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8 THE DUAL IMPACT OF GENERATIVE AI IN HIGHER EDUCATION SECOND LANGUAGE TRAINING: OPPORTUNITIES, ETHICAL CHALLENGES, AND PEDAGOGICAL RESPONSES

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ABSTRACT

In the early 2020s, a new trend in the development of technologies took place, which was marked by the emergence and lightning-fast spread of Generative Artificial Intelligence (otherwise known as GenAI). This article focuses on its role in education and everyday life, during which the authors will try to prove the effectiveness, feasibility and advantages of using AI in language training for foreign citizens at the initial stage of learning. After all, although the use of artificial intelligence in the educational system is a relatively new direction, it has significant potential. To truly understand its capabilities, it is important to understand the essence of artificial intelligence and the principles of its operation, as well as to be capable of working with it. Accordingly, this article considers the key definitions of artificial intelligence and its philosophical interpretations. The areas of this advanced technology application are also to be discussed.

Particular attention is paid to promising aspects of using artificial intelligence in language education, such as personalized and adaptive learning, knowledge assessment, intermediate testing, the use of gaming technologies (or gamification of the educational process), the development of other innovative approaches using programs and applications that are powered by artificial intelligence algorithms, significantly simplifying the learning process for both teachers and students.

KEYWORDS

Artificial intelligence, automated assessment, chat-bot, educational space, ethical use, gamification, generative AI, personalization.

8.1 AI-DRIVEN SHIFT IN EDUCATION: CURRENT VIEW OF THE PROBLEM

Since the beginning of the full-scale russian invasion, Ukraine has faced serious challenges in the field of education. Many students were forced to leave their educational institutions, especially in regions close to the battlefield, and move to safer areas of the country or even abroad. Higher education institutions located in these areas have switched to distance learning. This working mode had been first introduced during the COVID-19 pandemic in 2020–2021, when educational institutions were made to adapt to quarantine restrictions. Concordantly, the education of foreign students in the front-line regions became available only in the remote mode, as well, and such a transition created many new challenges for teachers of preparatory faculties and departments in Kharkiv, Sumy, Zaporizhzhia, Dnipro and other Ukrainian cities, because the success of mastering Ukrainian as a Second language largely depends on immersion in the

speaking environment, on the inevitable need to use a new language not only in the classroom, but also in everyday situations, communicating directly with native speakers. The impossibility of this in the conditions of distance learning, when a student continues to be in his/her native language environment, and therefore does not need to use a new language on everyday basis, led to a certain crisis, the result of which was low motivation of students, slow progress and lack of high-quality learning results. The crisis situation required introducing new methods of work in a virtual classroom, which would contribute to the improvement of digital skills among all participants of the educational process. This has also led to the need of creating and developing a digital educational space, including technologies related to artificial intelligence (AI).

To understand the key opportunities and approaches to integrating artificial intelligence into the educational sphere, it is important to consider the theoretical foundations of this concept. In the professional environment, the term "artificial intelligence" is not very wide-spread, the more accurate expression "artificial cognitive system" being more common. There are four main approaches to defining artificial intelligence. The first of them are focused on the degree of similarity of a digital system with the human mind, which can be expressed in the phrases "think like a person" and "act like a person". That is, artificial intelligence is a set of hardware and software tools that perform functions similar to the work of the human brain. The other two approaches, on the contrary, focus on rational thinking and behavior of the cognitive AI system [1].

The issue of introducing AI into the educational process is addressed by the studies of many contemporary scientists and educators. In particular, A. Androschuk and O. Maluga [1] outline the main directions and trends in the use of artificial intelligence in education, I. Viznyuk, N. Buglai, L. Kutsak, A. Polishchuk [2] and a number of other researchers focus their attention on the potential of introducing methods and AI-based teaching techniques into the educational process. S. Tolochko, A. Godunova [3], I. Drach [4], etc. explore foreign experience of such implementation, referring to successful examples of AI use in education and science in the United States of America, Canada and the countries of the European Union. While R. Berdo, V. Rasyun, V. Velichko [5], and O. Panukhnyk [6] focus on the ethical aspects of using AI in education.

