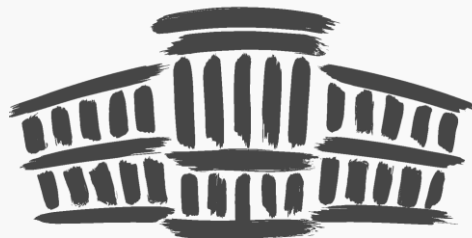


СУБОТИЦА  
SZABADKA  
SUBOTICA  
SUBOTICA  
2024



## 11. КОНФЕРЕНЦИЈА „ИКТ У ОБРАЗОВАЊУ”

КОМПЕТЕНЦИЈЕ

## 11. IKT AZ OKTATÁSBAN KONFERENCIA

KOMPETENCIÁK

## 11. KONFERENCIJA „IKT U OBRAZOVANJU”

KOMPETENCIJE

## 11<sup>TH</sup> ICT IN EDUCATION CONFERENCE

COMPETENCES



## **11. Конференција „ИКТ у образовању”**

Компетенције  
*Зборник радова*

Датум одржавања: 7–8. новембар 2024.

Место: Универзитет у Новом Саду, Учитељски факултет на мађарском наставном језику,  
Суботица, ул. Штросмајерова 11., Република Србија

## **11. IKT az Oktatásban Konferencia**

Kompetenciák  
*Tanulmánygyűjtemény*

A konferencia időpontja: 2024. november 7–8.

Helyszíne: Újvidéki Egyetem, Magyar Tannyelvű Tanítóképző Kar,  
Szabadka, Strossmayer utca 11., Szerb Köztársaság

## **11. Konferencija „ИКТ u obrazovanju”**

Kompetencije  
*Zbornik radova*

Datum održavanja: 7–8. studeni 2024.

Mjesto: Sveučilište u Novom Sadu, Učiteljski fakultet na mađarskom nastavnom jeziku,  
Subotica, ul. Strossmayerova 11., Republika Srbija

## **11<sup>th</sup> ICT in Education Conference**

Competences  
*Papers of Studies*

Date: November 7–8, 2024

Address: University of Novi Sad, Hungarian Language Teacher Training Faculty,  
Subotica, 11 Štrosmajerova str., Republic of Serbia

**Издавач**

Универзитет у Новом Саду  
Учитељски факултет на мађарском наставном језику  
Суботица

**Kiadó**

Újvidéki Egyetem  
Magyar Tannyelvű Tanítóképző Kar  
Szabadka

**Nakladnik**

Sveučilište u Novom Sadu  
Učiteljski fakultet na mađarskom nastavnom jeziku  
Subotica

**Publisher**

University of Novi Sad  
Hungarian Language Teacher Training Faculty  
Subotica

**Одговорни уредник / Felelős szerkesztő /**

**Odgovorni urednik / Editor-in-chief**

Valéria Pintér Krekić

**Уредници / Szerkesztők / Urednici / Editors**

Cintia Juhász Kovács

Zsolt Námesztovszki

**Технички уредник / Tördelőszerkesztő /**

**Tehnički urednik / Layout editor**

Attila Vinkó

Zsolt Vinkler

+381 (24) 624 444

magister.uns.ac.rs/conf

ict.conf@magister.uns.ac.rs

**ISBN 978-86-81960-33-2**

Суботица – Szabadka – Subotica – Subotica

2024



**САДРЖАЈ**  
**TARTALOM**  
**SADRŽAJ**  
**CONTENTS**

<b>Tünde Lengyelne Molnár, Lajos Toldi</b> .....	<b>11</b>
The Impact of Artificial Intelligence on the Education System	
<b>Czeglédi László</b> .....	<b>20</b>
Digitális könyvtárpedagógia, kritikus gondolkodás és az MI	
<b>Gógh Előd, Kóvári Attila</b> .....	<b>27</b>
Digitális támogatás és hozzáférhetőség a középfokú oktatásban	
<b>Valentina Krstanović, Anita Tot</b> .....	<b>36</b>
Društvene mreže u svakodnevnom životu djece i adolescenata	
<b>Péter Antal</b> .....	<b>44</b>
Education and Digitalization: Competences and Realities in Hungarian Public Education	
<b>Györe Géza, Kubinger-Pillmann Judit, Bognár Amália</b> .....	<b>51</b>
Eltérések és azonosságok a 3-4. és 5-6. osztályos digitális kultúra tankönyvekben	
<b>Szabóné Balogh Ágota</b> .....	<b>61</b>
The Future of Education – the Role of Artificial Intelligence	
<b>Csilla Prantner</b> .....	<b>70</b>
Innovative Approach to Creating Digital Learning Environments: Online Learning Monitored With Eye-Tracking	
<b>Andreja Zubac, Irella Bogut, Krešimir Vidačić</b> .....	<b>78</b>
Mikroučenje kroz aktivnosti održivoga razvoja u odgojno-obrazovnim ustanovama	
<b>Zoltán Csernai</b> .....	<b>90</b>
Supporting the Development of the Teaching Profession With Artificial Intelligence Tools	
<b>Réka Racsko</b> .....	<b>100</b>
Trends in Digital Education in the Light of Technology Adoption Models	
<b>Аутори / Szerzők / Autori / Authors</b> .....	<b>109</b>



