning refers to a teaching approach where, alongside the teacher and the student, artificial intelligence (AI) becomes a tool in the educational process. In this model, the instructional work is enhanced by AI, facilitating not only personalized learning but also integrating systematic competence and personality development tasks. Interactions occur not only between teacher and student or between students but within a triad of student-teacher-AI. Communication in AI-based learning involves three participants: teacher-AI, student-AI, and possibly back to the teacher, and can be both verbal and written. Later in this article, I will explore voice-based AI applications, demonstrating the potential for verbal communication as well.

In terms of student-centeredness, this method allows the teacher to step back entirely, giving full space for the student's development. The student has enormous freedom, not only in determining what to learn but also in how to execute it. The teacher's role is solely that of a facilitator and mentor. AI-based learning is capable of generating new knowledge and reinforcing existing knowledge. Additionally, it plays a significant role in developing competencies, attitudes, and autonomy, extending beyond traditional lexical knowledge expansion.

The learning environment is distinctly digital, and it can be either individual or group-based. In AI-based learning, the student can engage individually, but group tasks are also possible, where students collaborate to

complete a project with AI acting as a supportive "partner." Individual learning allows for excellent differentiation and personalized learning, while group work focuses more on project tasks, with AI offering support.

The curricular structure of AI-based learning is flexible and student-centered. It can be integrated and applied at any point within the current curriculum.

In summary, AI-based learning is student-centered and, due to its personalized nature, highly effective. It is versatile, supporting the development of various competencies, making it a modern method suited for differentiation and talent nurturing.

Figure 2 Video created by a student with Pictory.ai (17 year old)

Figure 3. Song generated by Emma (13 year old) from key words close to summer holiday (generated with Suno)

Figure 4. Image of David's (12 year old) dream school generated withtengr.ai

Figure 5. Code week- product[5]

3. Key fields being developed

The European Framework establishes four key categories in which educational efforts must focus on development: knowledge, attitudes, skills, and autonomy. Considering these four categories, my method is particularly well-suited for fostering development in the following areas:

3.1. Knowledge

- Understanding the limitations of AI
- Familiarity with AI applications

[5] As part of the Code Week initiative, we collaborated with a school from Romania on a joint project entitled "The Dream School." The project required participants to generate content across various genres, which was then collectively organized and displayed on a shared collaborative platform. Given the involvement of the Romanian school, the common language for this cross-border collaboration was Hungarian, ensuring effective communication and seamless cooperation between the participating institutions. This project fostered not only digital literacy and creativity but also highlighted the importance of language in international educational partnerships.

- Up-to-date knowledge of global events
- (+knowledge of the structure, lexical system of the given language)

3.2. Attitude

- Ready to collaborate
- Actively participates in teamwork
- Diligently completes assigned tasks
- Curious
- Persistent
- Able to identify key points
- Disciplined
- High tolerance for monotony
- Strong problem-recognition skills
- Open-minded
- Broad outlook
- Developed social skills
- Precise
- Critical thinker
- Excellent adaptability
- Flexible

3.3. Skills:

- Capable of independent thinking
- Able to gather information
- Able to understand explanations, even if they don't come from the teacher
- Able to recognize grammatical structures in other texts by analogy
- Able to search the internet with a specific purpose
- Able to give AI the right instructions to achieve desired goals/answers
- Able to organize thoughts and summarize knowledge using keywords
- Able to come up with creative solutions
- Able to think analytically
- Capable of independent planning
- Able to formulate original thoughts
- Able to ask independent questions
- Able to manage time effectively, execute plans with guidance, and meet deadlines
- Able to examine a problem from multiple perspectives
- Able to find multiple solutions to a problem
- Able to draw conclusions
- Able to observe small details

- Capable of asking meaningful questions
- Able to communicate effectively with AI
- Capable of self-monitoring
- Able to keep up with ongoing changes
- Able to overcome fear of using technology

3.4. Autonomy

- Works responsibly
- Understands that acquiring knowledge is their own responsibility
- Does not give up after the first failed attempt and does not rely unnecessarily on teacher assistance
- Feels responsible for the quality of group work

4. Task Types

Well-targeted tasks and correctly chosen AI applications can significantly enhance these qualities alongside language competencies. One of the significant advantages of AI-based learning is that, while traditional methods develop specific skills relatively slowly and often force decisions between prioritizing lexical knowledge or competence development, AI accelerates the development of competencies without sacrificing the transfer of lexical knowledge.

This section aims to introduce several tasks that can be performed using AI applications, which are especially effective for developing language competencies

4.1. Speaking Skills

Encikloped.ai

This application is capable of recognizing speech and providing voice-based responses. It is an excellent tool for improving students' speaking skills in scenarios where:

- The class size is large,
- Behavioral issues need to be managed,
- The group's speaking skills are very weak, and class time is limited,
- The group is heterogeneous in terms of speaking ability, leading to some students facing significant communication barriers,
- There are personal reasons (e.g., anxiety or other challenges) that prevent some students from speaking in front of others.

Ask students to engage in real-time interaction with an AI application capable of searching the internet for relevant information and generating coherent dialogue. These conversations can be recorded and later reviewed. Based on the collected materials, students can work on a group project where they analyze their discussions with the AI: what topics were discussed, what experiences they gained, what new vocabulary and expressions they learned, and what new perspectives they encountered. The results of these analyses can be organized into a mind map or another summary document requiring systematic arrangement.

4.2. Practising grammar/ writing skills

ChatGPT

The ChatGPT language model has become widely known and is now highly suitable even in its free version

for language teaching in realistic situations.

