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Artificial Intelligence in Higher Education: Policy Visions and Implementation Frameworks in Ukraine and the EU

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Abstract. Aim. *This article examines how artificial intelligence (AI) is conceptualised and framed in the policy documents of the European Union and Ukraine, with a focus on its use in higher education. It investigates how strategic visions, ethical considerations, and regulatory mechanisms influence the implementation of AI tools at the university level.* ***Methodology.*** *The study is based on comparative policy analysis and qualitative document review. It draws on official texts published between 2020 and 2025, including the EU's Digital Education Action Plan, the draft Artificial Intelligence Act, the DigCompEdu framework, Ukraine's Concept of Digital Transformation, and the national recommendations on AI in education issued in 2024 and 2025. The analysis identifies recurring themes, priorities, and conceptual differences between the EU and Ukrainian approaches to AI in higher education.* ***Results.*** *The findings show a significant divergence in how AI is addressed in the two policy contexts. EU documents define AI as a high-risk technology, accompanied by ethical safeguards, legal procedures, and professional training frameworks. Ukrainian policy texts refer to AI more generally and often lack definitions, implementation tools, or institutional guidelines. While the 2025 national recommendations in Ukraine represent a step toward clearer institutional responsibilities, practical mechanisms for enforcement remain limited. The article highlights a gap between declared priorities and actual policy readiness.* ***Conclusions.*** *The analysis shows that while key policy documents in Ukraine increasingly refer to artificial intelligence, the institutional mechanisms required for its integration into university practice remain underdeveloped. The comparison with EU approaches makes it clear that without more specific procedures and sustained support, the use of AI in higher education will likely remain uneven and largely dependent on local initiative.*

Keywords: *artificial intelligence, higher education, educational policy, digital transformation, educational regulation*

ПЕДАГОГІЧНА АКАДЕМІЯ:
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Штучний інтелект у вищій освіті: стратегічне бачення та моделі впровадження в Україні та ЄС

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Анотація. Мета. *У статті досліджується, як штучний інтелект (ШІ) концептуалізується та представлений у політичних документах Європейського Союзу та України, з акцентом на його застосування у сфері вищої освіти. Розглядаються стратегічні підходи, етичні аспекти та регуляторні механізми, що впливають на впровадження інструментів ШІ в університетське середовище.* ***Методологія.*** *Дослідження ґрунтується на порівняльному аналізі політик та якісному аналізі змісту офіційних документів, оприлюднених у період з 2020 по 2025 роки. У центрі уваги – План дій щодо цифрової освіти ЄС, проєкт Акту про штучний інтелект, рамка цифрової компетентності DigCompEdu, Концепція цифрової трансформації освіти і науки України, а також національні рекомендації щодо використання ШІ у вищій освіті, видані у 2024 та 2025 роках. Аналіз дозволяє виявити ключові теми, пріоритети та*

концептуальні відмінності між підходами ЄС та України. ***Результати.*** *Виявлено суттєві розбіжності у способах регулювання ШІ у двох політичних контекстах. Документи ЄС визначають ШІ як технологію високого ризику, яка потребує етичних запобіжників, правових процедур та професійної підготовки. Українські політичні тексти, як правило, подають більш загальні згадки про ШІ і часто не містять чітких визначень, інструментів реалізації чи інституційних настанов. Хоча національні рекомендації 2025 року засвідчують спробу окреслити зони відповідальності університетів, механізми практичного впровадження залишаються обмеженими. У статті наголошено на розриві між задекларованими пріоритетами та реальним рівнем готовності політики.* ***Висновки.*** *Аналіз показує, що попри зростаючу присутність теми ШІ в українських політичних документах, інституційні механізми, необхідні для його інтеграції у практику закладів вищої освіти, залишаються недостатньо розвиненими. Порівняння з підходами ЄС вказує на те, що без чіткіших процедур і стабільної підтримки використання ШІ у вищій школі й надалі залежатиме переважно від локальних ініціатив.*

Ключові слова: *штучний інтелект, вища освіта, освітня політика, цифрова трансформація, освітнє регулювання*

Introduction. Artificial intelligence is increasingly integrated into the practices of higher education. It is used to personalise learning, monitor student progress, automate routine assessments, and assist in academic administration. The use of AI in university teaching and management is no longer experimental but institutionalised through national and supranational strategies. In the European Union, the *Digital Education Action Plan 2021–2027* [6] outlines key areas for the digital transformation of education and sets specific priorities for the responsible use of AI in higher education. The document highlights the importance of digital infrastructure, staff

training, and ethical safeguards, noting that *the use of AI must be transparent, explainable and under human control* [6, p. 8].

