



**DIKTISAINTEK
BERDAMPAK**



GUIDELINES FOR USING GENERATIVE ARTIFICIAL INTELLIGENCE (GenAI) IN LEARNING AT UPGRIS

UNIVERSITAS PGRI SEMARANG



YAYASAN PEMBINA LEMBAGA PENDIDIKAN PERGURUAN TINGGI PGRI SEMARANG UNIVERSITAS PERSATUAN GURU REPUBLIK INDONESIA SEMARANG

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PERATURAN REKTOR UNIVERSITAS PERSATUAN GURU REPUBLIK INDONESIA SEMARANG RECTOR'S REGULATION OF UNIVERSITAS PERSATUAN GURU REPUBLIK INDONESIA SEMARANG

Nomor/Number : 099/R/UPGRIS/IX/2024

TENTANG

Regarding

PANDUAN PENGGUNAAN GENERATIVE ARTIFICIAL INTELLIGENCE (GenAI) DALAM PROSES PEMBELAJARAN DI LINGKUNGAN UNIVERSITAS PERSATUAN GURU REPUBLIK INDONESIA SEMARANG

*Guidelines for the Utilisation of Generative Artificial Intelligence (GenAI) in the Academic
Environment of Universitas Persatuan Guru Republik Indonesia Semarang*

REKTOR UNIVERSITAS PERSATUAN GURU REPUBLIK INDONESIA SEMARANG,

- MENIMBANG** : a. bahwa perkembangan teknologi kecerdasan buatan, khususnya Generative AI, memberikan
Considering peluang besar dalam transformasi metode pembelajaran di perguruan tinggi.
- b. bahwa untuk menjaga integritas akademik, etika, dan kualitas lulusan, diperlukan regulasi yang mengatur batasan serta tata cara penggunaan GenAI oleh civitas akademika.
- c. bahwa sehubungan dengan butir (a) dan (b), perlu ditetapkan Panduan Penggunaan Generative Intelligence (GenAI) dalam proses pembelajaran di Universitas Persatuan Guru Republik Indonesia Semarang.
- MENGINGAT** : 1. Undang-Undang Republik Indonesia Nomor 20 Tahun 2003 tentang Sistem Pendidikan
With Reference to Nasional;
2. Undang-Undang Republik Indonesia Nomor 14 Tahun 2005 tentang Guru dan Dosen;
Law of the Republic of Indonesia Number 14 of 2005 concerning Teachers and Lecturers;
3. Undang-Undang Republik Indonesia Nomor 12 Tahun 2012 tentang Pendidikan Tinggi;
Law of the Republic of Indonesia Number 12 of 2012 concerning Higher Education;
4. Undang-Undang Republik Indonesia Nomor 27 Tahun 2022 tentang Pelindungan Data Pribadi;
Law of the Republic of Indonesia Number 27 Law of the Republic of Indonesia Number
5. Peraturan Pemerintah Nomor 4 Tahun 2014 tentang Penyelenggaraan Pendidikan Tinggi dan Pengelolaan Perguruan Tinggi;
Government Regulation Number 4 of 2014 concerning the Provision of Higher Education and the Management of Higher Education Institutions.
6. Peraturan Menteri Pendidikan Tinggi, Sains, dan Teknologi No 39 Tahun 2025 tentang Penjaminan Mutu Perguruan Tinggi;
Regulation of the Minister of Higher Education, Science, and Technology Number 39 of 2025 concerning Quality Assurance in Higher Education Institutions.
7. Surat Keputusan Bersama Tujuh Menteri tanggal 12 Maret 2026 tentang Pedoman Pemanfaatan dan Pembelajaran Teknologi Digital dan Kecerdasan Artifisial di Jalur Pendidikan Formal, Nonformal, dan Informal;
Joint Decree of Seven Ministers dated 12 March 2026 concerning Guidelines for the Utilisation and Learning of Digital Technology and Artificial Intelligence in Formal, Non-formal, and Informal Education Pathways.
8. Surat Keputusan Menteri Pendidikan dan Kebudayaan RI Nomor 143/P/2014 tanggal 17 April 2014 tentang Penggabungan IKIP PGRI Semarang dan Akademi Teknologi Semarang yang diselenggarakan oleh YPLP PT PGRI Semarang di kota Semarang, provinsi Jawa Tengah menjadi Universitas PGRI Semarang yang diselenggarakan oleh YPLP PT PGRI Semarang di kota Semarang, provinsi Jawa Tengah;
Decree of the Minister of Education and Culture of the Republic of Indonesia Number 143/P/2014, dated 17 April 2014, concerning the Merger of IKIP PGRI Semarang and Akademi Teknologi Semarang, managed by YPLP PT PGRI Semarang in Semarang, Central Java Province, into Universitas PGRI Semarang, managed by YPLP PT PGRI Semarang in Semarang, Central Java Province;
9. Surat Keputusan YPLP PT PGRI Semarang Nomor: 075/P.Y/U/Kpts/3.1/YPLP PT PGRI/V/2019 tanggal 10 Mei 2019 tentang Statuta Universitas PGRI Semarang;
Decree of YPLP PT PGRI Semarang Number 075/P.Y/U/Kpts/3.1/YPLP PT PGRI/V/2019, dated 10 May 2019, concerning the Statutes of Universitas PGRI Semarang;
10. Surat Keputusan Pengurus YPLP PT PGRI Semarang Nomor 095/PY/U/Kpts/3.1/YPLP PT PGRI/V/2022 tanggal 20 Mei 2022 tentang Pengangkatan Rektor Universitas PGRI Semarang masa jabatan 2022-2026;
Decree of the Board of YPLP PT PGRI Semarang Number 095/PY/U/Kpts/3.1/YPLP PT PGRI/V/2022, dated 20 May 2022, concerning the Appointment of the Rector of Universitas PGRI Semarang for the 2022-2026 term of office.

