ARTIFICIAL INTELLIGENCE AS A COMPONENT OF MEDIA DIDACTICS

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Abstract. This article addresses the pressing issue of applying artificial intelligence (AI) in education, proposing its consideration as a component of media didactics. A brief overview of the historical development of both AI and media didactics is provided. The paper explores the various fields of AI application, with a particular focus on education. It outlines the stages of AI integration into educational contexts from the 1960s–1970s to the present day.

The potential functions of AI within media didactics are discussed, including adaptive learning, personalized instruction, automated knowledge assessment, information retrieval and sorting, and the generation of educational content. In the context of scientific research, AI can be employed for large-scale data analysis, automated literature searches, and the modeling and simulation of processes and phenomena.

The article examines both the advantages and challenges of using AI in media didactics. The review and analysis lead to the conclusion that artificial intelligence is a powerful tool with significant potential for advancing media didactics by introducing new opportunities for adaptive and individualized learning. AI integration can enhance the efficiency and speed of education, improve accessibility and flexibility, and enable a more personalized learning experience.

At the same time, ethical and technological challenges must be addressed thoughtfully. Maintaining a balance between traditional teaching methods and modern technologies is essential. Going forward, it is crucial that the use of AI in education complements rather than replaces human interaction between teachers and students, serving instead to enhance, support, and inspire the learning process. Furthermore, AI applications should be tailored to specific professions and educational programs.

Keywords: *Artificial intelligence, media didactics, media education, adaptive learning, individualized learning.*

1. Introduction

The term *media didactics* emerged in the second half of the 20th century within the context of educational developments involving mass media and new technologies. As television, radio, and other forms of media advanced in the early 1960s, it became increasingly evident that effective learning was no longer possible without the integration of these tools into the process of knowledge transmission. The idea of incorporating media into education quickly gained support from both educational theorists and practitioners, marking a significant step in the evolution of innovative teaching approaches.

Simultaneously, the rise of information technologies—particularly in the field of computer science—brought the question of integrating advanced intelligent systems into education to the forefront. Artificial Intelligence (AI), as a branch of science and technology, began to gain traction in the late 20th century, fueled by developments in automation, machine learning, neural networks, and computing power. The emergence of tools capable of simulating human cognitive processes provided new momentum for incorporating AI into media didactics. This integration has enabled adaptive learning models and promoted a more personalized and individualized educational experience.

2. History of the Problem: Literature Review and Analysis

Artificial Intelligence (AI) is a branch of computer science that develops systems capable of performing tasks traditionally requiring human intelligence—such as learning, reasoning, speech and image recognition, and decision-making. The evolution of AI can be traced through several key stages and milestones:

- **1950**: Alan Turing publishes *"Computing Machinery and Intelligence"*, introducing the Turing Test as a criterion for machine "thinking" [1].

- **1956–1970**: Development of foundational systems such as *Logic Theorist*, *General Problem Solver*, *ELIZA*, and *Shakey* [2].
- **1980s**: Proliferation of expert systems in business and medicine (e.g., *MYCIN*), alongside the growth of neural network research [3].
- **1997**: IBM's *Deep Blue* defeats chess champion Garry Kasparov [4].
- **2010–present**: Rapid progress in machine learning and deep learning; introduction of transformer-based models (e.g., in 2017) [5].
- **2020s**: Expansion of large language models (LLMs) such as ChatGPT and Google Gemini, widespread AI integration into daily life, and growing ethical concerns [6].

AI applications span a wide range of fields, including:

- **Healthcare**: diagnosis of medical images, disease prediction.
- **Transportation**: autonomous vehicles, route optimization.
- **Communications**: voice assistants, speech and text recognition.
- **Education**:
    o   personalized learning;
    o   automated assessment systems;
    o   adaptive learning platforms;
    o   interactive AI assistants (e.g., ChatGPT).

Historically, the integration of AI into education began with the automation of assessments and the development of expert systems for skill-specific training. The key stages of AI integration in education include:

- **1960s–1970s**: Early computer programs such as *ELIZA* enabled the simulation of educational dialogues and simple programmed learning experiences [futureoftech.org, globalaivision.com].
- **1980s**: Introduction of adaptive testing and assessment systems based on expert system logic.
- **2000s**: Emergence of adaptive learning platforms leveraging machine learning and student performance data.
- **2020s**: Introduction of modern LLM-based assistants (e.g., ChatGPT, Gemini) designed to support student thinking through inquiry, personalized explanations, and reflective learning processes [businessinsider.com].

Media Didactics: Development and Current Trends

Media didactics is a branch of pedagogy that studies the patterns of acquiring knowledge, skills, and competencies, as well as the formation of values and beliefs through media sources and media products. Its primary goal is the development of media literacy and media

competence. As a subfield of media pedagogy, media didactics is closely associated with media education, which focuses on the pedagogical use of communication materials (media and educational media) [12].

