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TRANSFORMATION OF ACADEMIC INTEGRITY PRINCIPLES IN THE ERA OF GENERATIVE ARTIFICIAL INTELLIGENCE

The article analyzes the transformation of academic integrity within higher education under the influence of Generative Artificial Intelligence (GenAI). The rapid integration of GenAI has caused a fundamental disruption of traditional operational models in higher education. Unlike previous technological iterations, Large Language Models (LLMs) have executed a «discrete leap», challenging established principles of academic assessment and authorship. This issue is particularly acute in technical universities, where students possess high levels of digital literacy and actively utilize AI as a central mechanism for idea generation and documentation synthesis. The traditional control model, based on detecting plagiarism in the final product, is losing effectiveness as GenAI enables the creation of linguistically sophisticated texts with minimal human cognitive input. This creates an «authorship black box», necessitating a conceptual reimagining of academic integrity. The aim of the article is a comprehensive comparative analysis of the structural and conceptual transformations of academic integrity under the influence of GenAI across the educational landscapes of the USA, Europe, and Ukraine. The primary objectives of the research include: identifying fundamental shifts from product-based to process-based assessment; mapping state policy trajectories in the specified regions; analyzing empirical data regarding the interpretive gap in norms between students and faculty; determining pedagogical implications for language training in technical Higher Education Institutions (HEIs); and formulating actionable recommendations for institutional policy. The study employs a qualitative comparative analysis based on a systematic review of regulatory documents and a synthesis of the evidence base from 2017–2026. A structured analytical matrix was used to compare governance architecture, pedagogical implementation, and behavioral patterns of AI usage. A data triangulation strategy allowed for the integration of global technological trends with the contextual specifics of the Ukrainian educational system operating under martial law. The research reveals that academic integrity is evolving into a model of accountable human-AI collaboration. The USA exhibits a decentralized, adaptive model with a high degree of pedagogical experimentation. The European approach is regulatory-oriented, prioritizing human agency in accordance with the AI Act. In Ukraine, despite a robust legislative framework, the implementation of integrity principles is characterized by asymmetry due to wartime constraints and uneven digital infrastructure. A key finding is the justification for a transition from a punitive «prohibit and detect» logic toward a constructive «declare, justify, and verify» framework. The study establishes that preserving the value of academic qualifications in the GenAI era is possible only through a systemic redesign of assessment systems. Priority areas for technical universities include: transitioning to staged assessments, integrating AI literacy as a core competency, and shifting the focus from the linguistic quality of the text to the verification of the student's individual cognitive contribution through oral defenses and reflective reports.

Key words: *academic integrity, generative artificial intelligence, higher education, assessment design, AI literacy, United States, Europe, Ukraine.*

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ТРАНСФОРМАЦІЯ ПРИНЦИПІВ АКАДЕМІЧНОЇ ДОБРОЧЕСНОСТІ В ЕПОХУ ГЕНЕРАТИВНОГО ШТУЧНОГО ІНТЕЛЕКТУ

У статті аналізується трансформація академічної доброчесності у вищій освіті під впливом генеративного штучного інтелекту (ГШІ). Стрімка інтеграція генеративного штучного інтелекту (ГШІ) спричинила фундаментальну дезорганізацію традиційних операційних моделей вищої освіти. На відміну від попередніх технологічних ітерацій, великі мовні моделі (ВММ) здійснили «дискретний стрибок», який поставив під сумнів усталені принципи академічного оцінювання та авторства. Особливо гостро ця проблема постає у технічних університетах, де студенти мають високий рівень цифрової грамотності та активно використовують ШІ як центральний