11. Panduan Penggunaan Generative Artificial Intelligence pada Pembelajaran di Perguruan Tinggi. Yang dikeluarkan oleh Direktorat Pembelajaran dan Kemahasiswaan Direktorat Jenderal Pendidikan Tinggi, Riset dan Teknologi, Kementerian Pendidikan, Kebudayaan, Riset dan Teknologi Tahun 2024.

Guidelines for the Use of Generative Artificial Intelligence in Higher Education Learning. Issued by the Directorate of Learning and Student Affairs, Directorate General of Higher Education, Research, and Technology, Ministry of Education, Culture, Research, and Technology, 2024.

MEMUTUSKAN

Decides

Menetapkan : **PERATURAN REKTOR UNIVERSITAS PERSATUAN GURU REPUBLIK INDONESIA SEMARANG TENTANG PANDUAN PENGGUNAAN GENERATIVE ARTIFICIAL INTELLIGENCE (GenAI) PADA PROSES PEMBELAJARAN DI UNIVERSITAS PGRI SEMARANG.**

To Enact

Guidelines for the Utilisation of Generative Artificial Intelligence (GenAI) in the Academic Environment of Universitas Persatuan Guru Republik Indonesia Semarang

Pertama : Mengatur penggunaan generative Artificial Intelligence (GenAI) pada proses pembelajaran di Universitas Persatuan Guru Republik Indonesia Semarang sebagai mana tercantum dalam lampiran.

First

To regulate the use of generative Artificial Intelligence (GenAI) within the learning process at the University of PGRI Semarang, as set out in the appendix.

Kedua : Peraturan ini mulai berlaku sejak tanggal ditetapkan dan apabila di kemudian hari terdapat kekeliruan dalam keputusan ini akan diadakan perbaikan sebagaimana mestinya.

Second

This regulation shall come into force on the date of its enactment; should any errors be discovered in this decision at a later date, the necessary rectifications shall be made accordingly.

Ditetapkan di : Semarang

Issued in Semarang

Pada tanggal : 02 September 2024

on September 02, 2024

Rektor,

Rector



Tembusan disampaikan kepada Yth. :

1. Wakil Rektor/ *Vice Rector*;
2. Dekan/*Dean*;
3. Kaprodi/Head of Study Programme:
di Lingkungan UPGRIS

**GUIDELINES FOR USING
GENERATIVE ARTIFICIAL INTELLIGENCE (GenAI)
IN LEARNING
UNIVERSITAS PERSATUAN GURU REPUBLIK INDONESIA SEMARANG**



**CURRICULUM CENTRE, CENTRE OF EXCELLENCE, AND MBKM
PROFESSIONAL DEVELOPMENT INSTITUTE
UNIVERSITAS PERSATUAN GURU REPUBLIK INDONESIA SEMARANG
2026**

FOREWORD

Praise be to Almighty God for His grace and blessings, which have enabled the successful preparation of these Guidelines for the Use of Artificial Intelligence (AI) within Universitas Persatuan Guru Republik Indonesia Semarang (UPGRIS). These guidelines have been developed as a reflection of the university's commitment to responding to the rapid advancement of digital technologies, particularly AI and Generative Artificial Intelligence (GenAI), which are increasingly influencing the delivery of higher education, research, community service, and institutional governance.