Media didactics is an interdisciplinary scientific field that integrates insights from computer science, psychology, communications, and pedagogy. Its evolution has been closely linked to advances in information technology.

The origins of media didactics can be traced back to the introduction of audiovisual teaching tools—such as film, radio, and television—into school and higher education systems.

- **1950s–1960s:** The concept of "media education" emerged in Western Europe and the United States. During this period, initial approaches to using mass media in education began to take shape, focusing on their influence on students' consciousness and behavior [13, 14].
- **1980s–1990s**: The term *media didactics* was introduced and gained traction, particularly in German-speaking countries, thanks to the works of scholars such as K. Brinker and F. Schneider. During this period, media began to be recognized not only as carriers of educational content but also as tools for interaction within the educational process [15, 16]. In the Soviet Union, the term *press didactics* was used as a rough equivalent of media didactics.

The **digital revolution of the 2000s** marked a new phase in the development of media didactics. With the rapid growth of digital technologies, the Internet, and interactive platforms, media didactics underwent significant transformations. Concepts such as e-learning, distance learning, and blended learning emerged. Media evolved from being a mere conduit for information into a dynamic tool for knowledge construction, communication, and collaboration [17–19].

During the **2010s and into the 2020s**, media didactics continued to evolve with the integration of mobile learning (m-learning), artificial intelligence (AI) in education, and adaptive learning systems. Researchers began exploring how the design of digital content affects learning outcomes and how technological innovations reshape the role of the teacher [20, 21].

The **current stage** (from the 2020s onward) has been notably shaped by the COVID-19 pandemic, which accelerated the adoption of distance and hybrid learning. This period has solidified the role of media didactics as a theoretical and practical foundation for organizing digital education. Principles such as digital pedagogy, interactivity, and media literacy have become central.

Media didactics continues to expand its research focus, now encompassing virtual and augmented reality (VR/AR), educational gaming, and personalized learning. VR (virtual reality) immerses users in entirely digital environments, disconnecting them from the physical world, while AR (augmented reality) overlays digital elements onto the real world, enhancing perception and interaction [22, 23].

Additionally, specialized forms of media didactics are actively developing—such as blog didactics, website didactics, webinar didactics, and wiki didactics—each with practical applications across various fields, including engineering, medicine, and law [24–26].

3. Possible Functions of AI in Media Didactics

Artificial intelligence, with its capacity to process vast amounts of information, learn from data, and adapt to various educational contexts, holds significant potential for enhancing media didactics in the following ways [27–29]:

3.1. Adaptive Learning

Through machine learning algorithms, AI can tailor educational content to each student's level of knowledge, dynamically adjusting task difficulty to improve learning outcomes. A key development in this area is the emergence of adaptive learning platforms, which monitor student progress and automatically personalize educational content. Examples include platforms like *Coursera* and *Khan Academy*, which employ AI algorithms to generate individualized learning pathways.

3.2. Personalized Learning

AI can analyze a student's learning pace, preferences, and strengths to offer customized recommendations and assignments. Interactive systems such as chatbots and virtual assistants provide instant feedback and ongoing support. AI is also applied in game-based learning: for instance, in simulators used for training dispatchers or operating complex technological equipment—especially in fields like medicine or engineering. These gaming platforms adjust scenarios in real time, offering optimized learning experiences. Moreover, AI supports the creation of inclusive learning resources tailored to individuals with special needs (e.g., systems designed for learners with hearing or visual impairments).

3.3. Automated Assessment

AI technologies can automate the assessment of student performance using advanced algorithms to analyze responses and deliver immediate feedback. This process often surpasses traditional evaluation methods in terms of speed and accuracy.

3.4. Intelligent Information Retrieval and Organization

AI-based educational tools can effectively search, filter, and organize large volumes of information, assisting both teachers and learners in preparing for lessons or conducting research on specific topics.

3.5. Generation of Educational Materials

AI can automatically create a wide range of instructional resources, such as test questions, exercises, educational videos, and interactive content, reducing the workload for educators and enabling more engaging learning formats.

AI is also becoming an essential tool in the context of academic research. Its applications include:

- **Large-scale data analysis**: AI helps researchers process and analyze complex datasets, enabling deeper insight into experimental outcomes, theory validation, and the discovery of new scientific facts.
- **Automated literature review**: By processing large volumes of textual information, AI significantly speeds up the search for relevant academic articles, books, and other sources.
- **Modeling and simulation**: In scientific fields, AI is used to simulate physical, social, or biological processes, helping researchers predict outcomes and test hypotheses with greater precision.

