ВІСНИК науки та освіти
ISSN 2786-6165 (ONLINE) №4(46) 2026
Bulletin of Science and Education

*UDC 378:004.8*

*https://doi.org/10.52058/2786-6165-2026-4(46)-2676-2692*

**Kovalenko Oksana Yuriivna** Candidate of Philological Sciences, Associate Professor, Associate Professor at the Department of Pedagogy, Foreign Philology and Translation,Simon Kuznets Kharkiv National University of Economics, Kharkiv, https://orcid.org/0000-0002-3432-2601

# APPLYING GENERATIVE ARTIFICIAL INTELLIGENCE IN HIGHER EDUCATION: RISKS, TECHNOLOGICAL LIMITATIONS, AND THE DISTRIBUTION OF RESPONSIBILITY

**Abstract.** The article analyses the use of generative artificial intelligence in higher education through the perspective of risks, technological limitations, and the distribution of responsibility among the key participants in the educational process. The relevance of the topic is determined by the rapid spread of generative models in teaching, learning, academic writing, assessment, instructional design, and research support, while the pace of their integration exceeds the development of coherent pedagogical, ethical, legal, and institutional regulatory frameworks. The purpose of the article is to provide a theoretical substantiation of the risks and technological limitations associated with the use of generative artificial intelligence in higher education and to develop a model of distributed responsibility under conditions of its implementation. The study is based on theoretical analysis of scholarly literature, international and national policy and regulatory documents, comparative legal analysis, as well as the methods of classification, systematization, generalization, and modelling. As a result, the principal groups of risks associated with the use of generative artificial intelligence in higher education are systematized, namely academic, cognitive, informational and content-related, ethical, legal, and organizational-managerial risks. The article distinguishes between risks and the technological limitations of generative systems, including the probabilistic nature of generation, the tendency to hallucinate, dependence of output quality on prompt quality, opacity of response formation mechanisms, variability of results, and limited contextual sensitivity. An authorial model of distributed responsibility is proposed, encompassing three levels: the student, the teacher, and the higher education institution. It is concluded that the most productive model for regulating the use of generative artificial intelligence in higher education is an institutionally regulated, human-centered, and accountable approach grounded in human oversight, verification, and distributed responsibility.

**Keywords:** generative artificial intelligence; higher education; AI-related risks; technological limitations; academic integrity; distributed responsibility; human oversight; institutional policies.

**Коваленко Оксана Юріївна,** кандидат філологічних наук, доцент, доцент кафедри педагогіки, іноземної філології та перекладу, Харківський національний економічний університет імені Семена Кузнеця, Харків, https://orcid.org/0000-0002-3432-2601

## ЗАСТОСУВАННЯ ГЕНЕРАТИВНОГО ШТУЧНОГО ІНТЕЛЕКТУ У ВИЩІЙ ОСВІТІ: РИЗИКИ, ТЕХНОЛОГІЧНІ ОБМЕЖЕННЯ ТА РОЗПОДІЛ ВІДПОВІДАЛЬНОСТІ

**Анотація.** У статті проаналізовано застосування генеративного штучного інтелекту у вищій освіті крізь призму ризиків, технологічних обмежень і розподілу відповідальності між основними учасниками освітнього процесу. Актуальність теми зумовлена стрімким поширенням генеративних моделей у практиках навчання, викладання, академічного письма, оцінювання, підготовки навчальних матеріалів і наукової роботи, тоді як швидкість їх інтеграції випереджає формування цілісних педагогічних, етичних, правових та інституційних механізмів регулювання. Метою статті є теоретичне обґрунтування ризиків і технологічних обмежень застосування генеративного штучного інтелекту у вищій освіті, а також розроблення моделі розподіленої відповідальності в умовах його використання. У дослідженні використано теоретичний аналіз наукової літератури, міжнародних і національних нормативних та рекомендаційних документів, порівняльно-правовий аналіз, методи класифікації, систематизації, узагальнення та моделювання. У результаті систематизовано основні групи ризиків застосування генеративного штучного інтелекту у вищій освіті: академічні, когнітивні, інформаційно-змістові, етичні, правові та організаційно-управлінські. Розмежовано ризики та технологічні обмеження генеративних систем, до яких віднесено імовірнісний характер генерації, схильність до галюцинацій, залежність якості відповіді від якості запиту, непрозорість механізмів формування результату, варіативність відповідей і обмежену контекстуальну чутливість. Запропоновано авторську модель розподіленої відповідальності, що охоплює три рівні: здобувач освіти, викладач, заклад вищої освіти. Зроблено висновок, що продуктивною моделлю врегулювання використання генеративного штучного інтелекту у вищій освіті є інституційно врегульований, людиноцентричний і підзвітний підхід, заснований на людському нагляді, верифікації та розподіленій відповідальності.

**Ключові слова:** генеративний штучний інтелект; вища освіта; ризики застосування ШІ; технологічні обмеження; академічна доброчесність; розподілена відповідальність; людський нагляд; інституційні політики.

