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Challenges of implementing artificial intelligence in higher education in the Czech republic

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Abstract Generative Artificial Intelligence (Gen AI) opens up new possibilities in the field of education, but its implementation poses significant legal and ethical challenges. This paper focuses on privacy, copyright, and academic integrity issues related to the use of Gen AI in educational settings. The study focuses on analyzing the approaches of the University of Hradec Kralove, Charles University, and Masaryk University to the regulation and implementation of AI. The results show that even when universities formulate positions for the use of AI, they often lack long-term sustainability strategies and mechanisms to ensure a level playing field for students when using AI tools. The lack of involvement of academia in decision-making processes and the absence of mechanisms to continuously update the rules may lead to ineffective regulation of the use of AI in education, which could hinder its optimal integration and limit its contribution to the innovation of the educational and scientific process.

Keywords: Generative Artificial Intelligence, Artificial Intelligence in Education, Plagiarism, Academic Integrity

1. INTRODUCTION

Generative artificial intelligence (Gen AI) is a subset of artificial intelligence that is capable of creating new text, images, sounds, and other forms of content based on input data and prior learning (Zhihan, 2023). As reported by Okaiyeto et al. (2023), Gen AI utilizes large-scale language models and deep neural networks to simulate human creativity, and its applications extend beyond academia to other fields, including the arts, healthcare, and business. In education, this technology opens up new possibilities in personalized learning, automated assessment, and academic writing support (Baidoo-Anu & Ansah 2023).

At the same time, however, fundamental legal and ethical questions arise that require the attention of the professional community. Dabis and Csáki (2024) note that universities around the world are beginning to formulate initial responses to the spread of Gen AI. The primary challenges include protecting students' data, addressing copyright issues in the use of AI-generated materials, and maintaining academic integrity in the context of automated text generation. In addition, Mayana et al. (2024) identify legal uncertainties associated with ownership and liability for AI-generated content.
This paper focuses on the analysis of the legal and ethical challenges associated with the implementation of Gen AI in major educational institutions in the Czech Republic. It focuses on issues of data protection, copyright and academic integrity. Based on an analysis of existing measures of universities, it will offer a comparative overview of strategies for the use of AI in the academic environment. The aim is not to formulate specific recommendations for educational institutions, but to highlight potential risks and problematic aspects associated with the integration of AI into the educational practice of universities.

2. LEGAL AND ETHICAL IMPLICATIONS OF THE USE OF ARTIFICIAL INTELLIGENCE IN EDUCATION

With the increasing integration of generative AI into adult education, new legal and ethical challenges are emerging that need to be addressed. Gen AI is currently one of the fastest-growing technological tools that is significantly impacting the educational process. Key aspects to consider in this context include data protection, copyright issues and maintaining academic integrity. However, current advances are accompanied by a number of challenges, including lack of regulation, risks of algorithmic bias, and the need to strengthen students' critical thinking skills so that they can use AI technologies ethically (Prepera, 2023).

One of the most important legal aspects of the use of generative AI in education is the protection of personal data. As stated by Nartey (2024), many educational institutions are currently faced with the question of how to effectively ensure that the use of AI systems complies with legislative standards such as the General Data Protection Regulation (GDPR). This is Regulation (EU) 2016/679 of the European Parliament and of the Council, which was adopted on 27. The GDPR sets out uniform rules for the protection of personal data across the European Union (EU) and the European Economic Area (EEA), and applies to all entities that process personal data of EU citizens, even if they are based outside the EU.

The Regulation regulates the rights of individuals to the protection of personal data, the obligations of data controllers and data processors, the rules on consent to data processing, data protection measures, and sanctions for breaches (GDPR; European Union, 2016). The GDPR also applies to the use of artificial intelligence when this technology processes personal data, for example, in the analysis of user behaviour or automated decision-making (Directive; European Union, 2019).

In the Czech Republic, personal data protection is regulated by Act No. 110/2019 Coll., on the processing of personal data, which adapts the General Data Protection Regulation (GDPR) to the Czech

legal system. This Act specifies the rights and obligations when processing personal data and defines the competence of the Office for Personal Data Protection (Act No. 110/2019 Coll., 2019). Using Gen AI in an academic setting often means processing sensitive personal data of students and educators, including their learning outcomes, preferences, and interactions with digital learning tools. In order to minimize the risks of misuse of this information, it is essential to establish clear guidelines for handling the data and to ensure that it is securely stored and anonymized.

Another key issue related to Gen AI is the issue of copyright and ownership of the generated content. Mayana et al. (2024) point out that the current legislative framework does not contain clear rules regarding ownership and liability for AI-generated content. In the educational context, this problem is manifested, for example, in the use of AI-generated materials in teaching or academic papers. The lack of clear legal provisions raises questions about whether generated content is considered an original work, whether it needs to be cited, or how the authorship of such output should be defined.