4. Advantages and Disadvantages of Using AI in Media Didactics

Advantages:

- **Personalized Learning:** AI can offer tailored recommendations for each student, taking into account their individual learning style and pace of material assimilation.
- **Speed and Accuracy:** Automated assessment and feedback make the learning process faster, more intensive, and more precise.
- **Improved Accessibility:** AI facilitates access to education for individuals with special needs and those in remote or underserved geographical areas.

Disadvantages:

- **Technological Dependence:** Over-reliance on automation may lead to reduced critical thinking, as students might increasingly depend on AI solutions.
- **Privacy Concerns:** The use of personal data for learning personalization raises significant questions regarding privacy and data protection.
- **Technical Limitations:** Not all educational platforms are sufficiently flexible to respond to the dynamic needs of learners—especially during global crises or force majeure situations.

5. Conclusions

1. Artificial intelligence represents a powerful tool with vast potential to enhance media didactics by enabling adaptive and individualized learning. Its implementation can substantially increase the efficiency and flexibility of the educational process, improve accessibility, and ensure a more personalized approach for each learner.

2. However, the integration of AI into education must be approached with caution, addressing both ethical and technological challenges. It is essential to strike a balance between traditional pedagogical methods and technological innovations. Moving forward, AI should be developed in a way that enhances rather than replaces live teacher-student interaction—serving as a complement that supports, motivates, and enriches the learning experience. Furthermore, the specialized application of AI by profession and educational program should be a key focus.

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წარმოადგინა ცხუმ-აფხაზეთის მეცნიერებათა აკადემიის სლავური ენების ინსტიტუტმა

აბსტრაქტი. ეს სტატია შეეხება ხელოვნური ინტელექტის (AI) გამოყენების აქტუალურ საკითხს განათლებაში და განიხილავს მას მედიადიდაქტიკის ერთ-ერთ კომპონენტად. წარმოდგენილია როგორც ხელოვნური ინტელექტის, ასევე მედიადიდაქტიკის ისტორიული განვითარების მოკლე მიმოხილვა. ნაშრომი იკვლევს ხელოვნური ინტელექტის გამოყენების მრავალმხრივ შესაძლებლობებს, განსაკუთრებული აქცენტით განათლებაზე. იგი აღწერს AI-ის ინტეგრაციის ეტაპებს საგანმანათლებლო კონტექსტში, 1960–1970-იანი წლებიდან დღემდე.

განხილულია ხელოვნური ინტელექტის ძირითადი ფუნქციები მედიადიდაქტიკაში, როგორიცაა ადაპტური და პერსონალიზებული სწავლება, ცოდნის ავტომატიზებული შეფასება, ინფორმაციის ძიება და დახარისხება, ასევე სასწავლო მასალის გენერირება. სამეცნიერო კვლევების კონტექსტში, AI შეიძლება გამოყენებულ იქნას დიდი მონაცემების ანალიზისთვის, ლიტერატურის

ავტომატიზებული ძიებისთვის, სხვადასხვა პროცესისა და ფენომენის მოდელირებისა და სიმულაციისთვის.

სტატიაში ასევე განხილულია ხელოვნური ინტელექტის გამოყენების უპირატესობები და გამოწვევები მედიადიდაქტიკაში. ანალიზის საფუძველზე ჩამოყალიბებულია დასკვნა, რომ AI წარმოადგენს ძლიერ ინსტრუმენტს, რომელსაც აქვს მნიშვნელოვანი პოტენციალი მედიადიდაქტიკის განვითარებისათვის — ის ქმნის ადაპტური და ინდივიდუალური სწავლების ახალ შესაძლებლობებს. AI-ის ინტეგრაციას შეუძლია გააუმჯობესოს სწავლების ეფექტიანობა და სისწრაფე, გაზარდოს ხელმისაწვდომობა და მოქნილობა, და უზრუნველყოს პერსონალიზებული სასწავლო გამოცდილება.

თუმცა, საჭიროა ეთიკური და ტექნოლოგიური საკითხების გააზრებული მიდგომა. მნიშვნელოვანია ტრადიციული სწავლების მეთოდებსა და თანამედროვე ტექნოლოგიებს შორის ბალანსის დაცვა. მომავალში, აუცილებელია, რომ AI მხოლოდ ავსებდეს და ამდიერებდეს მასწავლებელსა და მოსწავლეს შორის ცოცხალ ურთიერთობას და არ ჩაანაცვლოს იგი. აგრეთვე, უნდა მოხდეს ხელოვნური ინტელექტის აპლიკაციების პროფესიულ და საგანმანათლებლო პროგრამებთან ადაპტაცია.

საკვანძო სიტყვები: ხელოვნური ინტელექტი, მედიადიდაქტიკა, მედიაგანათლება, ადაპტური სწავლება, ინდივიდუალური სწავლება.