The development of AI has created significant opportunities to enhance the effectiveness of learning, personalise education, strengthen research, improve the efficiency of academic administration, and support data-driven decision-making. On the other hand, the use of AI also presents complex challenges, including issues of academic integrity, plagiarism, data security, algorithmic bias, transparency of use, and ethical responsibility in its application. Therefore, clear guidelines are required to ensure that the use of AI within higher education institutions is carried out wisely, ethically, securely, and responsibly.

These guidelines have been prepared with reference to the Guidelines for the Use of GenAI in Learning in Higher Education published by the Directorate of Learning and Student Affairs, Directorate General of Higher Education, Research, and Technology in 2024, which emphasise the importance of responsible AI use, the protection of academic integrity, and the promotion of educational innovation while upholding the values of honesty and fairness. In addition, these guidelines also take into account the Joint Ministerial Decree of 2026 concerning Guidelines for the Utilisation and Learning of Digital Technology and Artificial Intelligence, which highlights the importance of human resource readiness, governance, academic ethics, data protection, and digital literacy in the implementation of AI within educational institutions.

As a higher education institution that upholds the values of excellence and identity, UPGRIS believes that AI should be positioned as a strategic tool to strengthen the quality of the tridharma of higher education, rather than as a substitute for the human role in critical thinking, decision-making, and the development of academic character. AI must be utilised to support innovations that are oriented towards humanity, sustainability, and educational advancement.

These guidelines are expected to serve as a reference for all members of the UPGRIS academic community, including lecturers, students, administrative staff, and university leaders, in using AI appropriately, proportionately, and responsibly. In this way, digital transformation will not only generate efficiency, but also strengthen academic quality, integrity, and a healthy scholarly culture.

Our sincere appreciation is extended to all parties who have contributed to the preparation of these guidelines. It is hoped that this document will provide tangible benefits for the development of higher education at UPGRIS and serve as an initial step towards building an academic ecosystem that is adaptive, innovative, and ethical in the era of artificial intelligence.

Semarang, April 20th 2026

Head of the Centre for
Curriculum, Centre of
Excellence, and MBKM



Nurina Happy, M.Pd.

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INTRODUCTION

A. BACKGROUND

In the context of higher education, the utilisation of Artificial Intelligence (AI) offers significant opportunities to enhance the quality of learning, improve the effectiveness of academic management, and strengthen the implementation of the tridharma of higher education. National guidance issued by the Directorate of Learning and Student Affairs emphasises that Generative Artificial Intelligence (GenAI) has considerable potential in personalising learning, increasing access to learning resources, developing adaptive assessment, enhancing student engagement, strengthening academic collaboration, and assisting lecturers in carrying out both administrative and academic responsibilities. AI enables learning processes to become more flexible, interactive, inclusive, and responsive to the diverse learning needs of students.

For students, AI can serve as a supportive tool for understanding complex subject matter, identifying preliminary reference sources, developing writing ideas, preparing presentations, and enhancing critical thinking through the exploration of multiple perspectives. For lecturers, AI can be utilised to prepare Semester Learning Plans, develop teaching materials, design learning outcome-based assessments, provide faster feedback, and support the analysis of student learning outcomes. At the institutional level, AI also has the potential to support data-driven decision-making, improve academic services, and strengthen the university's digital transformation.

However, alongside these benefits, the use of AI also presents serious challenges that cannot be overlooked. The convenience offered by GenAI may lead to risks of misuse, such as plagiarism, violations of academic integrity, overdependence on technology, declining critical thinking skills, insecure use of data, algorithmic bias, and uncertainty regarding authorship and ownership of work produced with AI assistance. National guidance also highlights ethical concerns such as inequality of access to technology, potential data bias, plagiarism, and unclear ownership of intellectual work as major issues in the use of GenAI in higher education.