**Problem Statement.** The rapid spread of generative artificial intelligence in contemporary society has become one of the most visible technological factors shaping the transformation of the educational environment. These changes are especially evident in higher education, where generative models are already being used for text production, information selection and summarization, the preparation of teaching materials, the automation of certain instructional functions, language support, the structuring of research ideas, the preliminary analysis of data, and the generation of feedback. At the same time, the university environment, which has traditionally relied on intellectual independence, critical thinking, source verification, and the responsible production of knowledge, has found itself in a situation in which new digital tools simultaneously open up significant opportunities and generate fundamentally new challenges [1–7].

The complexity of the issue lies in the fact that generative AI is often interpreted in educational discourse in an overly simplified manner: either as a convenient technical tool that increases learning efficiency or as a direct threat to academic integrity. Both positions are partly justified, yet neither is sufficient. In reality, the use of generative AI in higher education transforms not only the techniques by which tasks are completed, but also the very structure of learning activity, modes of cognitive work, conceptions of authorship, assessment criteria, the boundaries of student autonomy, and the responsibilities of teachers and institutions.

For this reason, the problem of generative AI use cannot be reduced merely to plagiarism prevention, text checking, or the revision of wording in academic integrity policies. It requires comprehensive pedagogical, ethical, legal, and managerial reflection [1; 2; 5; 6].

The issue becomes particularly acute because generative AI operates in education under conditions of uneven regulation. Technological solutions are developing more rapidly than university policies, methodological guidance, and scientifically grounded implementation models. As a result, teachers, students, and university administrations are often compelled to act situationally: adapting to new tools without sufficiently clear rules, without a stable understanding of the boundaries of permissible use, without agreed approaches to declaring AI assistance, and without established procedures for responding to contested cases. It is precisely this situation that creates an elevated zone of risk: the tool is already being actively used, while a culture of its responsible use has not yet been fully formed [8–10].

In recent years, international documents have addressed this issue in a broader context. UNESCO, the Council of Europe, the European Union, NIST, OECD, and the European Commission consistently emphasize human oversight, transparency, accountability, the protection of human rights, non-discrimination, information security, result verification, and a risk-based approach to AI use [1–7]. Within these documents, education is treated as a sensitive domain in which errors, distortions, algorithmic bias, or opacity of decision-making may entail not only technical but also social, legal, and moral consequences. For higher education, this means that the use of generative AI should be regulated not only according to the logic of innovation, but also according to the logic of responsibility.

In the Ukrainian context, the issue of generative AI in higher education has also acquired institutional relevance. The Ministry of Education and Science of Ukraine has issued recommendations on the use of artificial intelligence in higher education institutions, while the Ministry of Digital Transformation of Ukraine has proposed a strategic vision for future AI regulation through a White Paper and a regulatory roadmap [8–10]. This indicates a gradual shift from general interest in the technology to the need for its orderly, lawful, and pedagogically sound application. However, scholarly reflection on this issue, especially with regard to the integration of risks, technological limitations, and the distribution of responsibility among the key participants in the educational process, remains insufficiently systematized.

Accordingly, the research problem lies in the fact that the practice of using generative AI in higher education is developing more rapidly than coherent scholarly approaches to the classification of risks, the delineation of the technological reliability limits of these systems, and the determination of the responsibilities of the student, the teacher, and the higher education institution. Under such conditions, particular importance attaches to the need to move from the spontaneous use of generative AI to an institutionally regulated model grounded in the principles of human control, academic integrity, transparency, verification, and distributed responsibility [1; 3; 4; 8].

**Analysis of Recent Research and Publications.** The contemporary body of research and normative-recommendatory documents devoted to generative AI in higher education is sufficiently broad, though internally heterogeneous. It may be provisionally divided into several substantive blocks, each capturing a distinct aspect of the problem. The first block comprises international framework, ethical, and legal documents that formulate general principles for the responsible use of artificial intelligence. These include UNESCO documents, the Council of Europe Framework Convention, the EU AI Act, OECD recommendations, the ethical guidelines of the European Commission, and the NIST AI Risk Management

Framework [1–7]. Although these sources are not limited exclusively to the educational context, they provide the normative and conceptual framework without which any analysis of generative AI in higher education would remain incomplete.

UNESCO documents stress that generative AI should be considered through the lens of human-centeredness, fairness, safety, transparency, the protection of human rights, and the preservation of human agency [1; 2]. The distinctive feature of this approach is that it does not oppose innovation to ethics; on the contrary, it requires their integration. For education, this means that the implementation of generative AI cannot be assessed solely on the basis of functional convenience or productivity; it must also be evaluated in relation to educational aims, principles of integrity, the protection of the individual, and conditions of equitable access to learning.

The European legal approach, represented above all by the AI Act, proceeds from a risk-based logic. Its essence lies in the recognition that different AI systems create different levels of risk and therefore require different levels of regulatory attention [4]. For higher education, the value of this approach lies in the possibility of moving beyond the simplified dilemma of "allow or prohibit" toward a more flexible analysis of the specific educational contexts, task types, and conditions under which the use of generative AI is acceptable, undesirable, or in need of enhanced control.