# SUPPORTING THE DEVELOPMENT OF THE TEACHING PROFESSION WITH ARTIFICIAL INTELLIGENCE TOOLS

ZOLTÁN CSERNAI

Eszterházy Károly Catholic University, Eger, Hungary  
[csernai.zoltan@uni-eszterhazy.hu](mailto:csernai.zoltan@uni-eszterhazy.hu)

## *Abstract*

Web 3.0 technologies, such as artificial intelligence (AI), Big Data, data mining and machine learning, are having a significant impact on education (Lengyelne, 2022). The profession of educator has been valorised as AI tools such as teaching assistants, chatbots, imaging generative AIs and automated content evaluators offer a range of opportunities to improve teaching (Szivák et al, 2020; Anand et al., 2023). My research aims to explore the use of AI-based tools in education through a systematic literature review (PRISMA protocol) and to investigate the preparedness of teachers to use these tools. The results will demonstrate how these tools can support the teaching process and contribute to the technological development of the teaching profession and to a better understanding of the role of AI in education (Gógh & Kóvári, 2022).

**Keywords:** *artificial intelligence in education; Teacher profession; Big Data; PRISMA protocol; Educational technology*

## **1. Challenges in digital pedagogy**

The rapid development of artificial intelligence (AI) is fundamentally changing the world, and education is no exception. Digital pedagogy presents new challenges and opportunities for teachers, who must constantly adapt to technological changes.

1. Revaluation of the teaching profession: The spread of AI does not reduce, but on the contrary, increases the importance of the role of teachers. As Szivák and his colleagues (2020) point out, the revaluation of the teaching profession has become a central element of education policy. AI tools do not replace teachers, but help them in their work. The teachers of the future will need competencies such as critical thinking, creativity, collaboration and problem solving in order to prepare students for the challenges of a world shaped by AI.
2. Innovative opportunities: AI-based tools offer a number of innovative opportunities for teachers (Anand et al., 2023). With their help, they can personalize learning, make evaluation more efficient, and motivate students. AI applications enable differentiated education, which allows each student to progress at their own pace.
3. Risks for the individual: It is important to emphasize that AI is not a panacea. If education does not focus on the development of individuals, then people can easily be excluded from areas that were previously considered the monopoly of the human intellect (Szűts & Námesztovszki, 2023). Teachers need to help students develop the skills and competencies that will be valuable in the future.
4. Development constraint: The rapid development of technology forces teachers to constantly renew themselves (Gógh & Kóvári, 2022). They must be open to new pedagogical methods and the use of AI tools. Teacher training must also adapt to this change and prepare future teachers for the challenges of digital pedagogy.

This article focuses on the pedagogical application of artificial intelligence-based tools, presenting the opportunities that these tools offer teachers. In the first part of the article, we provide an overview of the concept of artificial intelligence and its role in education. In the second part, we present the methodology and results of our research. And in the third part, we describe the most important AI-based educational tools in detail, and illustrate their application with practical examples.

### 1.1. Key concepts in the world of artificial intelligence

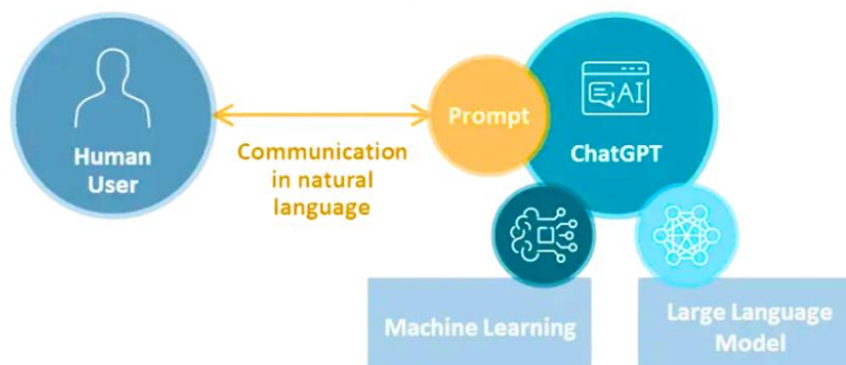
In order to effectively use artificial intelligence-based tools, it is essential to have a precise understanding of the key concepts. In the following, we define the most important concepts from the point of view of the article:

