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Copyright Challenges and Opportunities for the Integration of Generative Artificial Intelligence (GenAI) in Indonesian Higher Education Learning

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Abstract: *The use of Generative Artificial Intelligence (GenAI) in higher education in Indonesia offers great opportunities, but faces significant challenges related to copyright. The technology is capable of generating new content that supports more adaptive learning, but raises questions regarding the ownership of intellectual works, especially in the context of "fair use" and copyright protection. This research aims to examine the legal challenges in the integration of GenAI in Indonesian higher education learning as well as opportunities for its development. The method used is juridical-normative research, by analyzing secondary data from relevant regulations, books, and journals. The results show that the lack of clarity in copyright regulations in Indonesia can hinder the optimal utilization of GenAI. Nevertheless, this technology offers significant potential to improve the personalization of learning and the quality of higher education in Indonesia, provided that comprehensive and specific regulations are developed soon.*

Keywords: *Artificial Intelligence, Copyright, Higher Education in Indonesia.*

1. INTRODUCTION

Artificial Intelligence (AI) is a technological development that becomes a platform for humans to develop their skills and assist in doing their jobs (Prakken, 2005). One of the sectors that develop this technology is the education sector including higher education. The use of AI in higher education can help improve the quality and learning system for students. AI has several categories, one of which is Generative AI (Gen AI) (Dian Eka Chandra Wardhana et al., 2024).

Gen AI (General Artificial Intelligence) is an artificial intelligence technology that has human-like capabilities in various aspects. Generative AI, which is capable of creating new content from existing data, has become a global highlight due to its potential in advancing more adaptive, personalized and interactive learning methods. Across countries, the number of users of AI-based learning technologies continues to increase significantly. By 2022, it is estimated that 47% of higher education institutions worldwide will have started integrating AI into the learning process, with the figure projected to increase to more than 70% by 2025. (Quintais, n.d.). In Indonesia, although AI adoption is still in its early stages, several major universities have started using AI in various forms, from the creation of learning materials to academic evaluation.

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Responding to this development, the Ministry of Education, Culture, Research and Technology (Kemendikbudristek) Republic of Indonesia has recently issued a regulation that allows the use of AI technology, in particular GenAI, for learning media in higher education in the form of guidelines. This regulation aims to encourage innovation in education and ensure that the latest technology can be used to improve the quality of teaching and learning. However, it also emphasizes the importance of complying with copyright regulations and academic ethics in the use of this technology. The use of GenAI that can produce new products, such as texts, images, and learning materials, raises questions related to copyright ownership. (Surden, n.d.). The copyright protection mechanism in Indonesia is regulated in Copyright Law No. 28 of 2014 which specifically regulates the protection of intellectual works in the midst of current technological changes (UUHC, 2014). Unfortunately, there are still challenges in the application of AI due to the limitations of regulations on the utilization of copyrighted works for educational purposes, especially in the context of "fair use" which still requires clear interpretation in academic circles.

In fact, there is confusion among educators and learning media developers regarding how copyright applies to AI-generated content. Previous studies have suggested that the use of AI for the creation of learning materials poses a risk of copyright infringement if the resulting work is an adaptation or reproduction of copyrighted material without proper authorization (Rissland et al., 2003). In Indonesia, this challenge is compounded by the lack of knowledge of lecturers and institutions regarding intellectual property issues in educational technology. Many of them do not fully understand how GenAI works, which can easily access, modify and replicate materials from copyrighted online sources.

Despite the challenges, great opportunities are unlocked by the use of AI in higher education (*Kemendikbudristek*,n.d.). Through the guidance of the right regulations, GenAI can support the development of more inclusive and affordable learning materials. This technology can create adaptive content tailored to the needs and learning abilities of each student, which has been difficult to do with conventional methods. This approach is in line with Merdeka Belajar policy promoted by the Ministry of Education and Culture, where freedom in teaching methods and access to wider learning resources are prioritized.

In order to maximize this opportunity, clearer and more comprehensive regulations related to copyright need to be developed, both at the national level and at the level of educational institutions. This research seeks to fulfill this gap by exploring further the legal challenges and opportunities, and providing policy recommendations for the development and

implementation of AI in Indonesia's higher education environment, while respecting applicable copyright principles.