In Ukraine, AI is increasingly considered part of a broader policy framework for the modernisation of higher education. The *Concept of Digital Transformation of Education and Science of Ukraine* [1] identifies AI tools as essential for creating flexible and student-oriented learning environments. The interministerial recommendations on AI use in education, published in 2024, extend these principles and call for algorithmic transparency, data protection, and teacher training as necessary conditions for implementation [2, p. 4]. Although originally designed for schools, these principles are relevant to the university sector as well.

Both EU and Ukrainian documents refer to *DigCompEdu*, a framework that defines educators' digital competence, including the ability to interpret learning data, use adaptive tools, and understand algorithmic feedback. As Redecker and Punie explain, *the professional use of AI-supported tools requires critical awareness, pedagogical judgement, and a capacity to evaluate their effects on learning* [11, p. 13].

While policy documents provide the general direction, practical implementation remains uneven. Ukrainian researchers have identified several barriers to AI integration in higher education, including the lack of methodological guidance, insufficient digital literacy among staff, and low levels of institutional readiness [15, p. 147]. Nevertheless, there is growing consensus that AI has the potential to support student-centred teaching and to make educational systems more flexible and efficient, provided that its use is grounded in ethical, pedagogical, and legal frameworks.

The aim of the article. This article aims to examine how artificial intelligence is conceptualised and regulated in the policy discourse of the European Union and Ukraine. It focuses on official documents, implementation frameworks, and the underlying values associated with the use of AI in university education.

The following objectives have been set:

- to analyse the key strategic and normative documents issued by the EU and Ukrainian authorities with reference to the use of AI in university education;
- to identify the conceptual foundations and values underlying current AI-related educational policies;
- to outline the practical frameworks and institutional mechanisms proposed for the implementation of AI in higher education;
- to compare the regulatory approaches and levels of institutional preparedness in the EU and Ukraine;
- to evaluate the challenges and risks associated with the use of AI in university teaching and management, including ethical, legal and infrastructural aspects;
- to provide practical suggestions as for introducing AI literacy into higher education in Ukraine.

Theoretical background. Artificial intelligence has been gradually integrated into higher education for over a decade, becoming significantly more visible since 2022. Now its application can be observed in course development, assessment procedures, and institutional management. In a number of European universities, AI-supported tools have been introduced as part of broader digitalisation strategies. However, the level of integration remains inconsistent and varies across institutions. AI in education should not be viewed simply as automation but as a framework that can support the development of *adaptive, evidence-informed learning environments* [8, p. 6]. Similarly, Selwyn [12, p. 128] cautions that the use of AI in universities raises deep questions about control, surveillance, and educational values, especially as predictive technologies increasingly influence assessment and student profiling and the potential for algorithmic bias in automated decision-making, which can perpetuate inequality if not properly regulated [4, p. 2013].

While technical progress has been notable, conceptual clarity around the role of AI in higher education remains underdeveloped. Some researchers argue that the lack of alignment between pedagogical goals and AI system design creates tensions

between innovation and academic integrity [13, p. 548]. Others call for institutional strategies that embed AI within broader digital policy, staff training, and legal accountability [9, p. 224]. These studies highlight the need to move beyond pilot experiments and consider the structural conditions under which AI can function as part of sustainable university systems.

European policy documents have taken important steps in this direction. The *Digital Education Action Plan 2021–2027* defines the main priorities for building digital capacity in universities and supports the development of frameworks like DigCompEdu, which emphasise educators' ability to critically evaluate digital technologies, including AI-based tools [6, p. 13]. The proposed *Artificial Intelligence Act* introduces legal obligations for high-risk AI systems used in education, stressing transparency, human oversight, and safety [7, Art. 6–8].

UNESCO's guidance document *AI and Education* (2021) takes a global perspective. It defines AI-readiness not only as access to infrastructure but as a set of competencies, including ethical awareness, institutional responsibility, and protection of learners' rights. The report stresses that education systems should remain human-centred, with clear accountability for all automated processes [14, p. 14]. Likewise, OECD data shows that only a minority of higher education institutions have developed policies to govern the pedagogical and ethical use of AI, and that risks of inequality and misapplication remain high [10, p. 18].

In the Ukrainian context, academic interest in AI in education has intensified, but research focused specifically on the university sector is still limited. Most publications address digitalization in general terms or concentrate on secondary schools. Recent contributions, such as those by Bobrytska et al. [5, p. 412], examine stakeholders' expectations regarding AI in Ukrainian higher education and report concerns related to ethics, technical complexity, and institutional readiness. However, few studies connect national developments to the European regulatory landscape or provide a systematic policy-oriented analysis.