1. Artificial Intelligence (AI): A field dedicated to creating computer systems capable of performing tasks that typically require human intelligence, such as reasoning, learning, planning, and creativity (Aswin Kumer et al., 2021; Valadez et al., 2024; Tiwari, 2024).
2. ChatGPT: A state-of-the-art language model developed by OpenAI, designed to facilitate human-like conversations and perform a variety of natural language processing (NLP) tasks. (Keshamoni, 2023; Goar et al., 2023; Bhattacharya et al., 2023).
3. Prompt: A message designed to encourage someone to take an action that is possible but not necessary. Effective prompts should be optional, comprehensible, actionable, purposeful, timely, unobtrusive, controllable by the user, and user-specific (Herrmann & Nierhoff, 2017; Shi et al., 2024).

The precise definition and separation of concepts helps teachers make informed decisions regarding the selection and application of AI tools.

### 1.2. Artificial Intelligence vs. ChatGPT vs. Prompt

It is important to note that artificial intelligence is not the same as ChatGPT or prompt. Artificial intelligence is a broader concept that includes language models similar to ChatGPT, but also many other areas, such as machine learning, image recognition or robotics. Machine learning, for example, allows computers to learn from data and make decisions independently, while image recognition allows computers to identify objects seen in images.



**Figure 1:** The relationship between artificial intelligence, ChatGPT and prompt (Source of the image: <https://www.infodiagram.com/slides/working-with-ai-tools-what-is-chatgpt-prompt/>)

ChatGPT is a specific AI application capable of generating human-like texts. ChatGPT can be used, among other things, to answer questions, translate texts, create summaries, and even write creative content (e.g. poems, short stories).

A prompt is an instruction or question that we give to ChatGPT in order to get an answer or result. The quality of the prompt greatly influences the quality of ChatGPT's response. The more accurate and detailed the prompt, the more relevant and useful the answer we get. For example, if we give ChatGPT the prompt „Write an essay about competency-based education”, we will get a general essay. However, if we ask „Compare the advantages and disadvantages of competency-based education and traditional

education based on Bloom's taxonomy, with particular regard to higher education”, we will get a much more specific and interesting result.

## 2. Research steps to support the development of the teaching profession

The aim of the research is to map previous research related to artificial intelligence-based tools in order to support the development of the teaching profession.

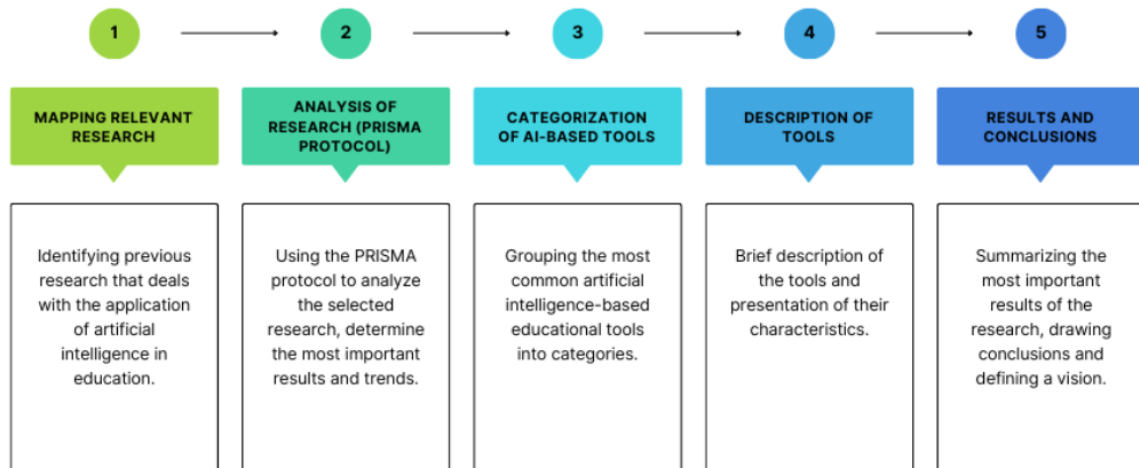


Figure 2: Research Steps

The research consists of the following steps:

1. Mapping relevant research: Identifying previous research that deals with the application of artificial intelligence in education.
2. Analysis of research (PRISMA protocol): Using the PRISMA protocol to analyze the selected research, determine the most important results and trends.
3. Categorization of AI-based tools: Grouping the most common artificial intelligence-based educational tools into categories.
4. Description of tools: Brief description of the tools and presentation of their characteristics.
5. Results and conclusions: Summarizing the most important results of the research, drawing conclusions and defining a vision.

