

The Eurasia Proceedings of Educational and Social Sciences (EPESS), 2026

Volume 51, Pages 95-100

ICRESS 2026: International Conference on Research in Education and Social Sciences

Institutional and Governance Challenges in Recognizing Content Generated by Artificial Intelligence in Higher Education

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Abstract: The development and spread of generative artificial intelligence (AI) tools pose new challenges for higher education, not only at the pedagogical level, but also at the institutional and management levels. Assessing student performance, maintaining academic integrity, and ensuring the reliability of quality assurance and evaluation processes are becoming increasingly strategic issues for organizations. Many higher education institutions already have guidelines and regulations on artificial intelligence, but there is currently no uniform, reliable solution that can be applied at the institutional level to determine the extent to which a given product can be considered the student's own work and where AI-generated content begins. The limited reliability of currently available AI detection tools (e.g., Turnitin, Quillbot) further increases decision-making uncertainty and poses a risk to assessment and quality assurance systems. The aim of the study is to review the possibilities of identifying content generated by generative AI based on the literature, focusing its linguistic, content, and technical characteristics, and to analyse its institutional applicability from the perspective of higher education management and quality assurance. The results may contribute to more informed management decisions on regulating the use of AI, transforming assessment practices, and maintaining academic integrity.

Keywords: Artificial intelligence, Higher education, Quality assurance

Introduction

The emergence of artificial intelligence tools has brought about noticeable changes in the everyday practice of higher education in a short period of time. The use of generative AI tools is increasingly becoming integrated into students' learning strategies and the work of educators, creating new opportunities but also new uncertainties. These uncertainties are not only pedagogical in nature, but also affect the areas of assessment, academic integrity, and institutional decision-making.

A growing number of analyses emphasize that the impact of AI on assessment cannot be considered a technical detail. Due to the complex nature of the problem, there is no single tool or rule that can address the tensions arising from it on its own (Corbin et al., 2025). This approach helps to understand why institutional responses based solely on identification or prohibition encounter limitations.

Several empirical studies have highlighted serious limitations in the reliability of automatic identification solutions. Currently available AI detectors (e.g., Turnitin, Quillbot) are sensitive to linguistic style, subsequent editing of the text, and the type of model used, and are therefore not suitable as a basis for consistent and fair decisions (Deep et al., 2025). Similar uncertainty arises when educators and technical tools jointly attempt to assess the origin of a student's work, which in many cases leads to contradictory results (Perkins et al., 2024). In the long term, this situation could undermine the legitimacy of assessment and trust in institutions.

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- Selection and peer-review under responsibility of the Organizing Committee of the Conference

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Beyond technological issues, ethical and organizational tensions also arise. A significant proportion of teachers and students are concerned about transparency, data protection, and fairness, indicating that the use of AI also raises normative and value-based dilemmas (Marín et al., 2025). In the Hungarian context, it has also been pointed out that the spread of generative AI tools could undermine trust within the academic community if a commonly accepted culture of use and institutional framework are not developed (Marciniak & Baksa, 2024).

Institutional guidelines typically take the form of regulations. Almost all higher education institutions have developed some form of guidelines for the use of AI. These are often general and do not provide clear guidance on how to deal with evaluation issues and uncertainties (Ullah et al., 2024). From a quality assurance perspective, AI can only be integrated into institutional operations in a sustainable manner if governance, evaluation, and quality management develop in a coordinated manner, rather than through isolated technological interventions (Warren et al., 2025).

Recognizing content generated by generative AI is not a technical problem, but an institutional and management challenge. The aim of our study is to show how the limitations of recognition are linked to organizational, ethical, and quality assurance issues, and what management responses appear to be well-founded in the current transformation process of higher education. Therefore, the recognition of AI-generated content should be understood not only as a technical issue, but fundamentally as an institutional and governance challenge.

Theoretical Background and Dimensions of Recognizing AI-Generated Content

The recognition of AI-generated content can be interpreted in three interrelated dimensions: linguistic, content, and technical, all of which are related to institutional decision-making and quality assurance (Figure 1).

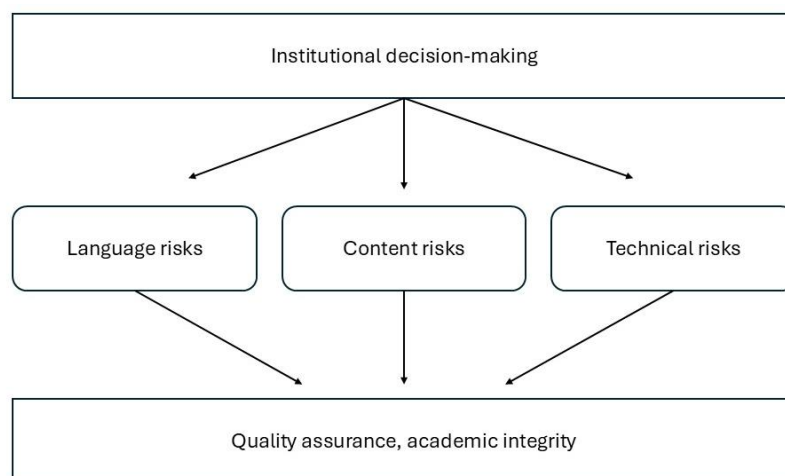


Figure 1. Three-dimensional interpretative framework for recognizing AI-generated content
Source: own elaboration.