In addition, the Joint Ministerial Decree of 2026 stipulates that every educational institution must identify the readiness of human resources, infrastructure, governance, data management, academic ethics, artificial intelligence ethics, and digital literacy in the implementation of AI. This demonstrates that the use of AI should not be viewed merely as technological innovation, but must also be managed through clear, systematic, and responsible policies in order to prevent negative consequences for educational quality.

UPGRIS, as a higher education institution committed to the development of quality, innovative, and character-based education, views the utilisation of AI as an essential part of the transformation of higher education in the digital era. As an institution that upholds a vision of academic excellence and the strengthening of identity, UPGRIS must ensure that the use of AI is not solely oriented towards efficiency, but also continues to uphold the values of integrity, academic honesty, professionalism, social responsibility, and humanity.

The use of AI within UPGRIS must be positioned as a strategic tool that strengthens the quality of learning, research, community service, and institutional governance, rather than as

a substitute for the human role in thinking, evaluating, and making decisions. A human-centred AI approach is therefore essential to ensure that technology remains under human control and is used to support the achievement of meaningful educational goals.

For this reason, the development of Guidelines for the Utilisation of Generative Artificial Intelligence (GenAI) within UPGRIS is necessary as a normative, operational, and ethical foundation for the use of AI by the entire academic community. These guidelines are expected to serve as a reference for lecturers, students, administrative staff, and university leaders in using AI wisely, securely, ethically, transparently, and responsibly, so that digital transformation genuinely supports the realisation of UPGRIS as a university that is excellent and firmly grounded in its identity.

B. LEGAL BASIS

The Guidelines for the Utilisation of Generative Artificial Intelligence (GenAI) within UPGRIS are developed based on the following legal foundations:

1. The 1945 Constitution of the Republic of Indonesia.
2. Law of the Republic of Indonesia Number 20 of 2003 concerning the National Education System.
3. Law of the Republic of Indonesia Number 14 of 2005 concerning Teachers and Lecturers.
4. Law of the Republic of Indonesia Number 12 of 2012 concerning Higher Education.
5. Law of the Republic of Indonesia Number 11 of 2008 concerning Electronic Information and Transactions, as amended several times, most recently by Law Number 1 of 2024 concerning the Second Amendment to Law Number 11 of 2008 concerning Electronic Information and Transactions.
6. Law of the Republic of Indonesia Number 27 of 2022 concerning Personal Data Protection.
7. Government Regulation Number 4 of 2014 concerning the Implementation of Higher Education and the Management of Higher Education Institutions.
8. Government Regulation Number 71 of 2019 concerning the Implementation of Electronic Systems and Transactions.
9. Regulation of the Minister of Higher Education, Science, and Technology Number 39 of 2025 concerning Higher Education Quality Assurance.
10. Indonesia's National Artificial Intelligence Strategy 2020–2045 as the policy foundation for the development and utilisation of artificial intelligence in Indonesia, as referred to in the Guidelines for the Use of Generative Artificial Intelligence in Higher Education Learning.
11. UNESCO Recommendations on the Ethics of Artificial Intelligence 2022 as a reference for global ethical principles in the utilisation of AI, as cited in the national guidelines.
12. Guidelines for the Use of Generative Artificial Intelligence (GenAI) in Learning in Higher Education, Directorate of Learning and Student Affairs, Directorate General of Higher Education, Research, and Technology, Ministry of Education, Culture, Research, and Technology, 2024.
13. Joint Ministerial Decree of the Minister of Home Affairs, the Minister of Religious Affairs, the Minister of Primary and Secondary Education, the Minister of Higher Education, Science, and Technology, the Minister of Communication and Digital Affairs, the Minister of Population and Family Development/Head of BKKBN, and the Minister of Women's Empowerment and Child Protection Number 400.1-492 of 2026 and other

related decree numbers concerning Guidelines for the Utilisation and Learning of Digital Technology and Artificial Intelligence in Formal, Non-formal, and Informal Education Pathways.

14. Statute of Universitas PGRI Semarang.
15. UPGRIS Institutional Development Plan 2026–2040.
16. UPGRIS Strategic Plan 2026–2029.
17. Academic Regulations of Universitas PGRI Semarang.
18. Code of Ethics for Lecturers, Students, and Administrative Staff of Universitas PGRI Semarang.