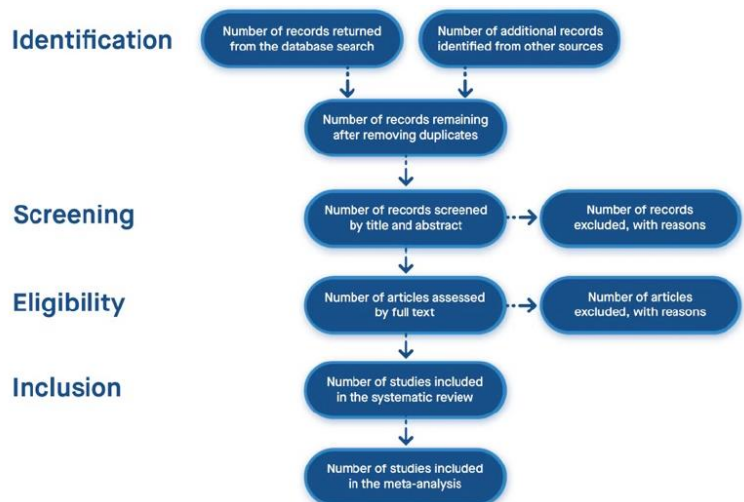
After describing the research steps, let's review the data collection strategy.

## 3. The research's data collection strategy

In the research, we used the PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analyses) protocol for the systematic analysis of the relevant literature. The purpose of the protocol is to help researchers report systematic reviews and meta-analyses in a transparent and comprehensive manner.

Figure 3: Systematic literature review (PRISMA protocol) (Source of the image: <https://www.aje.com/arc/how-to-create-prisma-flow-diagram/>)

The literature search was carried out in the EBSCO, SCOPUS and ERIC databases. The search term was „artificial intelligence”. During sampling, a typical/intensive strategy was used, and the time dimension ranged from 2014 to 2024.



**Table 1:** *Artificial intelligence in relevant databases*

database	artificial intelligence
EBSCO	256 (2014 is the first hit)
SCOPUS	1768 (2014 is the first hit)
ERIC	217 (2016 is the first hit)

The selected studies were analyzed based on the following aspects:

1. Type of study: During the analysis of the type of study, we examined what research methods were used (e.g. qualitative, quantitative, mixed method), what type of publications they were (e.g. empirical research article, review article, case study), and in what journal they were published.
2. Educational environment: During the analysis of the studies, we took into account the educational environment in which the application of artificial intelligence was examined. We examined at what educational level (e.g. elementary school, high school, higher education) and in what type of institution the research was conducted.
3. AI tools: We analyzed the artificial intelligence-based tools presented in the studies in detail. We examined the functions of the tools, the areas of application, as well as the advantages and disadvantages of the tools in the educational process.
4. Results and effectiveness: We evaluated the results presented in the studies and the effectiveness of artificial intelligence-based tools in terms of achieving educational goals. We examined to what extent the tools contributed to improving students' learning outcomes, making teachers' work more efficient, and developing educational processes.

During the data collection, we identified a number of artificial intelligence-based tools that can be useful in education. In the following, we present the most important ones.

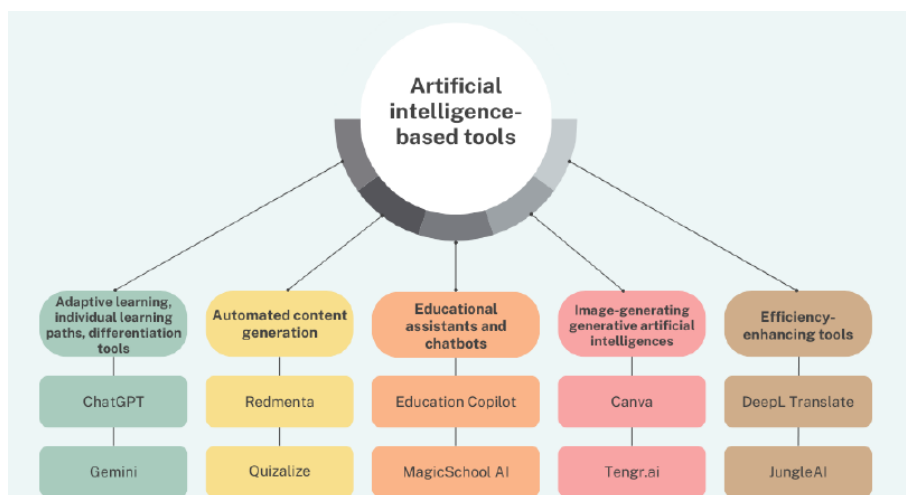
#### **4. Artificial intelligence-based tools in education**