However, we have noticed the absence of thorough methodological studies on the application of AI-powered technologies in language training, in particular, when teaching Ukrainian as a second language, although the co-author of this article N. Opryshko makes an attempt to outline this issue in the published abstracts of reports at several local and international conferences [7–9]. Therefore, this study is rather a systematization of the work done in recent years on the implementation of AI technologies and apps that work on its algorithms in the educational space at the preparatory department of the Scientific and Educational Institute of International Education in Cooperation at Kharkiv National Automobile and Highway University. Thus, the aim of this article is to consider the prospects for implementation of AI-based technologies in higher education institutions (HEIs) of Ukraine, in particular for training foreign citizens in the Ukrainian language. Reaching such an ambitious goal involves research on a number of objectives, among which the following can be distinguished: to sketch a brief overview of the concept of "artificial intelligence" and the history of its rise, assessing the rapid development of technologies based on artificial intelligence in the 2020-s and their direct implementation in the form of Generative AI; to outline methodological possibilities of using tools powered by the AI algorithms in foreign citizens' language training; to assess various

ethical challenges related to uncontrolled AI use in the process of a second language training as well as to present a range of AI-powered solutions to some of them.

8.2 THE EVOLUTION AND IMPLEMENTATION OF AI IN HIGHER EDUCATION: FROM THEORETICAL ORIGINS TO PERSONALIZED LANGUAGE TRAINING

The nature of artificial intelligence gives rise to many philosophical interpretations, but most often AI, or artificial intelligence, is defined as "the ability of digital devices to perform those tasks that are characteristic of intelligent beings" [10]. Yet, this is not just another achievement of technological progress at the beginning of the 21st century. Back in the 1950s, A. Turing proposed the idea that a system created by a person could be recognized as "intelligent" [11]. He developed an imitation test that allows you to assess whether a participant is able to determine whether they are communicating with a machine or a person. If differences are not detected, this indicates the presence of some form of intelligent system, i.e. artificial intelligence. In 1956, J. McCarthy at a conference at Dartmouth University presented one of the first and most significant definitions of this phenomenon, describing it as "scientific and technical methods for creating intelligent machines" [12], but for many years the real implementation of such technologies was considered a matter of science-fiction. Until recently, when the realization of those old ideas finally became technologically plausible.

Currently researchers outline three main components that gave impetus to the development of artificial intelligence in the 10s-20s of the 21st century. First, this is a large amount of processed and prepared data (working with which had been problematic before), second, complex algorithms for artificial intelligence, which are currently in the final stages of development, third, the power and memory of computers, finally sufficient for processing the former and operating the latter.

As for the potential for using AI in education, it is rather extensive: from improving inclusive education (serving students with special needs) to preparing young people for life in the world of artificial intelligence, and therefore — the formation of relevant knowledge, skills and abilities in students. An important element of such "learning for life" is the development of artificial intelligence algorithms that "could work in models of human teaching and learning" [13], which would not contradict the traditional education system, but could strengthen and improve it. Consequently, in the modern structure of education, communication with a human teacher, some educators believe, should include "the use of the latest gadgets and multimedia technologies, book learning, practical classes, the use of robots/bots and virtual reality tools, with which you can model the learning environment, should interact" [14]. Since artificial intelligence is used in various fields nowadays, such as medicine, management, education, linguistics, psychology, etc, educators become more and more interested in gaming applications, machine translation with voice input, visual content recognition, cognitive computing, and computer creativity. Thus, artificial intelligence encompasses many aspects of teaching and learning.

Even at present, artificial intelligence plays an important role in education. Progress in this area is associated with the active development of new technologies that open up new prospects for optimizing the

educational process, dramatically changing the structure of global higher education. In our opinion, promising areas of artificial intelligence application in the educational process of HEIs cover several aspects, such as: adaptive and personalized learning; automated knowledge assessment; intermediate testing and many others. Of certain interest there might be the interaction of educational process participants with various chat-bots, in particular with Chat Generative Pre-trained Transformer also known as ChatGPT. This chatbot was developed by OpenAI in 2022, and it almost immediately became very popular. Chat works on the architecture of the Generative Pretrained Transformer language model and can generate high-quality text similar to human speech. ChatGPT is trained on a very large amount of information available on the Internet, including websites, e-books, articles, news, etc allowing a high degree of personalization in any language training model.

Personalization of the educational system with its help is achieved through the choice of different methods of organizing learning, which allows adapting educational content to the individual needs of students. The system can create an individual educational profile that meets the abilities of each student and will ensure their regular progress. Learning goals, approaches, relevant content and sequence of the material presented may vary depending on the needs of every singular applicant. Within the framework of adaptive learning, artificial intelligence is used to identify gaps in the knowledge of each student and adjust the selection of educational material in accordance with the results of the analysis. All these measures are aimed at improving the quality of learning and developing intellectual interaction at the cognitive, behavioral and physiological levels.