The second important block of research comprises works devoted to the impact of artificial intelligence on learning, teaching, and educational policy in general. The studies of I. Tuomi, W. Holmes, M. Bialik, C. Fadel, and R. Luckin emphasize that the introduction of AI into education is not merely a technical update of the instructional toolkit. It transforms the logic of the learning environment, the structure of teacher–student interaction, approaches to individualization, and the very understanding of what it means to "learn," "know," "explain," and "create" [11–14]. These works are important for the present study because they make it possible to view generative AI not as an accidental digital novelty, but as part of a broader transformation of the educational process.

The third block consists of studies devoted to academic integrity and shifts in the nature of learning outcomes. The works of D. R. E. Cotton, P. A. Cotton, J. R. Shipway, K. Bittle, O. El-Gayar, J. Rudolph, S. Tan, and others analyze in detail the risks associated with the use of ChatGPT and similar systems for writing academic texts, completing homework, preparing written responses, and even undertaking certain forms of assessment [15–17]. These studies convincingly show that the problem is not limited to identifying dishonest behavior. Generative AI effectively calls into question traditional criteria for evaluating text-based assignments, compels a reconsideration of authorship, and raises the issue of

which intellectual operations within the educational process must remain distinctly human.

A separate body of work addresses student acceptance of generative AI, pedagogical scenarios for its use, and institutional university policies. In the studies of Y. Qian, Y. Jin, A. Strzelecki, A. Polyportis, A. Arowosegbe, J. Cabero-Almenara, as well as in the analytical materials of EDUCAUSE and HEPI, a different focus emerges: not only on risks, but also on actual use practices [18–26]. These studies indicate that students actively integrate generative AI into everyday learning activity—for idea generation, style improvement, translation, plan development, explanation of complex topics, and source summarization. At the same time, teachers and administrators often lack a unified vision of the permissible limits of such use. As a result, a gap arises between actual practice and formal rules.

It is also important that a large share of current research addresses generative AI primarily in one of two modes: either as a tool for improving efficiency and supporting learning, or as a source of threats to academic integrity. Much less frequently do we find studies that systematically analyze risks, technological limitations, and mechanisms for distributing responsibility among the student, the teacher, and the institution at the same time.

This theoretical gap is crucial, because without such an integrated approach it is difficult to construct a truly effective model for regulating the use of generative AI in higher education.

Moreover, in the Ukrainian scholarly and educational space, this topic remains at a formative stage. Official recommendations have already appeared [8], and strategic documents on AI regulation have also been outlined [9; 10], yet scholarly texts still lack systematic models that draw upon international approaches while remaining relevant to the specific context of Ukrainian higher education. In light of this, the scholarly novelty of the proposed study lies not only in summarizing existing approaches, but also in their conceptual integration.

Thus, the analysis of sources shows that the contemporary scholarly and normative discourse has already accumulated significant material for understanding generative AI in higher education. However, this material remains dispersed across several thematic fields: ethics, law, digital pedagogy, academic integrity, and educational governance. It is precisely for this reason that the creation of an integrated model combining a classification of risks, an analysis of technological limitations, and a distribution of responsibility among the main participants in the educational process is especially relevant.

**Purpose of the Article.** The purpose of the article is to provide a theoretical substantiation of the risks and limitations of the use of generative artificial intelligence in higher education and to develop a model of distributed

responsibility among participants in the educational process under conditions of its use.

**Main Body of the Study.** Methodologically, the study is based on a combination of the analysis of scholarly literature, international and national normative and recommendatory documents, comparative legal analysis, systematization, classification, and modelling. Such a combination of methods is justified because the problem itself is interdisciplinary in nature and cannot be explained solely within a single scholarly perspective. The analysis of sources makes it possible to identify dominant approaches to understanding generative AI; comparative legal analysis allows international and Ukrainian frameworks to be compared; classification makes it possible to systematize risks; and modelling allows the formulation of an authorial concept of distributed responsibility.

A point of fundamental importance for this study is the distinction between the concepts of "risks" and "technological limitations." In scholarly and public discourse, these notions are often conflated, although they refer to different analytical levels. Risks are the potential negative consequences of the use of generative AI in the educational process for actors, procedures, learning outcomes, and institutional mechanisms. Technological limitations are the properties of the models themselves that determine the boundaries of their reliability and suitability for educational use. It is precisely the failure to distinguish between these two levels that often leads to erroneous conclusions—for example, the expectation that a technological tool will automatically ensure educational quality, or the attribution of responsibility solely to the user in cases where the problem is partly attributable to the internal limitations of the system [1; 5; 6; 11].

First of all, academic risks should be considered. Higher education has traditionally rested on the idea that an academic outcome should reflect the student's own intellectual work: the degree of understanding of the material, the ability to analyze, interpret, argue, and synthesize. Generative AI complicates this relationship because it enables the rapid production of grammatically correct, stylistically orderly, and logically structured texts. As a result, the risk increases that a genuine learning outcome will be replaced by a product that only externally resembles independent academic work [15–17].