механізм генерації ідей та синтезу документації. Традиційна модель контролю, заснована на виявленні плагіату в готовому продукті, втрачає ефективність, оскільки ГШІ дозволяє створювати лінгвістично досконалі тексти з мінімальним когнітивним внеском людини. Це створює «чорну скриньку» авторства, що вимагає переосмислення академічної доброчесності. Метою статті є комплексний порівняльний аналіз структурних і концептуальних трансформацій академічної доброчесності під впливом ГШІ в освітніх просторах США, Європи та України. До основних завдань дослідження належать: ідентифікація фундаментальних зсувів від оцінювання продукту до оцінювання процесу; картографування траєкторій державної політики у зазначених регіонах; аналіз емпіричних даних щодо розриву в інтерпретації норм студентами та викладачами; визначення педагогічних наслідків для мовної підготовки в технічних ЗВО та формування дієвих рекомендацій для інституційної політики. У роботі застосовано якісний порівняльний аналіз, що базується на систематичному вивченні нормативних документів та синтезі доказової бази за період 2017–2026 рр.. Використано структуровану аналітичну матрицю для порівняння архітектури управління, педагогічної імплементації та поведінкових паттернів використання ШІ. Стратегія триангуляції даних дозволила поєднати глобальні технологічні тренди з контекстуальними особливостями функціонування української освіти в умовах воєнного стану. Дослідження виявило, що академічна доброчесність трансформується в модель підзвітної співпраці людини та ШІ. У США спостерігається децентралізована, адаптивна модель з високим рівнем педагогічного експериментування. Європейський підхід є регуляторно-орієнтованим, де пріоритетом є людська суб'єктність згідно з нормами AI Act. В Україні, попри міцну законодавчу базу, впровадження принципів доброчесності характеризується асиметрією через воєнні обмеження та нерівномірність цифрової інфраструктури. Ключовим результатом є обґрунтування переходу від каральної логіки «заборонити та виявити» до конструктивної рамки «декларувати, обґрунтувати та верифікувати». Встановлено, що збереження цінності академічних кваліфікацій у добу ГШІ можливе лише через системний редизайн системи оцінювання. Пріоритетними напрямками для технічних університетів визначено: перехід до поетапного оцінювання (staged assessments), інтеграцію ШІ-грамотності як базової компетентності та зміщення фокусу з лінгвістичної якості тексту на верифікацію індивідуального когнітивного внеску студента через усні захисти та рефлексивні звіти.

Ключові слова: академічна доброчесність, генеративний штучний інтелект, вища освіта, проектування системи оцінювання, ШІ-грамотність, Сполучені Штати, Європа, Україна.

Introduction. The rapid integration of Generative Artificial Intelligence (GAI) has significantly transformed the operational landscape of higher education within an unprecedentedly short timeframe (Mousavi and Gherghel, 2024). Unlike earlier educational technologies that evolved incrementally, large language models (LLMs) represent a «disruptive leap» that challenges established approaches to academic assessment and authorship. This transformation is particularly evident in language education for engineering and computer science students, whose high level of digital fluency facilitates the active incorporation of AI into learning processes. AI is increasingly used not merely as a supplementary tool, but as a resource for idea generation, structural refinement, and the production of complex technical texts. As a result, traditional mechanisms of academic integrity control no longer fully correspond to contemporary educational realities (Bearman and Ajjawi, 2023).

Traditionally, academic misconduct has been conceptualized through product-based indicators such as plagiarism, unauthorized collaboration, or contract cheating. However, GAI enables the creation of linguistically sophisticated and technically accurate texts that may remain formally «original» according to similarity metrics. This creates a «black box» of authorship and raises the question of how academic integrity should be understood when the final text no longer serves as reliable evidence of independent intellectual work.

This challenge is further complicated by the absence of a shared understanding of acceptable AI use in higher education. Institutions are required to distinguish between legitimate academic support - such as brainstorming or language correction - and forms of hidden substitution, where AI assumes the primary cognitive role in task completion. At the same time, responses to these challenges vary across educational systems and depend on differences in regulatory frameworks, institutional practices, and broader social conditions.

In this context, the problem of academic integrity requires reconsideration not only at the level of institutional regulation, but also in terms of the underlying logic of assessment, authorship, and responsibility. The key issue is how higher education systems adapt to the growing presence of generative AI and how these adaptations reshape the boundaries of acceptable academic practice. This makes a comparative examination of different regional approaches methodologically relevant and necessary for understanding the ongoing transformation of academic integrity in higher education.

The aim and tasks. The aim of this article is to analyze the transformation of academic integrity under the influence of Generative Artificial Intelligence (GAI) in the higher education systems of the United States, Europe, and Ukraine.

To achieve this aim, the study addresses the following tasks:

- to identify the main conceptual shifts in the understanding of academic integrity in the context of GAI;
- to compare governance and policy approaches in the selected regions;
- to examine key integrity risks associated with AI use in higher education;
- to determine the pedagogical implications of these changes for academic writing and language instruction in technical universities;
- to formulate recommendations for institutional policy and assessment design.

Research methods. The research methodology employed in this study is a qualitative comparative analysis, grounded in a systematic document analysis and evidence synthesis of the evolving academic integrity landscape. The selection of this approach is necessitated by the rapid, non-linear development of generative AI (GAI), where traditional quantitative metrics often fail to capture the nuanced shifts in institutional policy and pedagogical ethics. The dataset for this analysis comprises a diverse corpus of peer-reviewed journal articles, national policy guidelines, supranational legal documents, and institutional reports published between 2017 and 2026. This timeframe was specifically chosen to capture the «pre-GAI» baseline and the subsequent «hyper-acceleration» period following the public release of large language models, allowing for a longitudinal perspective on regulatory adaptation. Sources were filtered based on a four-tier eligibility framework: their primary focus on academic integrity in higher education, their explicit engagement with GAI technologies, their geographic relevance to the United States, Europe, or Ukraine, and their recency.