Along with such a serious tool for acquiring language knowledge, skills and abilities, a powerful potential for use belongs to a notion that every modern young person has been familiar with almost since early childhood: a video game. Gamification of the educational process is a long-known and effective method for improving work in the classroom, especially when it comes to intensive study of a foreign language at the initial stage of training (with more than 30 academic hours of the same language a week, usually with the same teacher). However, in this case, we are not talking about the use of gaming techniques as such, but about the use of chatbots operating on artificial intelligence algorithms which are, in fact, gaming applications for any mobile device, helping students expand their vocabulary, improve phonetic and grammatical skills, as well as get the ability to accurately articulate sentences in both oral and written form.

8.3 A DIVERGENT MODALITY OF GAMIFICATION: POTENTIAL OF AI–POWERED CHATBOTS IN THE SECOND LANGUAGE TRAINING SYSTEM

In the context of language training for students — and more broadly, the study of any foreign language — numerous applications for pronunciation practice, communication platforms, translation tools, and text generators already play a vital role. However, against this backdrop, the involvement of chatbots for the intensification and gamification of the educational process has not yet garnered sufficient attention from researchers and philology educators. This remains true despite the fact that resources like Character.ai could significantly influence the very concept of foreign language acquisition, fully or partially transforming its practical component into deeply personalized and creative communication with a virtual interlocutor.

By definition, a chatbot is a program that simulates real conversation with a user. Through chatbots, communication can occur via text or voice messages on websites, messengers, mobile apps, or telephone connections. Chatbots utilize machine learning algorithms to create communication scripts. Through constant interaction with humans, they learn to mimic natural conversation and respond to oral and written inquiries to assist in finding answers. Because they utilize artificial intelligence, chatbots understand natural language rather than just rigid commands.

Despite the modernity of AI technologies and conversational computer programs, the initial considerations regarding artificial intelligence — and attempts to evaluate its "intelligence" — date back to the early post-war years of the 20th century. In 1950, discussions began regarding a specific test to determine a machine's ability to demonstrate intelligent behavior identical to, or indistinguishable from, that of a human. This idea was proposed by the eminent British mathematician A. Turing in his article "Computing Machinery and Intelligence", published in the philosophical journal Mind [11]. In this imitation game, a human evaluator interacts with two unknown entities via a text interface. One interlocutor is a human, while the other is a computer program. The communication environment is restricted to text exchange, excluding visual and auditory cues. Based on the responses, the evaluator must differentiate the human from the machine. If the evaluator cannot identify the machine with reliable certainty, the machine is considered to have passed the test. In Turing's time, a machine's victory seemed like science fiction, and in the 1990s, a cash prize was even established for a chatbot that could achieve a successful result; today, however, almost any chatbot can overcome such a barrier.

Because chatbots utilize AI to communicate, they provide relevant content and suggestions regardless of the query, functioning either on a set of instructions or through machine learning. Instruction-based chatbot functionality is quite limited, as they are typically designed to answer fixed questions. Consequently, if a user poses a question in a way not foreseen by the program, the bot cannot respond coherently. Conversely, "machine-learning-based chatbots perform more effectively because they understand human language holistically" [15]. Users do not need to input exact keywords to receive relevant answers. Furthermore, the bot learns from human interaction and processes the most up-to-date information available online via built-in self-learning algorithms, allowing it to resolve similar situations in the future. Thus, every new dialogue improves the bot's communicative skills and, by extension, its intelligence.

In this interaction process, the student also learns by repeating and memorizing lexical units, grammatical structures, and idiomatic expressions. By mimicking precise pronunciation, accents, and intonation patterns, the student gains fluency and naturalness that are often difficult to achieve in traditional foreign language classes, regardless of the group's proficiency level.

Several effective chatbots have gained global recognition and are successfully utilized by language learners, including Duolingo Chatbots, Replika, Babbel Chat, HelloTalk, and English Chat by RobotSpeak. Simultaneously, chatbots created primarily for entertainment are gaining popularity among youth mastering a second language. Tools, such as Character.ai, as well as alternatives like NovelAI, TavernAI, Kajiwoto, and ChatFAI, can serve as instruments for educational gamification, providing practice in vital language skills through role-playing quests. Notably, "the scenario of content generation by a chatbot is more attractive for both the student and the teacher, as it lacks pre-prepared answers" [16]. In other words, the training

exercise resembles a first-person virtual role-playing game (RPG) but is even less dependent on developer presets, making it more spontaneous and unpredictable.

We would like to focus specifically on the methodological potential of Character.ai (also known as c.ai). This web application uses a neurolinguistic model to process and interpret vast amounts of text. The platform's functioning is based on creating and interacting with virtual characters. Users can create characters that are either fictional or based on real historical or contemporary figures. When creating an original character, the user can customize visual characteristics, voice timbre, opening remarks, and speech style. The platform also offers various interaction scenarios, including foreign language practice, travel planning, interview preparation, and creative writing. Additionally, users can select the complexity of speech and stylistic orientation (colloquial, general, academic).