Artificial intelligence (AI) is gaining more and more ground in education, offering a number of innovative tools for teachers and students. AI-based tools can help teachers deliver the curriculum more effectively, develop students in a personalized way, and automate educational processes.

In our research, we classified the most common artificial intelligence-based educational tools into the following categories:

1. Adaptive learning, individual learning paths, differentiation tools: These tools allow learners to progress through the curriculum at their own pace and follow a personalized learning path.
2. Automated content generation: These tools help teachers prepare teaching materials faster and more efficiently, such as generating presentations, worksheets, and tests.
3. Educational assistants and chatbots: These tools help students learn, for example, by answering questions, solving tasks or giving learning advice.
4. Image-generating generative artificial intelligences: These tools are capable of generating images based on textual descriptions, which can help teachers visualize the curriculum and students solve creative tasks.
5. Efficiency-enhancing tools: These tools help teachers and students manage their time more efficiently, for example by automating tasks, organizing information, or facilitating communication.

We selected two tools from each category for further presentation. The tools are presented with a short description, examples of use in education, and a sample task.



**Figure 4:** *Artificial intelligence-based tools in education*

#### 4.1. ChatGPT

ChatGPT is an advanced language model developed by OpenAI. The GPT-4 based model is capable of interactive conversations, generating learning materials, answering questions and supporting learners. The free and subscription versions are available with different functions.

ChatGPT can be used as an effective tool for teachers for various educational purposes. With the support of AI, teachers:

1. Content generation: They can quickly create diverse teaching materials, test questions or creative texts, such as story writing or developing dialogues for fictional characters.
2. Language support: It can provide useful help for language learning, especially in practicing foreign language texts or correcting texts.
3. Individual learning paths: It enables the creation of learning materials and differentiated tasks tailored to the needs of individual students, thereby supporting personalized education.

As a further option, ChatGPT can be used for brainstorming, lesson planning, and explaining various educational concepts in a simplified way to make it easier for students to understand. In addition, ChatGPT can also contribute to an interactive learning experience, where students can ask questions in real time and receive relevant answers during the modeled conversation.

*Sample task:* Create four English language test questions on the topic of medieval history.

Overall, it can be said that ChatGPT is a versatile tool that offers a number of possibilities in education. With its help, teachers can teach more effectively, and students can receive personalized support for learning.

#### 4.2. Gemini

Gemini is a language model developed by Google, formerly known as Bard. Gemini is able to generate text, translate, write code, and solve creative tasks, thereby supporting teachers during the educational process.

Gemini is especially useful in the following areas:

1. Curriculum development and summarization: Gemini is able to generate tasks at different levels of difficulty, adapting to the needs of the students, and is also suitable for highlighting the essence of longer texts, thus supporting the summarization of the curriculum.
2. Support for individual learning paths and learning styles: It enables the creation of differentiated tasks, taking into account the abilities and different learning needs of the students.
3. Source search and language practice: With its Internet search functions, Gemini offers up-to-date sources to expand the curriculum, and also supports language teaching with translation and language tasks.

*Sample task:* Write questions about ancient Rome at different difficulty levels - for beginner, intermediate and advanced students. There should be 2 questions at each level.

Overall, Gemini is a versatile tool that can help educators with curriculum development, differentiation, and personalized student development.

#### 4.3. Redmenta

Redmenta is a well-known learning support application in Hungary, which is especially popular in public education.

Recently, it has been expanded with two new AI functions:

1. AI content generator: It allows you to create different types of tasks from any text, including multiple-choice questions, true-false statements and other practice tasks. This allows teachers to easily and quickly put together tests or practice materials for students.
2. Chat function: Teachers can set how many questions students can ask the AI on a given topic, thereby helping individual learning and independent practice. The preset modes ensure that the AI provides relevant and targeted answers, which can be especially useful during language practice and deepening the topic.