It is important to emphasize that the academic risk here lies not only in the possibility of deliberate rule violation. A much broader phenomenon is the blurring of the boundary between permissible instrumental support and the actual delegation of an intellectual task to the system. For example, is it acceptable to use AI for stylistic editing? For building a text outline? For generating examples? For drafting? For paraphrasing? For identifying arguments? It is precisely in such borderline cases that the deeper complexity of the problem becomes evident. If

the institution does not define the rules clearly, and the teacher does not specify the limits, the student finds themselves in a space of uncertainty where a violation may occur not only because of dishonest intent, but also because of the absence of agreed norms [8; 15; 22].

The second group consists of cognitive risks. These are no less serious, although at times less obvious than academic ones. The educational process in higher education is intended not only to ensure the presence of a correct answer, but also to cultivate the ability to formulate questions independently, analyze information, compare positions, notice contradictions, identify weak points in an argument, and construct one's own judgment. If generative AI begins systematically to perform these cognitive operations on behalf of the student, the risk arises of weakening precisely those intellectual capacities that the university is meant to develop [11; 18; 20].

In this context, it is more appropriate to speak not of "laziness" or an "unwillingness to think," but of a change in the very architecture of learning activity. If a student becomes accustomed to turning first to the system for a ready-made explanation and only afterwards to sources, the teacher, or their own analysis, the sequence of the cognitive process changes. AI begins to perform the role not of an auxiliary but of a primary interpreter of knowledge. This is particularly dangerous in disciplines where not only facts but also the process of reasoning, argumentation, methodological doubt, and reflection are important. Generative AI may create an illusion of depth while in fact offering only a quickly constructed probabilistic answer.

The third group comprises informational and content-related risks. Generative AI is capable of producing persuasive yet factually false statements, fabricated bibliographic entries, non-existent quotations, and erroneous interpretations of scholarly concepts. This is particularly dangerous for academic writing and research, where the external coherence and stylistic unity of an answer may be mistakenly perceived as a sign of credibility. It is for this reason that international recommendations consistently emphasize the mandatory human verification of results generated with the help of generative AI [1; 2; 6].

For research and academic writing, this problem is critical. If fabricated sources, erroneous facts, or incorrect interpretations enter an academic or research text, the very foundation of the university culture of knowledge is undermined. For this reason, generative AI cannot be used as an autonomous source of facts, quotations, or bibliography without mandatory verification. Otherwise, a tool intended to accelerate work begins in effect to generate new forms of informational noise and academic unreliability [1; 6; 16].

The fourth group consists of ethical risks. These include algorithmic bias, the reproduction of stereotypes, unequal access to high-quality tools, and the

delegation of sensitive functions to systems whose operational logic remains opaque to the user. The ethical problem of generative AI in higher education lies in the fact that even when the system is not used for formal decision-making, it still influences the educational process: it suggests formulations, structures arguments, offers examples, and shapes patterns of thinking. If bias is embedded in these patterns, it may be reproduced and normalized in the educational environment [2; 3; 5; 7].

In addition, the ethical dimension includes questions of fairness of access. Not all students have equal access to paid versions of services, the same level of digital literacy, the same proficiency in English, the same prompt-writing skills, or the same experience in critically using digital tools. As a result, the same technologies may intensify not only productivity but also inequality. Accordingly, generative AI in education cannot be evaluated solely as a universal means of improving efficiency; it is necessary to consider who benefits most from it and who is placed at a disadvantage [7; 20; 23].

The fifth group is made up of legal risks. These include issues of confidentiality, personal data protection, copyright, the legal status of generated content, and the possibility that user-entered data may be used for further model training. The university environment is particularly vulnerable to these risks, since fragments of manuscripts, unpublished research materials, students' personal data, sensitive information about learning outcomes, or internal documents may be entered into external services. In the absence of clear rules, this practice creates a risk of unauthorized dissemination or reuse of data [2–6; 9].

Legal risks become especially significant because authorship in the era of generative AI is becoming increasingly complex. If a text is generated with the assistance of AI but substantially revised by a human, what is the status of such a text? If AI suggests formulations that are subsequently integrated into a scholarly paper, does this require explicit declaration? If a teacher uses generative AI to create teaching materials or tests, should students be informed of this? These questions go beyond purely technical discussion and directly concern the legal culture of the academic environment.

The sixth group consists of organizational and managerial risks. These arise when the use of generative AI is already taking place in practice, while institutional rules remain uncoordinated, fragmentary, or silent. In such a case, one teacher may allow the use of AI for drafting, another may regard this as misconduct, and a third may formulate no rules at all. The absence of institutional coherence creates risks of inequality of conditions, conflicts over assessment, distrust in procedures, and blurred responsibility [8; 22; 25; 26].

It becomes clear here that generative AI is not only a pedagogical or technological challenge, but also a governance challenge. The university must

address not only the question of "whether to allow it," but also the questions of "how to regulate it," "how to teach responsible use," "how to respond to violations," "how to update policies," and "how to preserve a balance between innovation and integrity." In this sense, institutional governance becomes one of the central elements of the responsible integration of generative AI into higher education.