To ensure a systematic and rigorous comparison, the study utilizes a structured analytical matrix that examines the target regions across three primary dimensions: governance architecture, pedagogical implementation, and behavioral evidence of AI use.

Within each of these dimensions, the collected materials underwent a qualitative coding process to identify dominant themes such as the transition from «prohibition-based» to «transparency-based» policy logic, the implications for assessment security, and the emerging expectations for AI literacy among both staff and students. This coding allowed for the synthesis of cross-regional patterns while maintaining the necessary nuance to treat national and supranational evidence as context-sensitive rather than directly equivalent.

By analyzing diverse materials - ranging from the EU AI Act to specific Ukrainian methodological recommendations - the study employs a triangulation

strategy to validate its findings. This methodological triangulation compensates for the uneven distribution of empirical data across the target regions. While English-language datasets from the United States and Europe provide a more established evidence base, the emergent data from Ukraine offer a unique perspective on integrity implementation under conditions of extreme external pressure and digital transformation. Consequently, the methodology does not aim for statistical generalization but rather for a reliable analytical interpretation of how core academic values are being re-enacted through new regulatory and instructional instruments.

Research results. The comparative analysis reveals that the integration of Generative AI into higher education has initiated a fundamental conceptual shift, moving the focus of academic integrity from the final product to the integrity of the creative and analytical process (Dawson, 2024). Traditionally, integrity was verified through the lens of textual originality; however, contemporary scholarship suggests that originality alone is no longer a sufficient proxy for authorship. The research indicates that institutions are increasingly adopting frameworks that prioritize process transparency. This is manifested in emerging requirements for students to provide «auditable» evidence of their reasoning, such as reflective process notes, chronological draft histories, and oral defenses of their submitted work. Consequently, the role of the educator is evolving from a monitor of outcomes to a facilitator of transparent, human-centered intellectual effort. Applying the comparative matrix reveals distinct regional models (see Table 1):

Analysis shows that while student adoption is universal, the «norm-interpretation gap» is most acute in Europe, where strict regulations clash with student perceptions of AI as a «legitimate scaffold» (Mollick, 2024). In Ukraine, despite a robust legal basis, war-time constraints create digital divides in how integrity is monitored.

In the United States, the response to GAI is characterized by rapid but decentralized adaptation (Fishman, 2023). While federal guidance from the Office of Educational Technology acknowledges AI's dual potential for innovation and governance risk, implementation remains largely fragmented at the departmental and course levels. Sectoral data suggests that while student adoption is widespread, faculty members face significant burdens in enforcement and express deep concerns regarding a potential decline in students' critical thinking skills. Nevertheless, this decentralization has fostered a high degree of pedagogical experimentation. Many American institutions are moving toward «staged assessments» and in-class

Table 1

Comparative matrix of distinct regional models

Criteria	United States	Europe (EU)	Ukraine
Regulatory framework	– fragmented; – office of Ed.Tech guidance	– rigid; – EU AI Act (rights-based)	– article 42 «On Education»
Centralization	– low; – high departmental autonomy	– moderate; – harmonized standards	– high legal anchoring; – implementation asymmetry
Practices	– pedagogical experimentation; – staged writing	– ethics-anchored; – human agency focus	– methodological recommendations; – infrastructure gaps
Control logic	– decentralized adaptation	– regulation-anchored model	– implementation under wartime pressure

writing checkpoints to ensure that the intellectual work is situated within the classroom environment, even if inter-institutional consistency remains low (Curtis, 2024).

The European context presents a more regulation-anchored model of integrity governance. Driven by supranational ethical frameworks and the binding provisions of the EU AI Act, European institutions are foregrounding human agency, fairness, and rights-based accountability. This regulatory environment has accelerated the revision of institutional policies to emphasize assessment security and staff support. Empirical evidence from the region, particularly within the UK, highlights a significant «norm-interpretation gap», where students often perceive certain AI-supported practices as legitimate assistance while faculty categorize them as misconduct. This disconnect underscores the urgent need for clearer, more harmonized definitions of acceptable AI use that align with the new regulatory standards.

In Ukraine, the transformation of academic integrity is legally grounded in Article 42 of the Law «On Education», yet its implementation is marked by a distinct asymmetry due to the ongoing wartime environment. National methodological recommendations indicate a clear trajectory toward institutionalizing integrity, but progress is often constrained by unequal digital infrastructure and varying levels of staff preparedness across universities. Empirical data from specialized fields, such as medical education, reveal a very high prevalence of AI use among learners, with a small but notable percentage acknowledging the submission of pre-written assignments for dishonest purposes. These findings suggest that for Ukrainian higher education, the strategic priority must be the creation of feasible, context-sensitive policies that balance legal requirements with the practical reality of high-pressure educational environments.