Syllogism

Syllogisms effectively enhance logical thinking and are applicable in the introduction and practice of nearly any topic. Simple syllogisms created in the health domain can be utilized in multiple ways. For example:

"All vegetables are healthy.

Carrots are vegetables.

Therefore, carrots are healthy."

In this task, we can omit words or entire sentences, and ask students to fill in the missing elements. Subsequently, students can be tasked with creating similar puzzles for each other, possibly with shuffled sentences. Additionally, they can be encouraged to generate as many syllogisms as possible using specific keywords, approaching the task from various perspectives. Another method involves providing students with an image, based on which they create syllogisms and then have them verified by artificial intelligence. An interesting task could be for students to select a historical era and generate syllogisms that were valid during that time but have since lost their relevance.

Prompt writing from memory

Show students an image, diagram, or text generated by ChatGPT. Allow them a few minutes to memorize the content, then ask them to formulate the prompt they believe generated the presented response. Subsequently, they should test their prompt with the AI.[6]

Organizing a trip

Let's divide the students into groups. Give each group a virtual budget and a target audience (families with small children, elderly people, business travelers, etc.). Ask the students to design an ideal trip using AI. Afterward, we will discuss which group managed to make the most out of the task—longest duration, most diverse activities, all while considering their target audience.

Criteria for the travel plan:

1. Beach holiday, sightseeing, mountain climbing, pilgrimage, historical, cultural, literary, musical, conference, exotic
2. Travel by plane, ship, car
3. For young couples, elderly people, large families, business travelers, school trips
4. Accommodation: camping, hotel, hostel, igloo, etc.

[6] For example: Sunday whispers, soft and bright,
Monday rises, chasing light,
Tuesday lingers, calm and slow,
Wednesday moves with steady flow,
Thursday hums with dreams to be,
Friday dances, wild and free,
Saturday rests in peaceful glee.

5. European or outside of Europe

Alternative task: Students may write down the completed plan in their notebooks, or they can create a poster in Canva, or design a flipbook in another program.

4.3.Listening skills

Generating similar images

Organize groups of 3-4 students. Invite one student from each group to the teacher's desk. Show the students images of food, at least three. After the students have memorized the images, they return to their group and describe what they remember. The rest of the group then generates the image.

Additional alternatíve task (with an everyday situation)

Students should upload the image to ChatGPT and ask how many carbohydrates/calories it contains. After that, they should have a group consultation with ChatGPT about daily energy/carbohydrate needs. They should take notes on their new knowledge. Finally, we will discuss the work completed by the groups in a whole-class setting.

Figure 6: an image to be generated from memory

5. Assessment

If we commit to the introduction of AI-based learning, our goal will not merely be the development of factual knowledge. In this context, it is essential to make the targeted competencies scalable and to provide appropriate information to students and, if necessary, to parents as well. This requires a new approach to assessment, as it is not

sufficient to simply check whether the student correctly filled in the blanks or matched the definitions. It is also necessary to consider the extent to which the student has reached the highest expected level in the particular competency being developed. Accordingly, it may happen that missing deadlines negatively impacts the evaluation, while a creative and unique solution may improve it.

6. Two main pillars of the method: critical and ethical AI use

It is crucial to thoroughly discuss the outcomes with students in every instance. This is the only way to avoid the loss of competencies by ensuring that generated products are supplemented with their own thoughts, subjected to their evaluation, and invite critical reflection. It should not be allowed for AI to solve a task independently without students analyzing and evaluating it. The aim should be to ensure that the final product is the result of the collaboration between the student and AI, rather than being satisfied with a well-written prompt alone. Furthermore, students should be encouraged to continually refine, clarify, and optimize the initial response provided by AI.

Introducing AI into daily educational practice is particularly important so that students become familiar with the possibilities of the technology and encounter examples of constructive and positive application. Teachers play a key role in demonstrating how AI can be effectively and ethically used in education, preventing students from seeing it merely as a tool for cheating. AI usage also helps students stay up to date with technological advancements while becoming aware of the limitations of artificial intelligence. Another key goal is to cultivate in students the desire to continually update and maintain their knowledge, thereby preparing them to meet future challenges successfully.

7. Summarizing

In summary, AI-based learning can bring significant transformation to language education. It is essential for educational institutions and educators to recognize and leverage the opportunities offered by AI technologies, which create personalized, interactive, and efficient learning environments. This not only promotes language proficiency but also enhances students' critical thinking, problem-solving skills, and technological literacy, all of which are essential for adapting to the challenges of the 21st-century job market. My work highlights that AI-based learning is not just a modern educational tool but a paradigm shift that enables students to become active and independent participants in their own learning processes. The knowledge and skills gained in this way provide the foundation for future success.

However, experiences with AI integration have been mixed. Some students and parents express apprehension towards technological innovations, wishing to resist change and hold onto traditional methods. These individuals often need to overcome their fear of new tools and technologies in order to fully engage with AI-based learning. Yet, the majority understand the significance of AI in education and recognize that embracing it is key to maintaining their competitive edge in a rapidly evolving world. For these students, AI represents not just a tool for learning, but a critical resource that will shape their future success in both academic and professional spheres.

Moreover, many teachers themselves must learn how to effectively use AI in the classroom. Recognizing this need, the author has taken steps not only to educate students but also to organize training sessions for fellow educators. These sessions aim to equip teachers with the skills necessary to integrate AI into their teaching practices, ensuring that both students and educators can fully benefit from the technological advancements shaping modern education.

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