At the legislative level, copyright in the Czech Republic is regulated by Act No. 121/2000 Coll., on Copyright, on Rights Related to Copyright and on Amendments to Certain Acts (Copyright Act). This Act defines a work of authorship as the unique result of the creative activity of the author, who can only be a natural person (Czech Republic, 2000). This means that content created by artificial intelligence cannot be considered a work of authorship within the meaning of this Act because it lacks a human creative element. The issue of ownership of content created by AI is currently the subject of intense legal debate. It follows that works created purely by AI, without human creative input, are not considered works of authorship and are not subject to copyright protection. AI tool providers specify in their terms of use who acquires rights (not in the sense of authorship) to the generated content.

Therefore, universities and academic institutions need to formulate clear policies for the use of AI in the educational process and ensure that students and educators have clear guidelines for working with the generated materials. At the same time, it is necessary to keep an eye on the development of legislation at the European level, as the issue of copyright of AI-generated content is subject to expert debate within the EU and may be subject to future legislative changes (European Union, 2019). The legal framework regarding the authorship and ownership of AI-generated content can be expected to evolve in the future.

Another important challenge is to maintain academic integrity and prevent plagiarism in the context of the increasing use of generative AI in academic writing. Costa et al. (2024) point out that the proliferation of AI tools such as ChatGPT has led to an increase in instances of unethical behavior, including plagiarism and inadequate assistance to students in academic writing. The use of Gen AI complicates traditional definitions of originality and authorial contribution, requiring a revision of current academic ethics rules (Plata et al., 2023). In order to ensure fair and transparent use of AI in academic settings, it is necessary to establish appropriate control mechanisms and clear guidelines for its use.

Some universities have already responded to these developments by modifying their assessment criteria and strengthening their emphasis on the procedural aspects of academic production rather than simply evaluating the final text.

Given these challenges, educational institutions must take an active role in developing regulations and recommendations to ensure the ethical and legally compliant use of Gen AI in academic settings. At the same time, it is important to support the development of digital literacy among students and educators to be able to critically evaluate AI outputs and effectively integrate them into their educational process, thus ensuring a balance between innovation and academic responsibility.

3. COMPARISON OF AI IMPLEMENTATION APPROACHES OF SELECTED UNIVERSITIES IN THE CZECH REPUBLIC

Higher education is undergoing dynamic changes, with one of the most significant trends in recent years being the use of Gen AI in education. Czech universities are realising the potential of AI in education. They emphasize its ethical and responsible use. A key ethical dilemma for educational institutions is the decision whether to promote or restrict the use of generative AI tools (Rana, 2025).
The paper analyses and compares the strategies of selected Czech universities in the field of the implementation of artificial intelligence in teaching. It focuses on how they are adapting to the advent of Gen AI, what obstacles they face in its implementation and how educational strategies can be optimized to reflect both pedagogical needs and institutional frameworks.

The comparison of the different strategies of the selected universities is based on a combination of descriptive analysis and critical comparison based on available data. This method is inspired by theoretical models of educational innovation management (Fullan, 2015) and concepts of digitalisation in education (Selwyn, 2016). Fullan's model of change (2015) shows that the implementation of new technologies such as AI requires both a structured approach from the top and the active involvement of lecturers and students in order to anchor sustained support for change. Vision sharing is seen as an outcome of a successful change process rather than a prerequisite for success. Selwyn's analysis of digital education (2016) highlights that access to technology in universities is often conditioned by ethical, economic and institutional factors, which directly affects the implementation of Gen AI.Higher education institutions face challenges in integrating Gen AI into the learning process, with methodological frameworks for managing educational innovation and digitising learning playing a key role. Thematic content analysis was conducted by systematically searching for codes in the texts of university documents and comparatively comparing the results between universities according to each category (Mayring, 2014; Scheier, 2012). Coding followed a deductive approach based on theoretical frameworks (Fullan, Selwyn) and complemented by inductive coding of newly identified themes, see Table 1 Coding matrix according to the proposed scheme.

Table 1 Code matrix of the proposed scheme

Code	Category	Description
K1	*Ethical Regulation*	Standards, recommendations, rules for responsible use of AI
K2	*Participation*	Involvement of teachers and students in strategy development, consultation
K3	*Innovation Support*	AI as a tool to improve teaching, creativity, personalization
K4	*Equal Access*	Availability of AI tools to all students, efforts toward inclusion
K5	*Strategy Sustainability*	Planning of revisions, long-term direction, adaptability of strategies

Source: own processing

Based on the available official documents, three leading universities were selected – University of Hradec Králové (UHK), Charles University (UK) and Masaryk University (MU).The primary documents of the universities were: internal guidelines, recommendations and opinions on the use of AI in teaching (UHK,

UK, MU) and secondary literature: professional articles, legislative frameworks, and theoretical background.