Alongside risks, it is crucial to analyze the technological limitations of generative AI. The first of these is the probabilistic nature of generation. A generative model does not possess knowledge in the human sense and does not engage in understanding as a conscious subject. Rather, it computes a statistically probable continuation of a prompt based on patterns learned during training. For this reason, even a highly persuasive answer is not a guarantee of truth. It is precisely this property that underlies hallucinations and the false equation of linguistic coherence with factual accuracy [1; 11; 13].

The second limitation is the tendency to hallucinate. In the educational environment, this is particularly dangerous because the student may not possess a sufficient level of subject-matter competence to identify the error in time. If the system provides a fabricated article, a non-existent date, a distorted concept, or a false conclusion, and the user fails to verify the answer, the error becomes integrated into the learning outcome. In this way, hallucination ceases to be merely a technical flaw and becomes an educational problem.

The third limitation is the dependence of output quality on prompt quality. Generative AI is extremely sensitive to prompt formulation, contextual completeness, the structure of instructions, and linguistic precision. This means that the same system may produce substantially different results for different users not because of differences in subject knowledge, but because of differences in digital competence. Consequently, prompt writing becomes a new "hidden variable" of the educational process, one that may reinforce inequality while simultaneously creating an illusion of the tool's objectivity [18; 20; 21].

The fourth limitation is the opacity of response formation. The user sees the final text but does not have access to the internal logic of the weights, priorities, and connections that determined the result. This creates a serious problem for education and research, where verification, reproducibility, and reasoned justification are core values. If one cannot sufficiently explain why the system arrived at a particular formulation, the possibilities for full critical evaluation of its answer are restricted [3–6].

The fifth limitation is the instability and variability of output. The system may provide different answers to identical or nearly identical prompts. While this may not always be critical for everyday use, in the educational environment such instability creates additional difficulties. For example, if a student relies on a

system response as support for an argument and that response is not stably reproducible, the reliability of such a tool as a source of support is diminished.

The sixth limitation is limited contextual and value sensitivity. Generative models may simulate complex argumentation, but they do not possess human responsibility, experience, intentionality, or moral judgment. For this reason, they cannot replace the teacher as mentor, expert, and bearer of pedagogical responsibility, nor the student as the subject of learning who must not merely reproduce text, but develop an independent judgment. This is why the use of generative AI in higher education must remain auxiliary rather than autonomous [1; 2; 11; 14].

In summarizing the above, it should be stressed that the technological limitations of generative AI are not a secondary detail that can be ignored in the name of convenience. On the contrary, it is precisely these limitations that explain why no educational outcome produced with the assistance of such systems can be considered reliable without human verification. Ignoring these limitations leads to inflated expectations, and inflated expectations in turn lead to pedagogical, ethical, and organizational errors.

Under such conditions, the most productive approach appears to be a model of distributed responsibility. Its principal advantage lies in the fact that it does not reduce the problem of generative AI use to a single actor. A total prohibition of generative AI is unrealistic and pedagogically insufficient: it does not eliminate the problem, but merely displaces it into the informal sphere. Unregulated use is likewise unacceptable, since it creates room for abuse, inequality, and procedural uncertainty. By contrast, a distributed responsibility model makes it possible to define clearly the functions and limits of each participant in the educational process.

At the individual level, responsibility rests with the student. This means, above all, responsibility for independent thinking, academic integrity, fact-checking, and the proper use of the tool. Students must understand that generative AI does not exempt them from the obligation to comprehend the content of the submitted text, verify sources, assess the truthfulness of claims, and bear responsibility for the final result. In cases where this is required by course rules, students must also declare the fact and manner of AI use. Accordingly, student responsibility does not consist in “never using AI,” but in not allowing it to replace their own intellectual work.

At the pedagogical level, responsibility rests with the teacher. Under current conditions, this can no longer be reduced merely to checking final assignments. The teacher must design learning tasks in such a way that they stimulate understanding rather than mere text reproduction; formulate transparent rules regarding the permissible boundaries of generative AI use; explain the

rationale behind those rules to students; and create forms of assessment that make it possible to evaluate genuine cognitive work. These may include oral defenses, staged submission of materials, reflective commentaries on the tools used, comparisons of text versions, explanations of the source base, and justifications of decisions. In this way, the teacher is responsible for the pedagogical resilience of the educational environment under conditions of AI use.

At the institutional level, responsibility rests with the higher education institution. It is the institution that must establish the rules of the game: approve internal policies, align them with academic integrity and data protection rules, prepare methodological guidance, ensure the development of digital and ethical competence among teachers and students, define procedures for examining contested cases, and maintain unified standards of communication. If the institution fails to do so, it effectively shifts all responsibility onto the individual teacher or student, even though a substantial part of the problem is systemic [8–10; 22; 25; 26].