C. PURPOSE

The Guidelines for the Utilisation of AI within UPGRIS are developed as a reference for directing the appropriate, ethical, secure, and responsible use of artificial intelligence technology in all academic and institutional activities. These guidelines aim to ensure that the use of AI is not solely oriented towards efficiency and technological innovation, but also continues to uphold the values of academic integrity, professionalism, fairness, and humanity.

More specifically, the objectives of these guidelines are as follows:

1. To provide policy direction and operational guidance for all members of the UPGRIS academic community in utilising Artificial Intelligence (AI) in learning activities, research, community service, and institutional governance.
2. To ensure that the use of AI is carried out ethically, transparently, accountably, and responsibly in accordance with the principles of academic integrity, personal data protection, and the academic values upheld in higher education. This is in line with the objectives of the national guidelines, which emphasise the responsible and ethical use of GenAI.
3. To protect academic honesty, the originality of scholarly work, and the quality of the learning process so that the use of AI does not lead to plagiarism, academic manipulation, or overdependence that may weaken the critical thinking abilities of both students and lecturers.
4. To encourage innovation in learning and the development of teaching methods that are adaptive, personalised, inclusive, and technology-based, while continuing to prioritise the quality of human interaction within the educational process.
5. To support lecturers and administrative staff in improving the effectiveness of academic and administrative duties through the proportionate and well-regulated use of AI.
6. To enhance digital literacy and AI literacy among students, lecturers, and administrative staff so that they are able to understand the opportunities, risks, limitations, and ethical dimensions of AI use appropriately.
7. To ensure the protection of data security, user privacy, and the confidentiality of institutional information in the use of various AI platforms, whether public or internal.
8. To provide mechanisms for guidance, supervision, the prevention of misuse, and the enforcement of ethical standards in the use of AI within the university environment.
9. To support the digital transformation of Universitas PGRI Semarang towards becoming a university that is excellent, adaptive, innovative, and firmly grounded in its identity in facing the challenges of higher education in the era of artificial intelligence.

Through these guidelines, it is expected that all members of the UPGRIS academic community will be able to utilise AI as a strategic tool to enhance the quality of the tridharma of higher education, rather than as a substitute for the human role in thinking, evaluating, making decisions, and developing academic character.

D. SCOPE AND DEFINITION OF GenAI TECHNOLOGY

The Guidelines for the Utilisation of Artificial Intelligence (AI) within Universitas PGRI Semarang (UPGRIS) are intended to provide clear direction regarding the use of Artificial Intelligence technology, particularly Generative Artificial Intelligence (GenAI), in all academic and institutional activities of the university. The scope of these guidelines covers users, areas of utilisation, as well as the boundaries and responsibilities associated with the use of such technology, ensuring that its implementation remains aligned with ethical principles, academic integrity, and sound higher education governance.

1. Scope

These guidelines apply to all members of the academic community and institutional elements within Universitas PGRI Semarang, including:

- a. Students, at diploma, undergraduate, professional, and master's degree levels;
- b. Lecturers, including permanent lecturers, non-permanent lecturers, and other teaching staff;
- c. Administrative staff involved in academic services, administration, and information system management;
- d. University leaders, faculty leaders, study programme leaders, and work units with authority in academic policy-making;
- e. Academic support units such as libraries, laboratories, information technology centres, learning development centres, and quality assurance units.

The scope of AI utilisation covered by these guidelines includes:

- a. Learning and teaching processes;
- b. Curriculum development and learning resources;
- c. Assessment, evaluation, and learning measurement;
- d. Research, scholarly publication, and academic writing;
- e. Community service based on digital innovation;
- f. Academic administration and institutional governance;
- g. Student services and data-driven decision support systems;
- h. Institutional innovation development based on digital transformation.

Accordingly, these guidelines do not merely regulate the use of AI as a learning support tool, but also position it as part of the university's institutional strategy in achieving sustainable digital transformation in higher education.

2. Definition of Artificial Intelligence (AI) Technology

In these guidelines, Artificial Intelligence (AI) is defined as technology designed to imitate human cognitive abilities in reasoning, decision-making, pattern recognition, language processing, and problem-solving based on the data received. The national guidelines explain that AI is a technology that seeks to replicate human capability in producing decisions. The human capability being imitated refers to reasoning based on

input received through the senses.

One example of a system using AI technology (as illustrated in Figure 1) is an automated student answer assessment system, where the system input consists of students' responses and the output or decision generated by the system is the score assigned to those responses.