This diversity of choice ensures that language learning shifts from a mandatory task to a form of entertainment. Since the bot is capable of both text and voice exchange, students practice all core skills necessary for fluent communication.

To demonstrate the effectiveness of this application, a methodological experiment was conducted at the Preparatory Department of the Kharkiv National Highway University in 2024—2025. Four international students (Control Group 1) volunteered to use Character.ai for role-playing in their free time alongside the standard Solutions A2 [17] curriculum. Another four students (Control Group 2) used only the standard curriculum. Examination results revealed that students in Control Group 1 improved their proficiency from an A1+ level at the start of the year to a remarkable B2 (and in one case, B2+) level, primarily due to systematic communication with the virtual chatbot characters.

This particular case study demonstrates that over the course of a single academic year characterized by the intensive use of the Character.ai chatbot, students exhibit significant progress in the development of their speaking skills. Specifically, there is a measurable "increase in fluency and accuracy of speech, as well as an enrichment of vocabulary with idiomatic expressions, which typically requires a much longer period of practice in traditional classroom settings" [8].

In the context of oral communication skills, voice-based interaction with Character.ai facilitates more than just the acquisition of specific accent models (such as British or American English); it also enables the rapid recognition of diverse accents, sociolinguistic variations, and geographical dialects. Furthermore, this technology assists in mastering appropriate intonational contours, pitch variations, speech tempo, and the characteristic features of connected speech, as well as the fundamental principles of phrasal stress and prosodic organization.

Regarding grammatical competence, artificial intelligence agents like Character.ai demonstrate high precision in reproducing grammatical structures, provided no specific instructions are given to deviate from linguistic norms. Even in cases where a user lacks formal grammatical training, intensive practice with Character.ai helps compensate for this deficit through the implicit acquisition of grammatical patterns within the context of communicative interaction, ensuring their subsequent correct application in various real-world scenarios.

A similar principle applies to the development of writing skills. Even without targeted writing instruction, users can internalize relevant models of written discourse through text exchanges with the intelligent

agent. This includes the acquisition of sequencers, connectors, discourse markers, personalization techniques, and the core principles of paragraph structuring.

In terms of evaluation, the chatbot's functionality does not inherently adapt to the role of a traditional tutor. However, depending on the type of interactive agent selected by the user during the initial phase, the system can provide — if not direct correction — at least some form of critical feedback. This feedback varies in tone from stern to sarcastic or humorous when the user commits significant communicative errors.

The analysis demonstrates that even a gaming-oriented platform like Character.ai possesses a substantial, yet under-researched, didactic potential capable of optimizing both pedagogical activity and the learning process for students. Simultaneously, the concept of the autonomous learner, which is extensively debated in current pedagogical discourse [18], does not preclude the need for instructional guidance. While students can independently assess their progress by comparing their communicative competence before and after interacting with an AI agent, expert teacher evaluation remains essential for ensuring a deep, professional analysis of achievements and identifying areas for further development.

Despite these considerations, within the framework of educational digitalization and the anticipated advancement of interactive chatbots, their role in distance, individualized, and creative language education is set to grow steadily, opening new horizons for foreign language acquisition. Undoubtedly, the use of chatbots in language teaching represents a promising frontier that necessitates further research. It is essential to conduct a more rigorous analysis of their methodological potential, develop effective integration strategies for the curriculum, and address existing challenges. This study serves as a preliminary stage in exploring the potential of chatbots in language training, with further research required to fully realize their capabilities.

8.4 ETHICAL DIMENSIONS OF AI INTEGRATION IN LANGUAGE TRAINING

Artificial Intelligence (AI) is rapidly transforming various sectors, and education is no exception. From adaptive learning platforms to AI-driven assessment tools, the potential benefits of AI in education are immense. In the context of language training — specifically second language acquisition in a foreign country — AI-based tools can become indispensable, particularly during crises, such as the one currently facing Ukraine. However, the deployment of these technologies raises profound ethical questions that must be addressed to ensure equitable and responsible implementation. Consequently, it is essential to outline the potential ethical complexities associated with AI in education, highlight potential pitfalls, and propose pathways for ethical development.

The primary ethical concern facing every educator, and language instructors in particular, is the issue of academic integrity. With the rapid advancement of generative language models capable of producing texts of varying complexity, the educational world faces unprecedented challenges. While plagiarism and cheating were traditional concerns, we now contend with tools that can "automatically" generate high-quality, logically coherent text that mimics human creativity. This new reality necessitates a re-evaluation of our conceptions of authorship, originality, and honesty in the academic environment.