Accordingly, the proposed authorial model of distributed responsibility may be represented as a triadic structure: student – teacher – higher education institution. Its scholarly value lies in the fact that it makes it possible to move beyond the simplified logic of searching for a single “culprit” and instead adopt a systemic view of regulation. If a student uses generative AI non-transparently, this may be an individual violation. But if the institution has not established rules and the teacher has not defined the limits of tool use, the situation can no longer be regarded as purely individual. On the contrary, it reveals an institutional gap.

Within this model, it is also appropriate to identify the principles of the responsible use of generative AI in higher education. First is the principle of the primacy of human judgment: final interpretation, evaluation, and responsibility remain with the human actor. Second is the principle of transparency of use: AI assistance must not be disguised as fully independent work where this would contradict course or institutional rules. Third is the principle of verification: no fact, quotation, source, or argument obtained through AI may be used without checking. Fourth is the principle of proportionality: different types of tasks may imply different regimes of permissible AI use. Fifth is the principle of institutional clarity: the university must provide understandable rules in order to avoid chaotic inconsistency of requirements. Sixth is the principle of competence development: both students and teachers must learn not only how to use AI, but also how to evaluate it critically. Seventh is the principle of data protection and harm minimization: the use of external systems must not violate the rights of participants in the educational process.

This model supports a transition from a simplified perception of AI use in education to a more substantive framework centred on the conditions, limits, and

principles under which such use may be considered educationally justified, ethically acceptable, and legally appropriate. This marks a key shift in perspective: generative AI is understood not as inherently beneficial or harmful, but as a tool whose integration requires a mature pedagogical, ethical, and institutional culture.

**Conclusions.** The article substantiates that the use of generative artificial intelligence in higher education is accompanied not by isolated but by systemically interconnected academic, cognitive, informational-content, ethical, legal, and organizational-managerial risks. It is demonstrated that these risks cannot be reduced solely to the issue of academic misconduct or to the technical convenience of the tool. They concern the deep foundations of university education: the nature of authorship, the structure of cognitive work, assessment criteria, the boundaries of autonomy, rules for working with data, and institutional governance.

It has been established that the risks associated with the use of generative AI should be clearly distinguished from the technological limitations of the models themselves. These limitations include the probabilistic nature of generation, the tendency to hallucinate, dependence of output quality on prompt quality, opacity of response formation mechanisms, output variability, and limited contextual sensitivity. It is precisely these properties that explain why generative AI cannot be treated as an autonomous subject of knowledge or as a full substitute for human academic judgment.

The article argues that the most productive model for regulating the use of generative AI in higher education is a model of distributed responsibility. Within this model, the student is responsible for integrity, verification, and the independence of intellectual work; the teacher is responsible for pedagogical design, rule formulation, and assessment methods that make it possible to evaluate genuine understanding; and the higher education institution is responsible for internal policies, methodological support, procedural clarity, and the protection of the rights of participants in the educational process. This model is more productive than either a total prohibition or unregulated use.

The practical significance of the study lies in the fact that the proposed model may serve as a conceptual basis for the development of internal higher education institution policies on generative AI, the revision of academic integrity rules, the preparation of recommendations for teachers and students, and the formation of procedures for reviewing disputed cases. Its theoretical significance lies in the systematization of risks, the distinction between risks and technological limitations, and the clarification of the multilevel logic of responsibility.

Prospects for further research are seen in the development of discipline-specific models of generative AI use for different fields of study, in the

specification of criteria for the acceptable declaration of AI use in academic work, in the study of the impact of generative systems on the formation of critical thinking and academic autonomy, and in the analysis of institutional practices in Ukrainian higher education institutions in this area. Overall, the article concludes that generative AI in higher education requires a transition from spontaneous use to an institutionally regulated, human-centered, and accountable model grounded in human oversight, transparency, and distributed responsibility.

***References:***

1. Miao, F., & Holmes, W. (2023). *Guidance for Generative AI in Education and Research*. Paris: UNESCO.

2. UNESCO. (2021). *Recommendation on the Ethics of Artificial Intelligence*. Paris: UNESCO.

3. *Council of Europe Framework Convention on Artificial Intelligence and Human Rights, Democracy and the Rule of Law*. (2024). Strasbourg: Council of Europe.

4. *Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 laying down harmonised rules on artificial intelligence (Artificial Intelligence Act).* (2024). *Official Journal of the European Union*.

5. NIST. (2023). *Artificial Intelligence Risk Management Framework (AI RMF 1.0).* Gaithersburg, MD: National Institute of Standards and Technology. Retrieved from https://doi.org/10.6028/NIST.AI.100-1

6. European Commission. (2024). *Living Guidelines on the Responsible Use of Generative AI in Research*. Brussels. Retrieved from https://research-and-innovation.ec.europa.eu/document/download/2b6cf7e5-36ac-41cb-aab5-0d32050143dc_en

7. OECD. (2019). *OECD AI Principles*. Paris: OECD.

8. Ministerstvo osvity i nauky Ukrainy. (2025). *Shtuchnyi intelekt u zakladakh vyshchoi osvity: rekomendatsii dlia vykladachiv, studentiv i pratsivnykiv ZVO* [Artificial intelligence in higher education institutions: recommendations for teachers, students, and staff of higher education institutions]. Kyiv [in Ukrainian].