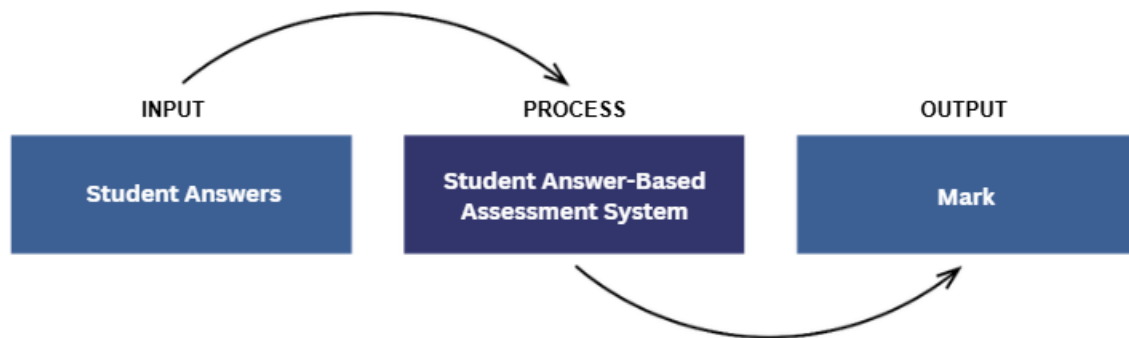


Figure 1. Example of AI Technology: Student Answer Grading System Other examples of AI technology include human face recognition, speech recognition

Other examples of AI technology include facial recognition, speech recognition (identifying words in spoken language), document summarisation, automatic translation, image generation, and many others. Table 1 presents examples of input and output for various AI systems. In higher education, examples of AI implementation include automated student assessment systems, learning recommendation systems, plagiarism detection, machine translation, academic data analysis, academic service chatbots, and student learning outcome prediction systems.

Table 1. Examples of Systems Using AI Technology

Examples of Systems with AI Technology		Input	Output
1	Human face recognition	Human face recognition	person's name/data
2	Speech Recognition	sound signals (speech)	spoken words
3	Document summarization	long text (can be more than 1 paragraph)	summary text
4	Automatic translation x (Indonesian-English)	certain texts in Indonesian	translated text in English
5	Document summarization	text that describes the contents of the image	picture

Fundamentally, in order to imitate human capabilities, there are three main approaches in AI technology:

- search algorithm-based approaches;
- explicit knowledge-based approaches; and
- machine learning-based approaches.

In modern developments, the most dominant approach is machine learning and deep learning, which form the primary foundation for the emergence of Generative Artificial Intelligence (GenAI).

3. Definition of Generative Artificial Intelligence (GenAI)

Generative Artificial Intelligence (GenAI) is a part of AI technology based on

machine learning, specifically as a branch of deep learning. Machine learning refers to algorithms that automatically learn patterns or knowledge from data. These patterns are then used to perform reasoning in generating responses to user input. There are various types of machine learning, one of which is deep learning.

Deep learning is a machine learning approach that uses artificial neural network techniques with more complex network architectures. GenAI applies deep learning algorithms to generate new outputs in the form of content sequences such as text, images, videos, or audio. Figure 2 illustrates the position of GenAI within Artificial Intelligence technology, where ChatGPT is one example of an application that belongs to GenAI.