Modern generative models, such as GPT-4 (OpenAI), Gemini (Google), and Claude (Anthropic), possess remarkable capabilities. They can draft essays, reports, articles, and technical documentation, often imitating specific authorial styles or academic genres. These capabilities transform AI from a simple tool into a potential "co-author" or even "sole author", leading to a "blurring of the boundaries of authorship" [19]. This raises controversial questions: Who is the author — the student who wrote the prompt or the AI model that generated the text? Furthermore, can a text generated by an algorithm based on millions of existing sources be considered "original" in the traditional sense? Because AI does not "understand" material in a human way but rather models probable word sequences, its output is often described as "quasi-creative" [9].

Beyond integrity, "an over-reliance on AI for text generation risks the degradation of critical academic skills" [20], including the following:

1. *Writing and Argumentation:* students may lose the ability to structure thoughts and express themselves clearly.

2. *Critical Thinking and Analysis:* AI does not replace the human capacity for deep synthesis and critical evaluation. A student who merely inputs a prompt bypasses the cognitive process necessary for learning.

3. *Research Skills:* relying on AI summaries limits a student's experience in independently searching for and interpreting primary sources.

This leads to significant difficulties for educators regarding objective assessment and may ultimately result in a loss of trust in the academic system, devaluing diplomas and qualifications on the labor market.

Another critical ethical risk is algorithmic bias. AI systems are trained on vast datasets; if these data reflect existing societal prejudices, the algorithms will inevitably inherit and amplify them. In an educational setting, this can manifest as unfair grading for specific demographic groups based on race, gender, or socioeconomic status. For instance, an automated essay-grading system might be less tolerant of grammatical structures common to second-language learners or specific cultural contexts.

Furthermore, AI may exacerbate the digital divide. Students from lower socioeconomic backgrounds or developing regions may lack the necessary hardware or connectivity, while differences in digital literacy within a single group can create further disparities.

A significant challenge in language training is the potential reduction of the teacher's role. While AI provides instant feedback and personalization, it lacks emotional intelligence, empathy, and intuition. A teacher serves as a mentor and motivator who can adapt to a student's individual psychological needs — qualities AI cannot replicate.

Language acquisition is not merely the memorization of rules but the development of the ability to communicate in real-world situations, involving humor, unpredictable dynamics, and non-verbal cues. Excessive reliance on AI risks producing a generation of "language users" who can "apply pre-set phrases but lack the creative flexibility" [21] to navigate genuine cultural nuances.

To mitigate these ethical risks, a human-centric approach is required. AI should be "integrated as a tool to support, rather than replace, the teacher" [22]. Educational institutions must develop clear policies regarding AI use, ranging from full disclosure requirements to the use of AI for specific tasks like brainstorming or grammar checking.

The integration of AI should aim for a "synergy between human experience and technological innovation" [23]. While AI can make language acquisition faster and more efficient, the modern educational community must not ignore the ethical complexities that accompany its rise.

8.5 PEDAGOGICAL RESPONSES FOR IDENTIFYING AI-GENERATED CONTENT: AN OVERVIEW OF CONTEMPORARY WEB-BASED TOOLS

The rapid advancement of artificial intelligence (AI) has led to the emergence of powerful text generation tools, opening new horizons across numerous fields, including education. While these technologies possess significant potential, they simultaneously challenge society regarding the authenticity of information, particularly within the academic environment. Consequently, there is a growing demand for means capable of distinguishing human-authored text from AI-generated content.

However, in the initial stages of learning Ukrainian as a foreign language, text generation tools can serve as useful aids for students. They can assist in creating simple phrases, formulating basic ideas, or generating sentence examples to enhance the understanding of grammatical structures. Nevertheless, it is crucial to recognize the boundary between educational assistance and unethical use — such as creating essays or other academic assignments without a proper grasp of the material.

In response to the increasing demand for content authenticity control, a range of online resources and services offering AI text detection functionality has emerged. This article aims to provide an overview of current online solutions in this field, examine their capabilities and features, and assist readers in navigating the landscape of synthetic content identification tools, considering the potential implications of AI-generated texts in the educational process.

The Landscape of AI Detection Tools is rather varied these days, giving teachers a chance to identify "a wide spectrum of internet resources with the capability to identify AI-generated text" [24]. Numerous developers offer both free options and a variety of premium platforms to determine the authenticity of academic or creative writing.