As a result, there remains a gap in understanding how AI in higher education is conceptualised not only as a technological innovation but as a normative and institutional construct. This article addresses that gap by analysing key Ukrainian and EU policy documents, focusing on how AI is framed, what values and priorities underpin its use, and how implementation is s tructured. This approach offers insights into the alignment and cases of divergence between national and supranational visions of digital transformation in higher education.

Methodology. The methodological framework of the study is based on an interdisciplinary approach, combining elements of policy analysis, discourse analysis, and comparative document review. The research relies on the close reading and interpretation of official policy documents, strategic frameworks, and regulatory texts issued by European and Ukrainian institutions between 2020 and 2025. These include the *Digital Education Action Plan 2021–2027* [6], the draft *Artificial Intelligence Act*, the *DigCompEdu* framework [11], UNESCO's *AI and Education* policy guidance [14], the *Concept of Digital Transformation of Education and Science of Ukraine* [1], and the 2024 interministerial recommendations on the use of AI in education [2].

The analysis proceeds in three stages. First, selected documents are examined for their explicit references to artificial intelligence in the context of higher education, including terminology, regulatory definitions, and priority areas. Second, the documents are analysed in terms of their conceptual foundations: how they define the role of AI in teaching, learning, institutional development, and governance. Special attention is paid to recurring values such as transparency, inclusivity, professional autonomy, and ethical oversight. Finally, a comparative lens is applied to identify differences and overlaps between EU-level and Ukrainian policy visions, with a focus on practical implications for universities.

All documents included in the analysis are publicly available and verified through official sources [1; 7]. The analysis is qualitative and interpretive in nature, aimed at tracing how AI in higher education is framed within the educational policy

discourse, rather than measuring implementation outcomes or performing statistical modelling.

Results and Discussion. Artificial intelligence is mentioned in the policy documents of the European Union and Ukraine. These references show its growing role in university education. The level of detail and institutional responsibility is not the same. EU documents include legal definitions and implementation tools. Ukrainian policies remain general and lack regulation. In EU policies, AI is classified as a high-risk technology. The *Artificial Intelligence Act* outlines requirements for risk management, transparency, and human oversight. AI is connected to staff training, institutional frameworks, and pedagogical values in the *Digital Education Action Plan 2021–2027*. The *DigCompEdu Framework* introduces a list of digital competences, including those related to AI. It emphasises the need for professional development and institutional support.

Ukrainian policies refer to AI in general terms. The *Concept of Digital Transformation of Education and Science of Ukraine* [1] identifies AI as one of the directions of innovation. However, no definitions or legal procedures are offered. The *Draft Recommendations on the Use of AI in Schools* [2] are not designed for the higher education sector. Ethical risks, teacher training, and control mechanisms are absent. A more structured approach was introduced in April 2025 with the publication of national recommendations on the responsible use of artificial intelligence in higher education. Prepared by the Ministry of Education and Science in cooperation with the Ministry of Digital Transformation, the document outlines the conditions under which AI can be used in teaching, research, and institutional management. As the document states, *The use of AI technologies in the educational process must be ethical, responsible, and transparent, and must take into account the principles of academic integrity and personal data protection* [3, p. 5]. Particular emphasis is placed on academic integrity, data protection, and the need for internal university policies. Although not legally

binding, the recommendations signal a move toward greater institutional responsibility and reflect an effort to provide clearer guidance at the national level [3].

The comparison of documents is presented in Table 1.

Table 1.

Key Documents on Artificial Intelligence in Education

Document	Region	Year	Focus	Legal Status
Digital Education Action Plan	EU	2020	AI in teaching, staff training, ethics	Non-binding
Artificial Intelligence Act	EU	2021	Legal risk classification	Proposed regulation
DigCompEdu Framework	EU	2017	Digital competences of educators	Advisory
Concept of Digital Transformation	Ukraine	2021	General innovation, no legal tools	Non-binding
Draft AI Recommendations (Schools)	Ukraine	2024	Focus on school sector only	Draft, advisory
Responsible Use of AI in Higher Education (Рекомендації щодо ШІ у вищій освіті)	Ukraine	2025	Ethical implementation of AI in universities; institutional responsibility; safeguards	Draft, advisory

Differences also appear at the conceptual level. EU documents introduce AI as a technology that must be integrated within existing legal and pedagogical systems. The focus is on responsibility, transparency, and ethical control. Ukrainian policies treat AI as a technological option rather than a field requiring governance. Institutional roles are not defined. No national framework connects AI with academic autonomy, teacher education, or quality assurance. Table 2 summarises the key differences in framing.