Recognizing generative content produced by AI is a complex problem that can be interpreted on multiple levels. The literature increasingly views this phenomenon as a difficult challenge related to evaluation, for which there is no single solution and where every intervention can have further consequences (Corbin et al., 2025). This suggests that recognition is not merely a technological issue but also brings to the surface conflicts of interpretation at the conceptual and institutional levels. According to research on the transformation of higher education evaluation, generative AI creates both new opportunities and new risks, necessitating a rethinking of regulation and practice (Xia et al., 2024). In this context, recognition is not a single technical operation but can be interpreted as the interplay of different aspects, each with different strengths and limitations.

Recognition based on linguistic patterns assumes that AI-generated texts may exhibit certain stylistic and structural characteristics. However, these are highly context- and language-dependent and are influenced by the type of model, the prompting method, and the degree of post-editing. Research examining automatic identification tools suggests that it is precisely in these common situations that the rate of misclassification increases, which is particularly risky in institutional settings (Deep et al., 2025).

In contrast, the content-based approach does not examine how a text is formulated, but rather the extent to which it contains independent thinking, reflectivity, and context-sensitive reasoning. According to studies analysing the generative AI-related transformation of assessment, it is becoming increasingly important for tasks to make student decisions and thought processes visible, rather than just the product (Weng et al., 2024; Xia et al., 2024). However, this necessarily remains interpretation-dependent and cannot be transformed into a completely objective rule.

Technical identification attempts to determine the origin of a text based on statistical patterns, which seems like an objective solution. In practice, however, these tools quickly become obsolete, are unable to handle partial use, and are sensitive to model development and user intervention (Deep et al., 2025). Empirical results also show that even a combination of technical and human judgment does not always lead to consistent decisions (Perkins et al., 2024).

These aspects are not mutually exclusive but rather presuppose and constrain each other. Linguistic features are easily manipulated, content interpretation is context-dependent, and technical identification is unstable and rapidly changing. The problem of recognition cannot therefore be reduced to a single solution but can be described as a space of interpretation where pedagogical goals, assessment fairness, and institutional risk management are simultaneously present. Recognizing this makes it understandable why the issue becomes a management and quality assurance challenge, not just a technological problem (Corbin et al., 2025; Warren et al., 2025).

Method

The study is theoretical in nature and based on an integrative literature review. The investigation takes a thematic and interpretative approach, aiming to explore the main problems, approaches, and tensions related to the recognition of content generated by generative AI. The analysis draws on international and domestic literature dealing with the application of generative AI in higher education, the transformation of assessment, academic integrity, and institutional governance. The selection of sources was based on relevance, and we included studies that explicitly examine the relationships between recognition, assessment, and institutional responses.

In analysing the selected studies, the emphasis was not on comparing results, but on identifying interpretive frameworks and recurring patterns. This resulted in a three-dimensional interpretative framework that addresses recognition at the linguistic, content, and technical levels and can serve as a basis for subsequent institutional and quality assurance conclusions. The analysis followed a thematic synthesis method, which coded the literature along linguistic, content, and technical dimensions, enabling the development of an integrated interpretive framework. This procedure made it possible to develop an integrated, three-dimensional interpretive framework, which constitutes the main theoretical contribution of the study.

Results and Discussion

The three-dimensional interpretative framework of recognition allows us to understand the impact of generative AI in its institutional and governance contexts. The results show that linguistic, content-based, and technical approaches are all partial and context-dependent, and therefore none of them is suitable on its own as a stable basis for assessment or disciplinary decisions. This finding is consistent with analyses that suggest that the integration of AI in education is not a linear process of development, but requires continuous adaptation and reinterpretation (Corbin et al., 2025).

Linguistic Dimension and Institutional Risks

The institutional application of recognition based on linguistic characteristics is particularly problematic because it is highly dependent on the linguistic environment and the stylistic strategies of the students. This is especially true in non-native language environments, where linguistic homogeneity is not necessarily a sign of AI use, but rather a characteristic of the learning situation. The use of automatic identification tools in such environments can therefore be not only inaccurate but also unfair, as it may disproportionately affect certain groups of students (Deep et al., 2025).