*Sample task:* Prepare a worksheet that is related to Sándor Petőfi's poem „Füstbe ment terv” and serves to assess students' knowledge and skills.

Redmenta is therefore a tool that not only makes teachers' work easier, but also makes learning more enjoyable and effective for students.

#### 4.4. Quizalize

Quizalize is a popular quiz creation application that has ChatGPT integration, thus enabling the creation of quick and customizable quizzes.

The tool offers the following advantages:

1. Quick quiz creation: With the help of AI, Quizalize users can create quiz questions in seconds.
2. Export option: Quizzes can be exported to multiple platforms, such as Kahoot, Quizizz, Blooket and Google Forms.
3. Varied practice: Quizalize provides varied practice opportunities while keeping students' attention constantly.
4. Ease of use: The tool simplifies preparation for teachers. They can use the same quiz in many different learning environments.

*Sample task:* Generate five questions on the topic of ancient Egypt.

Quizalize is therefore a tool that helps teachers make learning more interactive and enjoyable, while also saving time.

#### 4.5. Education Copilot

Education Copilot is an artificial intelligence-powered platform that helps teachers create lesson plans and teaching aids. The service is available with a one-month trial period, then can be used on a subscription basis.

Education Copilot offers the following functions:

1. Lesson planning: With the help of Education Copilot, teachers can prepare lesson plans quickly and easily.
2. Task preparation: The tool allows the creation of various tasks for students.
3. Project ideas: Education Copilot gives ideas for creative projects that involve students in learning.
4. Quiz creation: With the help of the tool, teachers can easily create quizzes to check the curriculum.
5. Multilingual support: The service is available in 14 languages, so although it is not currently available in Hungarian, it can be used well with translation tools.

*Sample task:* Prepare a detailed lesson plan on the topic of the Solar System for 6th grade students with the help of Education Copilot. The lesson plan should include a short introduction to the formation of the Solar System, the main characteristics of the planets, and a short practical task in which the students make models of the Solar System.

Education Copilot is an innovative platform that helps teachers plan their lessons more efficiently and creatively, and create more interesting teaching materials for students.

#### 4.6. MagicSchool AI

MagicSchool AI is an artificial intelligence-supported platform that offers a number of educational tools for teachers. The purpose of the tool is to help in the rapid creation of educational materials, lesson planning, and the effective measurement of students' preparedness. The AI functions allow teachers to create an interactive and adaptive learning environment. In addition, MagicSchool AI also promotes the development of students' AI competencies, with access without registration.

MagicSchool AI offers the following functions:

1. Translation: With the help of MagicSchool AI, teachers can quickly and accurately translate texts into different languages.
2. Question generation: The tool is able to generate questions related to the curriculum, which help students understand and check their knowledge.
3. Summaries: MagicSchool AI prepares summaries of longer texts, which makes it easier for students to highlight the essence.
4. Creating unique prompts: Teachers can create unique prompts with the help of MagicSchool AI, which help students in creative thinking and problem solving.
5. Raina, the pre-prompted instructional chatbot: Raina offers teaching ideas, behavior management strategies and resources for teachers' daily work.

*Sample task:* Find a longer article about ancient Greece on the Internet and copy its text. Use MagicSchool AI to create a 1000-character summary of it.

MagicSchool AI is a versatile tool that provides comprehensive support to teachers for effective and enjoyable teaching.

#### 4.7. Canva

Canva is a user-friendly online graphic design platform that allows educators to create professional-looking visual materials without prior graphic experience. The platform offers plenty of templates for creating presentations, infographics, posters, flyers and social media content.

Canva is available from a browser, as a mobile application and as a desktop application.

Canva offers a number of artificial intelligence tools in Magic Studio that make graphic design easier and faster:

1. Background Remover: This tool allows you to remove the background from images with a single click. This way you can easily highlight the main subject of the image and add a new background.
2. Magic Eraser: With the Magic Eraser, you can easily remove unwanted objects or details from images.
3. Magic Edit: This tool allows you to add or replace elements in an image using text prompts. For example, if you have an image of a classroom but want to add a globe to the image, you can simply type „globe” and Canva will add it realistically to the image.
4. Magic Expand: With Magic Expand, you can expand images beyond their original borders. This is useful when you need a larger image or want to change the aspect ratio.
5. Text to Image: This tool allows you to generate images from text descriptions. This can be useful for creating illustrations, visualizing concepts, or stimulating students' creativity.
6. Translate: Canva can translate texts into different languages, which can be useful for creating multilingual teaching materials.