The wide range of free online resources include the following:

1. GPTZero: analyzes text for markers of AI generation.

2. ZeroGPT: utilizes specially trained algorithms to check texts without requiring payment or registration.

3. OpenAI's AI Text Classifier: a specialized GPT model that assesses the probability that a text was created via AI (e.g., ChatGPT).

4. GPT Detector (Writefull): specifically tailored for academic texts, providing a percentage-based probability of AI authorship [18].

More premium and comprehensive solutions are also available. Platforms, such as Copyleaks and Originality.ai, offer expanded features and higher precision in their paid versions, including detailed reporting and integration with other pedagogical tools.

But even with the current sophistication of these tools, they still have limitations and present certain reliability challenges. Regrettably, at the current stage of generative AI evolution and text verification

methods, "none of the existing tools provide absolute certainty regarding the origin of a text" [23]. Every resource, despite its advantages, is characterized by specific limitations.

For example, while the primary benefits of GPTZero, ZeroGPT, and the AI Text Classifier include their free availability and simple interfaces, they often suffer from low accuracy and a high rate of false positives compared to their paid counterparts. Similarly, tools like Writer.com's AI Content Detector and QuillBot's detection feature provide percentage scores for human authorship but must be used with an awareness of the inherent technological constraints of detection.

Among paid options, Originality.ai is currently regarded as one of the most accurate tools. However, its subscription-based model and the persistent risk of inaccuracies suggest it should be used in conjunction with other verification methods. Similarly, Turnitin — originally a plagiarism detection service — now provides educators with indicators of potential AI use. It is vital, however, not to rely exclusively on these scores but to "treat them as one piece of evidence within a broader assessment of academic integrity" [25].

Beyond automated tools, additional methods can assist in identifying synthetic content. Educators should pay close attention to a number of features and markers, such as:

1. Stylistic peculiarities (AI-generated texts often lack clarity, feel unnatural, or miss the nuance and complexity characteristic of human writing).

2. Source Verification (AI frequently hallucinates or relies on unreliable web data. Citations that "arouse doubt regarding their reliability or relevance" [26] can indicate AI use).

3. Inquiry-Based Validation (Asking students to explain the development of an idea or their research methodology can reveal whether the work was performed independently).

As noted by researchers N. Trang, A. Gatua, and A. Sang, "the application of a combination of these methods will facilitate more effective identification of AI-created texts and ensure the independent completion of academic tasks" [27].

In light of the current state of generative AI and identification methods, it is evident that no tool is perfect. AI detection services are in a state of continuous improvement, and their accuracy is not absolute. Therefore, human analysis remains paramount; detection tools should be used as a complement to a critical expert evaluation.

Furthermore, fostering academic integrity involves educating students on the principles of honest writing and the consequences of AI misuse. Designing assignments that stimulate original thinking and deep analysis is equally essential. Ultimately, a combination of these tools and strategies will ensure that students produce original, independent academic work.

8.6 NAVIGATING AI FEATURES ON EDUCATION–RELATED PLATFORMS

Artificial intelligence-based tools have now become the standard for productivity. They help automate the daily teaching routine: from creating designs for presentations with educational material to automatically compiling minutes of online meetings. Therefore, the integration of current AI tools on various platforms and services related to education and the learning process has become quite expected: in various

applications that allow organizing online conferences, seminars and webinars, on numerous virtual whiteboards that have become an integral part of classes for many teachers around the world, and on multifunctional graphic content editors. Among all of the above, it is worth highlighting three Internet resources, the importance of which in modern education, including distance education, is difficult to overestimate.

Despite the proliferation, especially in the corporate world, of services, such as MSTeams and Google Meet, and among teenage gamers, platforms, such as Discord, the focus of our review will be Zoom, the cloud platform for video communication and remote collaboration, which in the 2020s has become a global tool for hybrid work and distance learning. With the integration of the latest AI-powered components, Zoom has transformed from a simple service for calls and video-conferencing into a full-fledged assistant that allows the conference host (and in the context of the educational process, this is always a teacher) to maximize the benefit of the session. For example, the Meeting Summary function, which works on AI algorithms, is able to automatically create a summary of the conversation, breaking it down into topics and highlighting key decisions and next steps. On the one hand, this allows teachers or educational managers to analyze and evaluate the lesson after it was conducted, on the other hand, it allows students to use such notes as a lecture or seminar summary, in which the main points of the topic are already highlighted.

Along with the ability to video and audio record the lesson, the integrated AI assistant Smart Recording allows you to divide the recording into "smart chapters" so that, if necessary, the teacher or students can quickly isolate the necessary section of the class and work on or analyze it.