Content Dimension and Pedagogical Implications

The content-based approach has a stronger pedagogical foundation because it is linked to learning objectives and competence development. However, at the institutional level, this approach also has its limitations because interpretation is necessarily subjective and depends largely on the professional culture and assessment practices of teachers. In the longer term, this heterogeneity can lead to a reduction in the uniformity of the assessment system, which can weaken consistency and transparency within the institution (Weng et al., 2024).

Technical Dimension and Institutional Challenges

The institutional appeal of technical identification is understandable because it offers an objective solution. However, based on empirical results, these tools are not capable of reliably handling partial or creative AI use, nor are they suitable as a basis for complex evaluation decisions (Perkins et al., 2024; Deep et al., 2025). If too much weight is given to technical identification, it can easily lead to the "outsourcing" of assessment responsibility, which reduces teacher autonomy and can distort pedagogical goals.

From an institutional governance perspective, this means that the issue of recognition cannot be separated from the assessment system. The emergence of AI is forcing institutions to rethink what they consider legitimate knowledge, how they interpret student autonomy, and what role they assign to technology in these processes. Responses based solely on regulation are therefore insufficient on their own, as they do not address the underlying normative issues that form the basis of assessment decisions (Ullah et al., 2024).

From a quality assurance perspective, the most important question is not whether all AI-generated content can be recognized but whether the assessment system can maintain its legitimacy and the trust of its stakeholders. If assessment practices become unpredictable or unfair, they undermine the institutional credibility that underpins quality assurance. Therefore, quality assurance systems must not only keep pace with technological changes but also reflect on how these changes affect the meaning of learning and assessment (Warren et al., 2025).

Overall, the results suggest that recognizing content generated by generative AI cannot be treated as a separate technical task, but rather as an organizational learning process in which institutions gradually develop their own norms, rules, and practices. This process inevitably involves conflicts, but it also creates an opportunity for institutions to reflect more consciously on their own assessment culture and educational goals.

Conclusion

The aim of the study was to show that recognizing content generated by generative AI is a challenge that must be interpreted from an institutional, management, and quality assurance perspective. The analysis showed that linguistic, content-based, and technical approaches are all partial and context-dependent, and therefore none of them can provide a stable basis for evaluation and disciplinary decisions on their own. The problem of recognition is closely linked to what institutions consider legitimate knowledge, how they interpret student autonomy, and what role they assign to technology in the learning process. This means that addressing the issue cannot be reduced to decisions about tool use or regulation but requires a rethinking of assessment culture and institutional norms.

One of the main conclusions of the study is that the emergence of generative AI inevitably creates tensions in higher education, but these tensions are not necessarily problems; rather, they are potential sources of organizational learning and institutional renewal. The question is not whether institutions can preserve their previous practices, but whether they are able to consciously shape them in the new technological and social environment.

The limitation of the study is that it is based on a theoretical and literature-based approach, so it does not provide an empirical answer to the question of what specific solutions individual institutions are applying. However, it can contribute to higher education stakeholders approaching the issues raised by generative AI in a more conscious and reflective manner, and to management and quality assurance decisions being based on pedagogical and institutional considerations as well as technological ones. The main theoretical contribution of the study is the development of an integrated, three-dimensional interpretative framework that links the linguistic, content-related, and technical dimensions of recognition with institutional governance and quality assurance.

Recommendations

Based on the results of the study, there is no single "good" institutional solution, but rather several aspects that are worth considering when integrating generative AI into higher education. It is worth moving away from approaches based solely on technical recognition and placing greater emphasis on rethinking assessment practices from a pedagogical perspective. Task types that make students' thought processes visible can reduce uncertainty around recognition and strengthen the legitimacy of assessment.

At the institutional level, it may be important to develop transparent and flexible guidelines that are not based solely on prohibitions but also allow for conscious and responsible use of technology. In addition, quality assurance systems should reflect on how innovative technologies are transforming institutional concepts of learning, knowledge, and assessment. These recommendations do not offer definitive solutions but rather indicate directions along which institutions can develop responses appropriate to their own contexts.

Scientific Ethics Declaration

* The authors declare that the scientific ethical and legal responsibility of this article published in EPESS journal belongs to the authors.

Conflict of Interest

* The authors declare that they have no conflicts of interest.

Funding

* This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Acknowledgements or Notes

* This article was presented as an oral presentation at the International Conference on Research in Education and Social Sciences (www.icress.net) held in Batumi/Georgia on July 09-12, 2026.

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To cite this article:

Toth, R. & Horvath, S. (2026). Institutional and governance challenges in recognizing content generated by artificial intelligence in higher education. *The Eurasia Proceedings of Educational and Social Sciences (EPESS)*, 51, 95-100.