*Sample task:* Place Sandro Botticelli's „The Birth of Venus” on the canvas. Use the Magic Expand function to add new elements to the image. Try different settings of the function and observe how the image changes under the influence of the generated content.

Canva is a creative and versatile tool that allows teachers to create visual and interesting visual materials for education.

#### 4.8. *Tengr.ai*

Tengr.ai is an innovative tool developed in Hungary, specifically designed for educators. The application specializes primarily in generating images that help illustrate and make the curriculum interactive.

Tengr.ai offers the following functions:

1. Generating visual materials: Tengr.ai is capable of generating various types of visual materials, such as infographics, diagrams, and images.
2. Illustrating educational content: The generated images can be used as illustrations for educational content, such as presentations, worksheets, or quizzes.
3. Customizing the curriculum: With the help of the generated images, teachers can make the curriculum more visually appealing and adapt it to the needs of the students.

*Sample assignment:* Create an infographic using Tengr.ai that presents the most important inventions of the industrial revolution and their impact on society.

With the help of Tengr.ai, educators can easily create visual materials that arouse students' interest and help them understand the curriculum.

#### 4.9. *DeepL Translate*

DeepL Translate is an advanced machine translation tool often used in language classes or multilingual classrooms. DeepL Translate is one of the most advanced machine translation tools, which provides accurate and context-sensitive translations with the help of artificial intelligence (AI) based algorithms. The tool excels in producing grammatically and stylistically natural translations, making it an ideal solution for teachers to translate texts for educational purposes.

AI technology is constantly learning and evolving, allowing for fine-tuning of translation results and presenting linguistic variations.

DeepL Translate offers the following advantages in education:

1. Accurate translation: DeepL Translate produces accurate and reliable translations that help students overcome language barriers.
2. Grammatical and stylistic correctness: DeepL Translate stands out especially with its grammatically and stylistically correct translations, which allows teachers to provide authentic and understandable teaching materials.
3. Development of language skills: DeepL Translate can help students develop their language skills, for example in vocabulary expansion and understanding grammatical structures.

*Sample task:* Select an article in English from the Internet and translate it into Hungarian using DeepL Translate. Compare the translation with the results of other online translation programs and observe the differences in terms of accuracy and style.

DeepL Translate is a tool that can be used to overcome language barriers and make information from all over the world more easily accessible.

#### 4.10. *JungleAI*

JungleAI is an artificial intelligence-based educational platform that helps teachers create personalized learning paths for their students. The tool adapts to the individual pace and needs of the students, so that everyone can progress at their own pace. JungleAI analyzes student data (e.g. test results, learning style) and makes recommendations for appropriate learning materials, tasks and learning strategies.

*Sample task:* Enter the link of the YouTube video „The traveling agent problem - with a heuristic approach” in the JungleAI application. JungleAI automatically creates a test task series based on the content of the video. Fill out the test generated by JungleAI.

JungleAI contributes to increasing student motivation and improving the effectiveness of learning by providing a personalized learning experience.

## 5. Results, conclusions and vision

The artificial intelligence-based tools identified during the research can be widely used in education and provide significant support to educators in curriculum development, differentiation, personalized development of students, and evaluation. The examined tools included chatbots, quiz creation applications, translation programs, as well as platforms that allow teachers to create images, presentations and other educational materials.

The use of artificial intelligence tools can motivate students and increase their commitment to learning. Interactive tasks, personalized learning paths, and diverse learning environments can all contribute to students acquiring new knowledge in a more experiential and effective way.

Artificial intelligence-based tools are valuable tools in the hands of educators and can contribute to effective and experiential education. Their application creates new opportunities in the development of the teaching profession and can help teachers to better understand the individual needs of students and provide personalized support to them.

In the future, it would be important to design and create a knowledge base, as well as to develop methodological recommendations, that support educators in the effective application of artificial intelligence tools. This knowledge base could provide information on the functions, advantages and disadvantages of various tools, as well as practical advice on their use.