Discussion. The comparative analysis across the United States, Europe, and Ukraine indicates that the proliferation of Generative Artificial Intelligence

(GAI) does not fundamentally abolish the core principles of academic integrity, but rather necessitates a profound redefinition of its operational core. Across these diverse pedagogical landscapes, we observe a steady shift from the traditional, punitive «ban - detect – punish» logic toward a more constructive and transparent «declare - justify - verify» framework. This transition reflects the reality that in an AI-augmented world, the focus of ethical assessment must migrate from the static final product to the dynamic integrity of the intellectual process itself.

This paradigm shift carries at least four major implications for the future of higher education. First, assessment design must be elevated to the status of the central integrity mechanism. The reliance on automated detection tools is increasingly viewed as insufficient and ethically problematic; such tools are often probabilistic, easily contested, and have shown a systematic bias against non-native speakers in multilingual contexts. To preserve integrity, educators must move toward «staged assessments» and tasks that require situated judgment and domain-specific reasoning - elements that remain uniquely human. By requiring traceable intellectual effort, such as chronological draft histories or reflective process notes, the academy can ensure that AI remains a scaffold rather than a substitute for student cognition.

Second, the governance of academic integrity must transition from broad institutional mandates to granular, task-specific taxonomies. Simple binary labels like «AI allowed» or «AI prohibited» are pedagogically weak and fail to address the nuances of modern technical documentation. Institutions, particularly technical universities, require clear frameworks that distinguish between acceptable support, such as brainstorming or grammar refinement, and prohibited «hidden substitution» where the machine assumes the primary cognitive burden. This granularity is essential for closing the «norm-interpretation gap», where students’ perceptions of legitimate assistance often clash with faculty’s definitions of misconduct.

Third, AI literacy must be repositioned as a foundational integrity competency rather than a peripheral technical skill. It is no longer enough for students to understand traditional citation rules; they must now master prompt ethics, the verification of AI-generated claims to prevent «hallucinations», and the complex issues surrounding data confidentiality and algorithmic bias. In the context of engineering and computer science cohorts, where digital fluency is high, this literacy involves a critical awareness of how AI synthesizes information. Students must be held accountable for the final output as authors, which requires a deep understanding of the AI's role in their creative process.

Fourth, a sustainable policy environment requires a structural commitment to faculty development. Without systemic institutional investment, lecturers face an unsustainable increase in enforcement labor and the emotional burden of managing inconsistent standards. In technical universities like Igor Sikorsky Kyiv Polytechnic Institute, where the goal is to prepare students for a global IT market that demands AI proficiency, faculty must be equipped with shared rubrics and exemplars of transparent AI use. This is especially pertinent for English-language instruction. We can no longer treat linguistic quality or sophisticated syntax as direct evidence of unaided authorship. Instead, the focus of language education must shift toward assessing argument architecture, source rationale, and the student's ability to defend their technical claims through oral examination and situational writing. Ultimately, by moving toward a framework of accountable human-AI collaboration, the academy can foster a resilient educational design that secures the value of academic qualifications while embracing technological progress.

Conclusions. The findings of this comprehensive study demonstrate that the fundamental principles of academic integrity are currently undergoing a profound structural transformation in their practical implementation, rather than being replaced or diminished in their core substance. While the essential values of honesty, fairness, responsibility, and trust remain the immutable pillars of the global academic

community, the emergence of Generative AI necessitates the development of entirely new pedagogical instruments and regulatory mechanisms to preserve these values in daily practice.

The comparative analysis reveals a diverse landscape of adaptation: the United States serves as a model for agile but fragmented institutional experimentation, where the lack of centralized mandates fosters innovation at the cost of consistency. In contrast, Europe demonstrates a trajectory toward stronger regulatory alignment, driven by the ethical imperatives of the EU AI Act, which prioritizes human agency and systemic transparency. For Ukraine, the situation is uniquely complex, as the country must navigate the transition toward European standards and clear legal frameworks while simultaneously managing the implementation asymmetries caused by the exceptional constraints of wartime disruption.

Despite these regional differences, a significant global convergence is evident: the traditional «ban - and - detect» paradigm is no longer viable in an era of sophisticated large language models. The academy is moving toward a more nuanced «declare - and - verify» framework, where academic integrity is conceptualized as a model of accountable human-AI collaboration. In this new reality, the strategic objective for higher education institutions - and particularly for technical universities like Igor Sikorsky Kyiv Polytechnic Institute - is not the futile pursuit of technological prohibition, but rather the intentional redesign of educational processes.

This redesign must prioritize assessment formats that are inherently resilient to invisible substitution, focusing on the transparency of the creative process and the verification of individual cognitive contribution. Ultimately, by integrating AI literacy as a core competency and shifting the focus from the final linguistic product to the integrity of the underlying intellectual journey, universities can secure the long-term value of academic qualifications and sustain the necessary trust between the institution, the student, and the global professional market.

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