9. Ministerstvo tsyfrovoi transformatsii Ukrainy. (2024). *Bila knyha z rehuliuvannia shtuchnoho intelektu v Ukraini: bachennia Mintsyfry* [White Paper on the regulation of artificial intelligence in Ukraine: vision of the Ministry of Digital Transformation of Ukraine]. Kyiv. Retrieved from https://storage.thedigital.gov.ua/files/c/fc/36c4cae89deedfbf3781ec6bceddffcc.pdf [in Ukrainian].

10. *A Road Map of AI Regulation in Ukraine*. (2023). Retrieved from https://ai.org.ua/a-road-map-of-ai-regulation-in-ukraine/

11. Tuomi, I. (2018). *The Impact of Artificial Intelligence on Learning, Teaching, and Education*. Luxembourg: Publications Office of the European Union.

12. Holmes, W., & Tuomi, I. (2022). State of the art and practice in AI in education. *European Journal of Education*, *57*(4), 542–570.

13. Holmes, W., Bialik, M., & Fadel, C. (2019). *Artificial Intelligence in Education: Promises and Implications for Teaching and Learning*. Boston: Center for Curriculum Redesign.

14. Luckin, R. (2018). *Machine Learning and Human Intelligence: The Future of Education for the 21st Century*. London: UCL Institute of Education Press.

15. Cotton, D. R. E., Cotton, P. A., & Shipway, J. R. (2024). Chatting and cheating: Ensuring academic integrity in the era of ChatGPT. *Innovations in Education and Teaching International*, *61*(2), 228–239.

16. Bittle, K., & El-Gayar, O. (2025). Generative AI and Academic Integrity in Higher Education: A Systematic Review and Research Agenda. *Information*, *16*(4), Article 296.

17.Rudolph, J., Tan, S., & Tan, S. (2023). ChatGPT: Bullshit spewer or the end of traditional assessments in higher education? *Journal of Applied Learning and Teaching*, *6*(1), 342–363.

18.Qian, Y. (2025). Pedagogical applications of generative AI in higher education: A systematic review of the field. *TechTrends*. Retrieved from https://doi.org/10.1007/s11528-025-01100-1

19. Lee, D., Eynon, R., Klímová, B., et al. (2024). The impact of generative AI on higher education learning and teaching: A study of educators' perspectives. *Computers and Education: Artificial Intelligence*, *6*, 100198. Retrieved from https://doi.org/10.1016/j .caeai.2024.100198

20. Strzelecki, A. (2024). To use or not to use ChatGPT in higher education? A study of students' acceptance and use of technology. *Interactive Learning Environments*, *32*(9), 5142–5155. Retrieved from https://doi.org/10.1080/10494820.2023.2209881

21. Polyportis, A., Pahos, N., Karyotaki, M., et al. (2025). Understanding students' adoption of the ChatGPT chatbot in higher education: The role of anthropomorphism, trust, design novelty and institutional policy. *Behaviour & Information Technology*, *44*(2), 315–336. Retrieved from https://doi.org/10.1080/0144929X.2024.2317364

22. Jin, Y., Yan, L., Echeverria, V., Gašević, D., & Martinez-Maldonado, R. (2025). Generative AI in higher education: A global perspective of institutional adoption policies and guidelines. *Computers and Education: Artificial Intelligence*, *8*, 100348. Retrieved from https://doi.org/10.1016/j.caeai.2024.100348

23. Arowosegbe, A., Alqahtani, J. S., & Oyelade, T. (2024). Perception of generative AI use in UK higher education. *Frontiers in Education*, *9*, 1463208. Retrieved from https://doi.org/10.3389/feduc.2024.1463208

24. Cabero-Almenara, J., Palacios-Rodríguez, A., Loaiza-Aguirre, M. I., & Andrade-Abarca, P. S. (2024). The impact of pedagogical beliefs on the adoption of generative artificial intelligence in higher education: Predictive model from UTAUT2. *Frontiers in Artificial Intelligence*, *7*, 1497705. Retrieved from https://doi.org/10.3389/frai.2024.1497705

25. EDUCAUSE. (2025). *In the room where it happens: Generative AI policy creation in higher education*. Retrieved from https://er.educause.edu/articles/2025/5/in-the-room-where-it-happens-generative-ai-policy-creation-in-higher-education

***Література:***

1. Miao F., Holmes W. *Guidance for Generative AI in Education and Research*. Paris: UNESCO, 2023. – 44 p.

2. UNESCO. *Recommendation on the Ethics of Artificial Intelligence*. Paris: UNESCO, 2021.

3. *Council of Europe Framework Convention on Artificial Intelligence and Human Rights, Democracy and the Rule of Law*. CETS No. 225. – Strasbourg: Council of Europe, 2024.