## REFERENCES

- Anand, S., Raja, R. G., & Sheela, T. (2023). An overview of AI platforms, frameworks, libraries, and processes. In *Explainable Artificial Intelligence (XAI): Concepts, enabling tools, technologies and applications* (pp. 93–113).
- Aswin Kumer, S. V., Kanakaraja, P., Sairam Nadipalli, L. S. P., Ramesh, N. V. K., & Kotamraju, S. K. (2021). The Categorization of Artificial Intelligence (AI) Based on the Autonomous Vehicles and Its Other Applications. *192 LNNS*, 411–421.
- Bhattacharya, K., Bhattacharya, A. S., Bhattacharya, N., Yagnik, V. D., Garg, P., & Kumar, S. (2023). ChatGPT in Surgical Practice—A New Kid on the Block. *Indian Journal of Surgery*, 85(6), 1346–1349.
- Goar, V., Yadav, N. S., & Yadav, P. S. (2023). Conversational AI for Natural Language Processing: An Review of ChatGPT. *International Journal on Recent and Innovation Trends in Computing and Communication*, 11, 109–117.
- Gógh, E., & Kővári, A. (2022). Az élethosszig tartó tanulással összefüggő tényezők faktorcsoportjainak értelmezése. In C. Kovács & Z. Námesztovszki (Szerk.), *9. IKT az oktatásban konferencia: Paradigmaváltás az oktatásban és a tudományban* (pp. 28–40). Újvidék: Újvidéki Egyetem Magyar Tannyelvű Tanítóképző Kar.
- Herrmann, T., & Nierhoff, J. (2017). Prompting – A feature of general relevance in HCI-supported task workflows. *713*, 123–129.
- Kamarási V., & Mogyorósy G. (2015). Szisztematikus irodalmi áttekintések módszertana és jelentősége. Segítség a diagnosztikus és terápiás döntésekhez. *Orvosi Hetilap*, 156(38), 1523–1531.
- Keshamoni, K. (2023). ChatGPT: An Advanced Natural Language Processing System for Conversational AI Applications—A Comprehensive Review and Comparative Analysis with Other Chatbots and NLP Models. *765 LNNS*, 447–455.
- Mian, S. M., Khan, M. S., Shawez, M., & Kaur, A. (2024). Artificial Intelligence (AI), Machine Learning (ML) & Deep Learning (DL): A Comprehensive Overview on Techniques, Applications and Research Directions. 1404–1409.
- Rodrigues, J. A., Krois, J., & Schwendicke, F. (2021). Demystifying artificial intelligence and deep learning in dentistry. *Brazilian Oral Research*, 35, 1–7.

- Shi, F., Qing, P., Yang, D., Wang, N., Lei, Y., Lu, H., Lin, X., & Li, D. (2024). Prompt Space Optimizing Few-shot Reasoning Success with Large Language Models. 1836–1862.
- Szivák, J., Kálmán, O., Pesti, C., Rapos, N., & Vámos, Á. (2020). A pedagógus professzió hazai megújításának esélyei a mesterpedagógus programok tükrében. *Iskolakultúra*, 30(10), 3–24.
- Szűts, Z., & Námesztovszki, Z. (2023). A digitalizáció kihívásai a civil, mindennapi felhasználó szemszögéből. Fejleszti vagy kiváltja az egyént a mesterséges intelligencia használata az oktatásban? *CIVIL SZEMLE*, 5, 57–66.
- Thayer, T. (2022). How AI, ML and neural networks differ and work together. *Control Engineering*, 69(9), 40–41.
- Tiwari, S. (2024). The Rise of Intelligent Machines: An Introduction to Artificial Intelligence. In *Artificial Intelligence and Machine Learning in Drug Design and Development* (pp. 1–22).
- Valadez, S. C. O., Mendoza, J. C. H., Villanueva-Hernandez, V., Tijerina, G., & Avila-Guzman, D. (2024). Languages with artificial intelligence applications. In *Exploring Intersectionality and Women in STEM* (pp. 192–201).

CIP - Каталогизација у публикацији  
Библиотека Матице српске, Нови Сад

371.13(082)  
371.3(082)

**КОНФЕРЕНЦИЈА "ИКТ у образовању" (11 ; 2024 ; Суботица)**

Зборник радова [Електронски извор] / 11. конференција "ИКТ у образовању" [са темом] "Компетенције", 7-8. новембар 2024, Суботица ; [уредници Cintia Juhász Kovács, Zsolt Námesztovszki]. - Суботица : Учитељски факултет на мађарском наставном језику, 2024

Начин приступа (URL): <https://magister.uns.ac.rs/publ/2024/978-86-81960-33-2>. - Насл. са насловног екрана. - Опис заснован на стању на дан 21.1.2025. - Радови на више језика. - Лат. и ћир. - Библиографија уз сваки рад. - Резиме на енгл. језику уз сваки рад.

ISBN 978-86-81960-33-2

а) Учитељи - образовање - Зборници б) Настава - Методика - Зборници

COBISS.SR-ID 161483273