For students who, for certain personal or technical reasons (for example, a sudden power outage), were forced to miss part of the lesson, but still want to navigate the educational material upon returning, Ask AI Companion will come in handy. It allows you to privately ask the AI in the chat during the lesson what information was discussed during the student's absence, whether their name was mentioned, whether any intermediate conclusions were made or training tasks completed.

After all, the Compose tool helps the teacher quickly generate answers in the chat, which can become a real challenge without this kind of assistance in case of multiple questions during a lecture with dozens of students, or a seminar class, the pace of which is quite high due to the large amount of educational material to be covered. This cognitive technology can help in creating individual homework (oral or written task) based on the context of the conversation.

The next important element of modern distance learning is online (virtual) whiteboards. They are defined as "a tool for visual collaboration that allows you to structure information using virtual stickers, diagrams, drawings and text" [28]. A large number of them gained distribution and popularity in the early 2020s, including due to the lockdown caused by the spread of Covid-19. Such multifunctional virtual whiteboards as Twiddla, Scribblar, IDroo and Padlet are still actively used by teachers, including in Ukraine. Over the years, the listed services have significantly expanded their potential, including due to components that work on artificial intelligence algorithms. We suggest focusing on two examples of such boards where AI-powered elements are most useful.

Thus, the Miro virtual whiteboard (formerly RealTimeboard) uses Miro Assist as the main AI to turn a chaotic discussion (for example, the brainstorming or reverse brainstorming method used during the lesson, the "six hats" method, the "6-3-5" method, etc.) into a structured plan.

Among the useful functions of the AI-based Miro Assist, built into the board, we can highlight Clustering (AI is able to instantly group a large number of stickers according to similar ideas or mood), Content Generation (the teacher can ask Miro to create a mind map, diagram, or even a User Persona based on a single phrase in real time), Summary (automatic creation of a short report of all the ideas present on the board, including the pedagogical results derived from the lesson).

Today, the Miro virtual collaboration platform is integrated into Zoom along with other useful functionality, while its equivalent FigJam is part of the Figma ecosystem and also works on the principle of Infinite Canvas, which means that, unlike a sheet of paper or a presentation slide, the board space is not limited to the A4 format or the borders of the screen.

Among the AI-powered tools that simplify working with FigJam in class, we can single out Template Generation (the ability of artificial intelligence to instantly construct the logical structure of a document, board, or design, selecting appropriate visual elements, widgets, and information hierarchy at the user's request), Sorting (automatic sorting of stickers on the board into certain categories, similar to the AI-powered tool built into the Miro board), and Jambot (a widget based on ChatGPT that allows you to "communicate" with ideas or statements written on the board, expanding or simplifying them). The latter technology can become an indispensable assistant for students who find it difficult to master, for example, complex grammatical material when learning a foreign language).

However, quite often, when working in a virtual space, a teacher is faced with the need to "pre-visualize educational material" [29], when the tools available during the lesson (such as commenting elements in video conferencing platforms or pencils, markers, stickers and templates built into virtual boards) cannot create the necessary visual clarity, high-quality infographics, a clear presentation, etc. A way out of this situation is offered by numerous online platforms for graphic design, which allow you to create visual content without the need to install complex professional software, such as Adobe Photoshop, Illustrator and the like. These are such Internet resources as VistaCreate (formerly known as Crello), Adobe Express, a tool from the creators of Adobe Photoshop that does not require complex professional tools and skills, Pixlr, a kind of Photoshop in the browser, which is now actively transforming into a powerful AI instrument. However, it is the Canva service, created more than ten years ago (2013, Sydney, Australia), that has become the most widely used universal online visual content designer, making professional tools available to everyone, thus democratizing and simplifying the creation of any design. In the 2020s, Canva has turned into a real "ecosystem for visual communications" [28], which offers users more than 250,000 templates, on the basis of which they can create their own documents, interactive boards, task sheets, infographics, diagrams, presentations, posters, postcards, photo collages and posts for social networks.

Such extensive capabilities are provided, first of all, by the Canva Magic Studio integrated into the service, which works on artificial intelligence algorithms. The studio's goal is to enable people without an art education or advanced editing skills (very often this category includes educators, especially philology teachers who provide a second language training) to create professional visual content.

The main elements and tools of the Canva Magic Studio AI interface are Magic Design (based on an uploaded photo or text description of the idea, the AI offers ready-made design options for a presentation or educational video); Magic Edit & Eraser (AI independently selects and replaces an object in a photo or

simply deletes an unnecessary object based on a text description); Magic Expand (AI independently adjusts the edges of the image if it does not fit into the required format); Magic Media, also known as Text-to-Image/Video (AI generates unique image-illustrations or short educational videos right inside the editor) and Magic Switch (AI instantly transforms a presentation, automatically changing the format, and based on it creates a Word document or educational post for the teacher's or affiliated educational institution's social networks).