The documents of the **University of Hradec Králové (UHK)** 'The Use of Artificial Intelligence in Education' (n.d.) and 'Guidelines for the Use of Artificial Intelligence in Written Works at UHK' reflect the institutional approach to regulating the use of AI in education (Univerzita Hradec Králové, 2024). They clearly define ethical standards, reducing the risk of inconsistent approaches among lecturers as well as for students. They highlight the potential uses of AI, which fulfils Fullan's (2015) premise of promoting innovation through specific application in teaching. On the other hand, these statements lack a clear strategy for active involvement of teachers and students in the decision-making process in the field of AI. Participatory mechanisms such as workshops or consultations with academia are missing. The documents mentioned do not mention a long-term strategy to respond to technological developments. The University of Hradec Kralove does not address how students who do not have access to the same technological skills or AI tools outside the university environment will be supported. Selwyn (2016) emphasises that digitalisation must not widen the gap between students. UHK regulates the use of AI in education, but does not bring a deeper discussion of how AI could change teaching strategies (e.g., personalized learning, adaptive testing).

UHK emphasizes ethical regulation (K1), which is clearly and standardized. On the other hand, there is a complete lack of participation (K2) - the university does not provide any tools for involving teachers or students in the development or revision of strategies. Support for innovation (K3) is only outlined in a framework, without concrete proposals for didactic integration of AI. The issue of equity of access (K4) is completely omitted, as is the sustainability of strategies (K5) - the documents lack dynamic updating mechanisms or long-term planning.

Charles University has developed a set of documents aimed at integrating AI into different areas of the academic environment, including teaching, research and administration (Univerzita Karlova, 2025). The UK strategy provides structured recommendations for different target groups (teachers, students, researchers), indicating a thoughtful approach to implementing AI in education. Transparency, accountability and safety in the use of AI are emphasised. Recommendations for educators include integrating AI into teaching, fostering students' creativity and critical thinking, reflecting the potential of AI to innovate teaching methods in line with Fullan's theory of managing educational innovation (2015). The University actively supports its members in adapting to new technologies. However, it also lacks procedures for regularly updating these documents in response to the rapid evolution of AI technologies in terms of long-term sustainability. The issue of access to AI tools for all students is not consistently addressed, which can lead to widening digital inequalities (Selwyn, 2016).

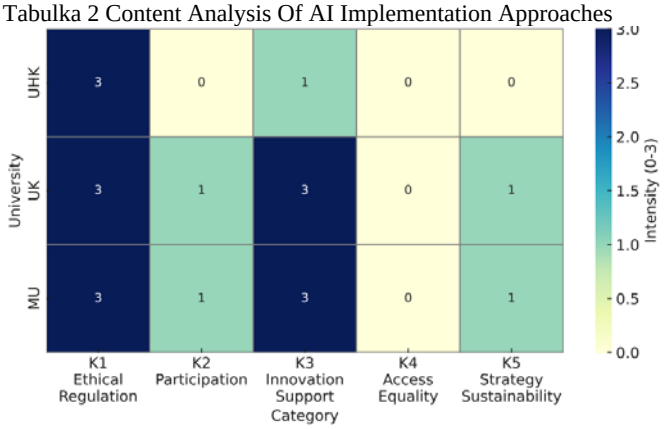
UK presents a comprehensive approach to ethical regulation (K1), reflecting the needs of different academic groups (students, teachers, researchers). However, participation (K2) is only implicitly represented - it is not clear whether the wider academic community contributed to the development of the documents. Support for innovation (K3) is strongly developed, where AI is seen as a means to develop teaching methods and student competencies. The area of equity of access (K4) is, as at UHK, completely absent. Sustainability of strategies (K5) remains unaddressed as the documents do not include mechanisms for continuous revision or adaptation to technological developments.

Masaryk University (MU) has developed several documents on the use of artificial intelligence (AI) in education, including "Statement on the Use of AI in Teaching at Masaryk University" (Masarykova univerzita, 2024), "Recommendations on the Use of AI in Teaching" (2024), and "Artificial Intelligence in Questions and Answers" (MU, n.d.), which provide structured recommendations for the use of AI in teaching, thus providing a coherent strategy for the implementation of these technologies. The university actively supports its faculty and students in adapting to new technologies, which is consistent with Fullan's (2015) emphasis on institutional support. Recommendations for lecturers include integrating AI into teaching, encouraging students' creativity and critical thinking, and reflecting the potential of AI to innovate pedagogical methods (Selwyn, 2016). As with the universities above, there is no clear strategy for regularly updating these documents in response to the rapid development of AI technologies, nor does it address the accessibility of AI for all students.