2. LITERATURE REVIEW

A. Previous Research

1. Generative AI, Copyright and the AI Act

The Artificial Intelligence Act (AI Act) and copyright law in the European Union regulate the interaction between the development of generative AI models, particularly in terms of text and data mining (TDM) and AI model training. TDM is considered a critical component of AI training and falls under copyright protection, which requires permission from the rights holder or the application of copyright exceptions. It also requires transparency in data usage, including disclosure of the source of data used to train AI models. Challenges arise in protecting copyright at the input, model, and output stages of AI, as well as the possible encouragement for AI model providers to enter into licensing deals with rights aggregators. Nonetheless, this regulation is still inadequate in ensuring fair remuneration for creators(Quintais, n.d.)

2. ChatGPT Usage among Students and Lecturers of Indonesian Higher Education Institutions

The use of ChatGPT among students and lecturers in higher education in Indonesia shows that lecturers are more informed and utilize it than students. The level of awareness of the existence ChatGPT is very high among academics, although many consider its use to be incompatible with academic ethics. Based on a survey of 430 respondents, no significant effect of age on ChatGPT adoption among lecturers was found. In addition, there are no standardized ethical guidelines regarding the use of ChatGPT in educational settings, despite its widespread use and debate in academic contexts (Niyu et al., 2024).

3. Copyright Protection in Generative AI: A Technical Perspective

The advancement of generative AI models, such as for text, images, and audio, has raised huge concerns regarding copyright. These models require enormous amounts of data for training, which is often used without the explicit permission of the owner, thus potentially infringing copyright. Several technical methods have been developed to protect copyright, including the use of watermarks, unrecognizable examples, machine learning that allows data to be forgotten, and removal of duplicate data to protect data. In addition, the method of watermarking the model is also applied

to prevent model theft. However, despite these advances in protection, there are still limitations that need to be addressed, so further research is needed to ensure effective copyright protection in the use of generative AI (Ren et al., 2024).

B. Copyright

Copyright theory is a legal principle that grants protection to creators of original works that have been created, including works of literature, art, music, and technology, and grants exclusive rights to reproduce, distribute, and display such works (Ujang Badru Jaman et al., 2021). Copyright serves to encourage creativity and innovation by providing incentives to creators, so that they can gain recognition and economic benefits from their works (Ujang Badru Jaman et al., 2021). Similarly, the theory also includes the concept of "fair use", which allows limited use of protected works without the owner's permission, especially for educational, research, or critical purposes. However, the application of copyright theory in the context of new technologies, such as generative AI, creates its own challenges regarding how to determine ownership and legitimate use of the generated content.

C. Academic Autonomy

Academic autonomy is the principle that gives educational institutions, especially higher education institutions, the freedom to set curriculum, teaching methods, and research independently without external interference, either from the government or outside parties (Soetjipto et al., n.d.). This theory emphasizes the importance of intellectual freedom and creativity in creating an innovative and collaborative academic environment. In the context of technology utilization, such as Artificial Intelligence in learning, academic autonomy allows institutions to experiment with new teaching methods and technology integration in the curriculum (Soetjipto et al., n.d.). Nonetheless, this autonomy must be aligned with regulatory compliance, including copyright protection, so that use of technology does not compromise the rights of creators and remains compliant with applicable laws, so as to create a fair and sustainable educational environment.

3. RESEARCH METHOD

This type of research is juridical-normative. Juridicial normative is research conducted by examining library materials or secondary materials (Putranti, 2018). This research will examine the problem of the unclear restrictions on the use of AI, especially in relation to learning media. The Data Analysis Method will be carried out by collecting secondary data

through a review of library materials which include legal materials, both primary, namely Law Number 28 of 2014 concerning Copyright and Guidelines for the Use of Generative Artificial Intelligence (Gen Ai) in Learning media in Higher Education. Secondary legal materials are legal materials that explain primary legal materials, namely books, journals, research reports, magazines, articles, and documents related to the research theme. Tertiary Legal Materials, are legal materials that complement primary and secondary legal materials, namely: Legal Dictionary, Indonesian Dictionary, English Dictionary. The secondary data collection method is done by document study. After the data is collected, the data analysis used is qualitative data analysis. Qualitative data analysis is applied to find and describe problems in the field or structures and processes in routines and practices. The ultimate goal is to generalize by comparing various materials or various texts or several cases (Putranti & Putri, 2024).