Table 2.

Framing of Artificial Intelligence in Higher Education

Parameter	EU	Ukraine
Legal definition	Clear, detailed	Not provided
Ethical regulation	Included in strategic documents	Not mentioned
Educator training	Structured recommendations (DigCompEdu)	No provisions
Risk classification	Present (AI Act)	Absent
Implementation phase	Active	Preliminary stage

The EU model offers legal and ethical guidance. Documents provide specific expectations and tools. The system supports both institutions and individual educators. Ukraine lacks this structure. No legal instruments regulate AI in universities. Ethical and professional dimensions remain unaddressed.

Although both policy frameworks refer to AI, their content, level of preparedness, and institutional logic differ. Ukrainian higher education operates without national procedures for introducing AI tools. Staff development, ethical compliance, and legal oversight are not part of the current agenda.

There is a clear difference between what the policies aim to achieve and what universities are ready to put into practice. If Ukraine wants to follow EU models, there is a need for practical steps: updated documents, specific procedures, and better coordination. Without that, institutions rely on their own understanding, which leads to different approaches across the sector. Some move forward, others hesitate and the overall picture remains uneven.

At the institutional level, the absence of legal obligations in Ukrainian policy creates both opportunities and risks. On the one hand, universities have the flexibility to define their own AI strategies, but on the other hand, the lack of national enforcement mechanisms results in fragmented practices and unequal capacities. Ukrainian educators are still uncertain how to incorporate AI into actual teaching practice. The lack of coordinated training makes this process uneven, and many institutions face

limitations in infrastructure and access to digital tools [5, p. 418]. In the EU, legal definitions and ethical safeguards offer a more structured framework, though implementation differs across contexts.

Both regions speak about the potential of AI, but systemic risks are addressed more directly in EU policies. The Artificial Intelligence Act [7] includes education among the areas requiring particular caution. It calls for clear rules, human control, and transparency in how AI tools are applied. Ukrainian policy documents mention similar concerns, but they do not yet explain how these principles should be implemented in practice. Although the 2025 Recommendations [3, p. 6] call for academic integrity and data protection, they do not articulate procedures for evaluating algorithmic bias or safeguarding student rights. As Boateng & Boateng [4, p. 2013] argue, unregulated AI tools may inadvertently reinforce existing inequalities if ethical risks are not actively addressed at the institutional level. This underlines the importance of national-level guidance to support not just innovation, but also fairness and ethical responsibility in the use of AI in higher education.

Meanwhile, we see the neceesity to undertake the following steps at the local level:

- keep the academic staff informed about the potential benefits and risks of using AI in academic context. The question should be addressed formally during scheduled staff meetings and informally through professional interaction. Both successful and problematic cases of AI use need to be shared and analyzed;
- encourage academic staff to participate in professional trainings on the use of AI. Such trainings should include:
    - designing a learning environment that promotes creativity and critical thinking while restricting the use of unauthirised AI tools;

- training staff to recognize and respond constructively to students' use of AI. Etical use of AI should be encouraged, while the lack of academic integrity and AI-enabled cheating must be prevented;

- include topics related the ethical use of AI into course syllabi, and encourage staff to discuss and model in the classroom ethical integration of AI into academic and professional activities;
- share practical experience with other academic institutions to inform and potentially influence state policy on AI use in academic context.

Conclusions. The analysis shows that artificial intelligence is gradually becoming part of the policy landscape in both the European Union and Ukraine. However, the ways in which it is defined, regulated, and introduced into higher education remain uneven. In EU documents, AI is approached through specific legal instruments and linked to staff training, institutional procedures, and ethical oversight. In Ukraine, references to AI are more general, and the absence of legal definitions or practical guidelines limits their use at the university level.

The recommendations published in Ukraine in 2025 address some of the existing gaps and reflect an attempt to offer more consistent guidance. They bring together previously scattered concerns related to academic integrity, institutional responsibility, and the use of AI in teaching and research. At the same time, they remain advisory and leave open many questions about implementation.

The comparison suggests that further steps will be needed to ensure that universities are not left to navigate this process on their own. Without support at the policy level, including clear procedures and professional development, the integration of AI into university education will continue to depend on local initiative rather than shared standards.

Future Perspectives. Future research could focus on how universities interpret and apply national recommendations in practice, and what institutional conditions support or hinder the responsible use of AI in higher education.

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