The MU presents a consistently defined framework for ethical regulation (K1), with clear recommendations for individual actors. Participation (K2) is outlined similarly to the UK, but without specific tools for its implementation. A strength is the promotion of innovation (K3) - the university encourages the use of AI to enhance creativity and critical thinking. Equality of access (K4) is not reflected in the documents, which may lead to the reproduction of digital inequalities. A long-term framework or plan for updating is not present here either, weakening the sustainability dimension of the strategies (K5).

Table 2 Content Analysis Of AI Implementation Approaches (based on Coding Scheme) visualizes the results of the content analysis in the form of a heatmap. The intensity (0-3) represents the degree of presence of each category: 3 = strong presence, 1 = partial or implicit mention, 0 = absence.

Tabulka 2 Content Analysis Of AI Implementation Approaches



Source: own processing

In summary, all three institutions show a strong orientation towards ethical regulation (K1) and to some extent towards the innovation potential of AI (K3). In contrast, the areas of participation (K2), equity (K4), and sustainability (K5) remain underdeveloped in the current strategies. For a comprehensive and inclusive implementation of AI in higher education, these areas will need to be systematically developed in line with the framework of educational innovation (Fullan, 2015) and critical digitisation (Selwyn, 2016).

Despite the differences, three key common threads emerge in universities' strategies. All institutions support the integration of AI while maintaining ethical standards in education and recognise its importance in modernising teaching. Educational institutions face

the challenge of balancing innovation while maintaining the integrity of the academic process. Creating ethical frameworks with an emphasis on critical thinking appears to be important.

4. DISCUSSION AND CONCLUSION

The leading Czech universities – University of Hradec Králové (UHK), Charles University (UK) and Masaryk University (MU) - approach the regulation of artificial intelligence (AI) in education in different ways, but share some challenges that need to be addressed.
An analysis of the strategic documents of the three Czech universities, revealed different approaches to the implementation of generative artificial intelligence (Gen AI) in higher education, in line with the five key categories defined in the coding scheme.

All three universities are defining rules for the use of AI in teaching and academic work, thereby ensuring that academic integrity is upheld. The universities' documents include ethical guidelines and warn of potential risks of misuse of AI, particularly about plagiarism and mismanagement of generated content. The emphasis on transparency and accountability in the use of AI is thus a common element across the three institutions. Another common strength is supporting educators in the process of adapting AI to education. Each university provides recommendations or guidelines for implementing AI in the classroom, with UK and MU emphasizing critical thinking when working with AI. In addition, UK tries to systematically regulate different areas of AI use, which gives it a more comprehensive framework compared to UHK and MU, which focus more on specific recommendations for teaching.

However, the main challenge remains the absence of a long-term strategy for the sustainability of the rules. None of the universities specify how their guidelines and rules will be updated in response to the rapid technological evolution of AI. This can lead to rules becoming outdated and needing to be adapted ad hoc without a clear methodological framework.
Another shortcoming is the lack of reflection on digital inequalities. The documents primarily focus on the technical and ethical aspects of AI but do not address the issue of equal access to these technologies for students. Universities do not cite specific measures to ensure that all students have an equal opportunity to use AI tools, which can lead to an uneven playing field in the academic environment.

The limited involvement of the academic community in the rule-making process is also a major weakness. Although universities are setting frameworks for the use of AI, it is not clear to what extent students and faculty have been involved in their development. The absence of a participatory approach may affect the adoption of these rules in practice and reduce their effectiveness.

In conclusion, universities agree on the need to regulate AI, focus on protecting academic integrity and promoting the development of innovative teaching methods, but neglect the long-term sustainability of the rules, the issue of digital inequalities, and the involvement of academics in the decision-making process. To promote inclusivity and diversity in research and education, it would be desirable to make Gen AI technologies accessible to educators and students, e.g. through institutional accounts. By discussing the ethical implications of using AI or through workshops and seminars on the responsible use of AI, institutions can promote a culture of accountability and integrity. To improve the regulation of AI in education, it is essential to focus on these areas and ensure that the rules are not only up-to-date but also fair and sustainable in the long term.

Given the cultural and institutional diversity of the higher education community, there is no one-size-fits-all solution, but it would be advisable to encourage interdisciplinary collaboration between universities to develop a common methodological framework for the use of AI in higher education.

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