4. RESULT AND DISCUSSION

Legal Challenges in Using Generative AI for Learning Materials

The use of Generative Artificial Intelligence (GenAI) in higher education presents significant challenges related to the copyright legal framework in Indonesia. This challenge lies in the vagueness of the legal rules in dealing with aspects of creation and protection of creators' rights in an era of evolving technology. The guidebook on the use of GenAI published by the Directorate General of Higher Education, Research and Technology, Ministry of Education, Culture, Research and Technology of the Republic of Indonesia, provides important guidelines, but there are still critical issues that require in-depth study, especially regarding copyright.

One of the most obvious issues is how GenAI processes and produces content based on copyrighted works. For instance, when students use previously published papers or theses to train AI models, there is the potential that the copyright owners of these works could be infringed. Student works, academic books, scientific journals, and other materials fed into AI systems for use in learning also require legal protection. (Conrad & Zeleznikow, 2015). Unfortunately, in Indonesia, the restrictions related to the use of copyrighted works by AI are still unclear, especially in assessing whether such use violates copyright or not.

The Ministry of Education and Culture's guidebook on the use of Generative AI (GenAI) also mentioned the ethical regulation aspect, where it is important for higher education institutions to ensure that AI is used responsibly. This includes efforts to avoid unconscious copyright infringement in AI-based learning processes. In this discussion, the relevant rule of law becomes an important basis, while in the Indonesian legal framework, specifically under

the Copyright Law (UUHC) No. 28 of 2014, there is no specific provision that clearly regulates how works used by AI can be protected.

UUHC certainly regulates the rights of creators to protect their creations from unauthorized use, but the phrase "reasonable interests of the creator/copyright holder" found in Article 43 of the UUHC is still controversial (UUHC, 2014). The definition of "reasonable interests" has not been clarified, leading to uncertainty in law enforcement when it involves technologies such as AI that tend to utilize existing data or works. For example, whether a work used by AI to generate new content is considered an infringement if there is no permission from the copyright holder, or vice versa, if such use is considered a fair use for educational purposes.

In addition, Article 43 of the UUHC states that the use of protected works for educational purposes can be done without the permission of the copyright holder, provided that it complies with applicable standards (UUHC, 2014). However, the standardization of the "substantial part" of a work that is permitted to be used without infringing copyright has not clearly been spelled out in Indonesian law. This has resulted in a gray area in the application of copyright rules, particularly in relation to GenAI-based learning materials. How much material can be used by AI to generate new content, and whether the output of the AI process itself is considered copyright infringement, is still an outstanding issue.

A number of developed countries have begun to develop more detailed regulations regarding the use of AI and copyright. For example, in the United States, the concept of "fair use" is the basis for consideration in the use of copyrighted material for educational, research, and critical purposes. (Surden, n.d.). While this concept has not been explicitly adopted in Indonesia's legal system, further study is needed to understand how similar principles can be applied in the context of higher education learning.

The Ministry of Education and Culture's guidelines emphasize the need for higher education institutions to develop internal policies that ensure the use of AI, including GenAI, is conducted ethically and in accordance with applicable copyright rules. This policy could include limiting the use of AI to only materials that have obtained permission from the copyright owner, or in other cases, ensuring that the materials used fall into the fair use category stipulated in the UUHC. However, without a clear standardization of the substantial part of the work that can be freely used by AI, it is difficult for universities to truly ensure that the use of AI is free from legal violations.

Another issue that arises is whether works produced by AI itself deserve copyright protection. According to UUHC, copyright is only granted to creators who are individuals or groups that create a work with their intellectual abilities. In this case, the works produced by AI, which process data and information from various sources, including copyrighted works, raises the question: first, who owns the rights to the work? and second, whether the work is considered a work worthy of copyright protection or vice versa? Since AI creates the work, copyright cannot be assigned to anyone else.