4. *Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 laying down harmonised rules on artificial intelligence (Artificial Intelligence Act).*

5. NIST. *Artificial Intelligence Risk Management Framework (AI RMF 1.0).* – Gaithersburg, MD: National Institute of Standards and Technology, 2023. – URL: https://doi.org/10.6028/NIST.AI.100-1

6. European Commission. *Living Guidelines on the Responsible Use of Generative AI in Research*. – Brussels, 2024. – URL: https://research-and-innovation.ec.europa.eu/document/download/2b6cf7e5-36ac-41cb-aab5-0d32050143dc_en

7. OECD. *OECD AI Principles*. – Paris : OECD, 2019.

8. Міністерство освіти і науки України. *Штучний інтелект у закладах вищої освіти: рекомендації для викладачів, студентів і працівників ЗВО*. – Київ, 2025.

9. Міністерство цифрової трансформації України. *Біла книга з регулювання штучного інтелекту в Україні: бачення Мінцифри*. – Київ, 2024. – URL: https://storage.thedigital.gov.ua/files/c/fc/36c4cae89deedfbf3781ec6bceddffcc.pdf

10. *A Road Map of AI Regulation in Ukraine*. – Kyiv, 2023. – URL: https://ai.org.ua/a-road-map-of-ai-regulation-in-ukraine/

11. Tuomi I. *The Impact of Artificial Intelligence on Learning, Teaching, and Education*. – Luxembourg : Publications Office of the European Union, 2018.

12. Holmes W., Tuomi I. State of the art and practice in AI in education // *European Journal of Education*. – 2022. – Vol. 57. – Issue 4. – P. 542–570.

13. Holmes W., Bialik M., Fadel C. *Artificial Intelligence in Education: Promises and Implications for Teaching and Learning*. – Boston : Center for Curriculum Redesign, 2019.

14. Luckin R. *Machine Learning and Human Intelligence: The Future of Education for the 21st Century*. – London : UCL Institute of Education Press, 2018.

15. Cotton D. R. E., Cotton P. A., Shipway J. R. Chatting and cheating: Ensuring academic integrity in the era of ChatGPT // *Innovations in Education and Teaching International*. – 2024. – Vol. 61. – Issue 2. – P. 228–239.

16. Bittle K., El-Gayar O. Generative AI and Academic Integrity in Higher Education: A Systematic Review and Research Agenda // *Information*. – 2025. – Vol. 16. – No. 4. – Art. 296.

17. Rudolph J., Tan S., Tan S. ChatGPT: Bullshit spewer or the end of traditional assessments in higher education? // *Journal of Applied Learning and Teaching*. – 2023. – Vol. 6. – No. 1. – P. 342–363.

18. Qian Y. Pedagogical Applications of Generative AI in Higher Education: A Systematic Review of the Field // *TechTrends*. – 2025. – URL: https://doi.org/10.1007/s11528-025-01100-1

19. Lee D., Eynon R., Klímová B., et al. The impact of generative AI on higher education learning and teaching: A study of educators' perspectives // *Computers and Education: Artificial Intelligence*. – 2024. – Vol. 6. – Art. 100198. – URL: https://doi.org/10.1016/j.caeai.2024.100198

20. Strzelecki A. To use or not to use ChatGPT in higher education? A study of students' acceptance and use of technology // *Interactive Learning Environments*. – 2024. – Vol. 32. – Issue 9. – P. 5142–5155. – URL: https://doi.org/10.1080/10494820.2023.2209881

21. Polyportis A., Pahos N., Karyotaki M., et al. Understanding students' adoption of the ChatGPT chatbot in higher education: the role of anthropomorphism, trust, design novelty and institutional policy // *Behaviour & Information Technology*. – 2025. – Vol. 44. – Issue 2. – P. 315–336. – URL: https://doi.org/10.1080/0144929X.2024.2317364

22. Jin Y., Yan L., Echeverria V., Gašević D., Martinez-Maldonado R. Generative AI in Higher Education: A Global Perspective of Institutional Adoption Policies and Guidelines // *Computers and Education: Artificial Intelligence*. – 2025. – Vol. 8. – Art. 100348. – URL: https://doi.org/10.1016/j.caeai.2024.100348

23. Arowosegbe A., Alqahtani J. S., Oyelade T. Perception of generative AI use in UK higher education // *Frontiers in Education*. – 2024. – Vol. 9. – Art. 1463208. – URL: https://doi.org/10.3389/feduc.2024.1463208

24. Cabero-Almenara J., Palacios-Rodríguez A., Loaiza-Aguirre M. I., Andrade-Abarca P. S. The impact of pedagogical beliefs on the adoption of generative artificial intelligence in higher education: predictive model from UTAUT2 // *Frontiers in Artificial Intelligence*. – 2024. – Vol. 7. – Art. 1497705. – URL: https://doi.org/10.3389/frai.2024.1497705

25. EDUCAUSE. *In the Room Where It Happens: Generative AI Policy Creation in Higher Education*. – 2025. – URL: https://er.educause.edu/articles/2025/5/in-the-room-where-it-happens-generative-ai-policy-creation-in-higher-education

*Дата першого надходження статті до видання: 16.04.2026*
*Дата прийняття статті до друку після рецензування: 30.04.2026*