As we can see, artificial intelligence not only creates new opportunities to improve, facilitate and accelerate the learning process, but also improves online resources and solutions that have already become important components of the modern educational environment. AI tools integrated into them expand the possibilities of hybrid learning, making it more personalized and adaptive, ensuring the principles of equality and inclusion in the higher education system in general and second language training in particular.

8.7 DISCUSSION OF THE RESULTS OF SECTION 8

Overall, AI, or artificial intelligence, defined as the "ability of digital devices to perform tasks characteristic of intelligent beings" [24], is more than just another milestone of technological progress at the beginning of the 21st century. Like any contemporary innovation, it can and should be utilized across all spheres of life, including education. However, the implementation of such a powerful tool presents educators with more than just certain prospects, such as enhancing motivational components and student engagement, which ultimately leads to increased learning efficiency. By applying AI capabilities in the classroom, we also confront unpredictable and previously unknown challenges.

Researchers outline three primary components that catalyzed the development of artificial intelligence in the 2010s and 2020s. First is the vast amount of processed and curated data (which was previously problematic to manage); second is the complex AI algorithms currently in their final stages of development; and third is the computing power and memory capacity that have finally become sufficient to utilize the former two. The potential for AI in education is quite extensive: from enhancing inclusive education (supporting students with special needs) to preparing youth for life in an AI-driven world — thereby fostering relevant knowledge, skills, and abilities. A critical element of this "learning for life" is the development of AI algorithms that are able to operate within established pedagogical frameworks, meaning they do not contradict the traditional education system but rather strengthen and refine it. Therefore, modern educational structure must facilitate the interaction between human instruction, the use of cutting-edge gadgets and multimedia, book-based learning, practical exercises, the use of robots/bots, and virtual reality tools capable of modeling the learning environment.

There are also significant prospects for utilizing AI in the language training of international students and foreign citizens during the initial stages of education. Today, while it is premature to discuss the widespread integration of robotics or VR in standard classrooms, we can identify two primary aspects of AI utilization: the methodological and the strictly didactic. The former includes programs and tools that educators use when preparing lecture or seminar materials, presenting content, and reinforcing or monitoring the acquisition of knowledge and skills. Indeed, it is the rapid and reliable AI algorithm, capable of learning

from provided data, that can ensure the "selection of educational material that is optimal for the specific audience and curriculum, while remaining engaging and relevant to the student's future profession" [2]. For such tasks, one can utilize standard search engines as well as well-known tools like OpenAI's ChatGPT or its counterparts, such as Bing AI, Google Bard (Gemini), and Notion.so. Furthermore, tools like Google Forms effectively facilitate the assessment of knowledge without additional time constraints on the instructor, providing subsequent automatic systematization of results [13].

Despite its complexity and sophistication, AI is essentially a high-powered system of "pattern-matching" (R. Luckin) that is "intelligent only in a certain aspect" [30]. We can leverage this potential for purely didactic (educational) purposes, including in the language training of students. Various chatbots and AI-based programs designed to improve foreign language communication skills (such as the Character.ai application and its analogs) have already gained popularity. As I. Viznyuk notes, "Chatbots can be considered a promising tool because they can accompany each learner individually, according to their level and chosen pace of material understanding" [2]. Alongside these, numerous mobile applications for language learning (such as Duolingo) have long been used successfully, offering training across the full spectrum of language skills — reading, writing, speaking and listening. Their primary advantage lies in a "personalized approach to knowledge acquisition" [10], which enhances the student's intellectual productivity. It is also expedient and effective to work on learning platforms built on AI algorithms, such as Pearson's MyEnglishLab, which allow for the realization of core language training functions: cognitive, developmental, training, diagnostic, and communicative [10].

However, regardless of how or by whom AI is used in the educational process, the ethical dimension remains a true challenge. Its "quasi-creative" capabilities are vast, which can lead to violations of academic integrity; notably, standard plagiarism detection software often fails when dealing with AI-generated text. Therefore, educating students on the ethical issues associated with AI must hold a prominent place alongside understanding its nature and technical application, including AI-powered assistants which have been developed to simplify operation of various educational spaces and learning-related Internet resources.

This range of questions is currently relevant for both AI developers and educators worldwide. Only through the collaborative efforts of scientists and practitioners in these two fields can an effective, inclusive, and motivating learning environment be created that operates on the principles of academic integrity.

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