At the international level, organizations such as the World Intellectual Property Organization (WIPO) are exploring new approaches to protecting AI-generated works. (Prakken, 2005). Meanwhile, in Indonesia, the rules related to the copyright of AI-based works have not been seriously considered in the existing regulations. This emphasizes the need to formulate clearer policies related to the use of AI in higher education and the protection of copyright of works produced by such technology.

Opportunities in Using Generative AI to Support Learning

The use of Generative AI (GenAI) in the context of learning in Indonesian higher education provides various significant opportunities that have the potential to support the development of the Indonesian education system in the digital era. While the legal challenges as discussed earlier indicate weaknesses, there are also opportunities offered by GenAI, both in terms of teaching effectiveness and improved learning outcomes.

One of the main opportunities resulting from the implementation of GenAI is increased personalization in learning. GenAI allows teachers to create learning materials that are more adaptive and tailored to student needs. Based on existing reports, the use of AI in education can support the creation of a learning system that is more responsive to individual needs (Harahap et al., n.d.). For instance, AI can assist in assessing a student's level of understanding in real-time and suggest additional materials or exercises that suit the individual's shortcomings. It has the ability to analyze student data in depth and offer a more targeted approach to learning.

In addition, GenAI is also able to accelerate the process of developing teaching materials. Lecturers or teachers can utilize this technology to produce educational content relevant to curriculum needs in a short time. In the meaning of higher education, innovation and relevance are prioritized, AI can play a key role in developing teaching materials that are up to date and in accordance with global trends (Marlin et al., n.d.). For example, AI can be used to create learning modules based on the latest data, enhance the quality of teaching, and enable the preparation of materials based on the latest research in a particular field.

In terms of efficiency, the application of AI in the college administration process is no less important. GenAI can support operational efficiency in terms of student assignment grading, especially in large numbers. In many cases, AI can help grade essay answers, provide automated feedback, and even detect plagiarism more accurately (Marlin et al., n.d.). The fact that GenAI can handle these tasks faster than humans allows educators to focus more on strategic activities such as academic advising.

Another opportunity GenAI offers in higher education is its ability to expand access to quality education, especially in remote or underdeveloped areas. In Indonesia, where access to adequate educational resources is not always evenly distributed, AI can be a solution to bridge this gap. Through AI, students in remote areas can get access to the same high-quality learning materials as students in big cities. In addition, AI also has the potential to reduce reliance on physical infrastructure such as laboratories, by providing AI-based simulations for scientific or technical experiments.

When it comes to ethics, although GenAI offers many benefits in education, its use must still be supervised so as not to violate academic values and integrity. One ethical issue that arises is the potential use of AI to dishonestly complete academic assignments, where students may rely on AI to create assignments without sufficient understanding. Therefore, it is important for educational institutions to not only provide guidance on the use of GenAI, but also instill strong academic ethics in students.

Several higher education institutions in Indonesia have started to implement internal policies to regulate the use of GenAI in learning. Based on information from various sources, several major universities in Indonesia, such as Gadjah Mada University (UGM) and Bandung Institute of Technology (ITB), have developed stricter ethical guidelines regarding the use of AI (Attar, 2024). These guidelines emphasize the importance of academic integrity and suggest using AI as a tool rather than a substitute for students' creativity and critical thinking skills.

In the future, regulatory challenges related to the use of AI in learning media in higher education may continue to arise along with the rapid development of AI technology. The Indonesian government, through the Directorate General of Higher Education, Research and Technology, needs to urgently update the regulatory framework to include clearer guidelines regarding the use of GenAI in learning. This includes copyright protection, data privacy, as well as the development of guidelines that ensure that this technology is used ethically and responsibly.

In addition, GenAI also provides opportunities to enrich research and innovation in higher education. The technology is capable of accelerating data analysis on a large scale, which is particularly useful for scientific research. In some studies, AI has been used to analyze genomic data, evaluate clinical trial results, and forecast economic trends (Tittahira, 2025). By expanding the adoption of AI in research activities in higher education, Indonesia has the potential to improve the quality and productivity of its academic research.

Recommendations for the Development of Copyright Policy in Higher Education

Based on the challenges and opportunities that have been identified regarding the use of Generative AI (GenAI) in learning in Indonesian higher education, the government, especially the Ministry of Education, Culture, Research, and Technology, needs to formulate a holistic and comprehensive policy. The policy should cover legal, technical, and ethical aspects so that GenAI can be maximally utilized to improve the quality of higher education without violating copyright or ignoring academic ethics.

More specific regulations related to copyright protection in the context of AI must be drafted immediately. The government needs to clarify the definition of terms such as "reasonable interest" and "substantial part" in the Copyright Act so that the utilization of copyrighted works by AI does not infringe on the rights of creators. This policy can take the form of amendments to the Copyright Law or derivative regulations that clarify the limits of the use of intellectual works by AI systems, especially in the context of education. In this case, the regulations should ensure that copyrighted content, such as journals, textbooks, or other scholarly works used by AI to generate new materials, remains protected according to the rights of the creator (Amodei et al., 2016).

Policies related to academic integrity in the use of GenAI also need to be emphasized. GenAI should be used as a tool, not a substitute in the academic process. Therefore, the Ministry needs to formulate specific guidelines for universities that set limits on the use of AI by students and lecturers, especially in the creation of assignments, scientific papers, or learning materials. This policy should be accompanied by clear monitoring and enforcement mechanisms to prevent potential violations, such as plagiarism or misuse of technology.

The government then needs to encourage the responsible integration of AI in the college curriculum. By introducing courses that focus on ethics and technology law, students can be equipped with an in-depth understanding of the use of AI and its impact on copyright and academic integrity. This will create early awareness on how AI can be used ethically and in accordance with applicable regulations.

From the technical side, policies must ensure that infrastructure that supports the use of AI in higher education is equally available. The government needs to ensure that AI technology, especially GenAI, can be accessed by all universities in Indonesia, including in areas that may lack access to advanced technology. This equitable infrastructure development will ensure that all students and lecturers can benefit from GenAI, without a technology gap between universities in big cities and remote areas.

The government also needs to encourage collaboration between universities, technology industries, and research institutes in the development of context-appropriate AI in Indonesia. This collaboration can help universities adopt AI in an appropriate manner, including to produce learning materials that are relevant, effective, and in line with the needs of the national curriculum. By involving various parties, AI innovation in education will be more targeted and relevant to local challenges, without ignoring global standards.

Data collection and processing policies should also be clearly regulated. AI requires large amounts of data to function optimally, but the collection of student data must be protected in accordance with the principles of personal data protection. The Ministry needs to formulate and strengthen policies such as Law number 27 of 2022 on personal data protection so that there are no privacy violations in the use of GenAI, including ensuring that data collected for the benefit of AI is used safely and in accordance with applicable data protection regulations (UUPDP, 2022).

5. CONCLUSION

The use of Generative AI (GenAI) in higher education learning systems in Indonesia brings legal challenges, especially related to copyright protection. The main challenge is the unclear regulations regarding the use of copyrighted works in the AI process. Copyright Law (UUHC) No. 28 of 2014 does not yet contain rules that specifically address how AI uses copyrighted content to generate new material. This creates uncertainty as to whether such use can be categorized as copyright infringement.

Legal challenges aside, there are great opportunities in the application of GenAI to improve learning personalization, accelerate the development of teaching materials, and support research and innovation in higher education. This technology enables a learning system that is more responsive to student needs, improves administrative efficiency, and expands access to quality education.

Relevant policies need to be drafted immediately by the Ministry of Education, Culture, Research and Technology to ensure that the use of GenAI is done ethically and does not violate copyright. This includes amendments to the UUHC to clarify the use of copyrighted works by AI, the development of academic integrity guidelines, as well as technical policies that support AI infrastructure across universities in Indonesia.

LIMITATION

This research faces several limitations that need to be considered. One of the most significant limitations is the lack of availability of secondary data specific to copyright regulations and GenAI usage policies in the Indonesian educational context. As a result, this research may not be able to offer a comprehensive analysis of implementation practices that comply with the law, as the available references are limited to general or international studies.

Another limitation is the gap between copyright law theory and its application in the field, especially in the case of GenAI usage in higher education where there is no clear legal framework. This can lead to a lack of precision in attributing practical legal implications. In addition, the limited time for conducting the research also affected the depth of exploration of the latest developments in GenAI technology.

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