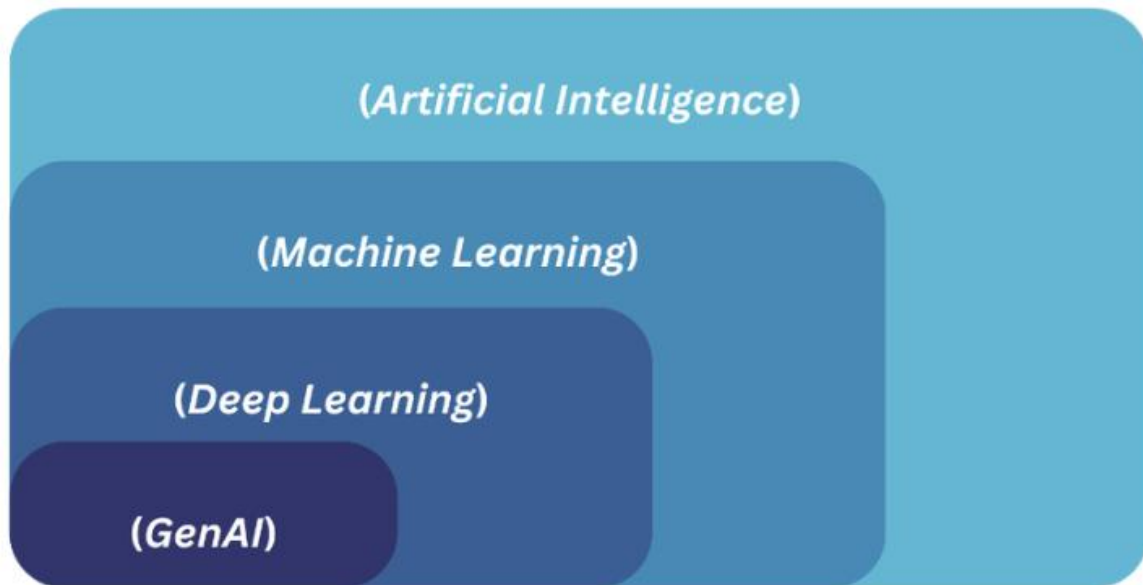


Figure 2. GenAI as part of Artificial Intelligence Technology

Examples of GenAI applications commonly used in higher education environments include:

- a. ChatGPT;
- b. Microsoft Copilot;
- c. Google Gemini;
- d. Claude;
- e. Perplexity AI;
- f. DALL·E;
- g. Midjourney;
- h. Canva AI;
- i. Grammarly AI;
- j. various institutionally developed internal AI systems.

The use of GenAI is fundamentally intended as an assistive technology rather than a substitute for human thinking processes. Therefore, all outputs generated by GenAI must still be verified, validated, and accounted for by the user.

4. The Position of GenAI in the Academic Environment

In the context of higher education, GenAI should be positioned as a strategic support tool to enhance the quality of learning, strengthen the effectiveness of research, and support more efficient academic governance. Students use GenAI as a learning

support tool, while lecturers utilise it as an aid for pedagogy, assessment, and academic development.

However, the use of GenAI must not eliminate the genuine learning process, reduce the originality of scholarly work, or replace the academic responsibility of the user. AI must remain under human control (human-centred AI), meaning that final decisions, academic judgement, and scholarly accountability must remain with human beings rather than technological systems.

On this basis, the utilisation of GenAI within UPGRIS must always be oriented towards strengthening academic quality, scholarly integrity, and the development of an academic community that is excellent and firmly grounded in its identity.

CHAPTER II

INTRODUCTION TO GenAI TECHNOLOGY

A. WORKING PRINCIPLES OF GENAI TECHNOLOGY

The AI technology present in each system in Table 68 essentially consists of a file containing the knowledge or patterns possessed by humans in making a decision. This file is often referred to as an AI model. In machine learning-based AI technology, the AI model file is generated by a machine learning algorithm based on training data input (as shown in Figure 3).

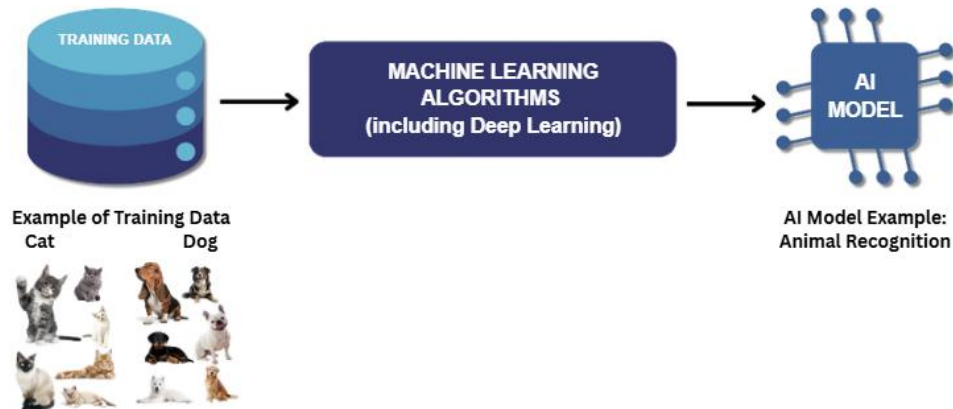


Figure 3. How Machine Learning-Based AI Technology Works (including Deep Learning)

Training data is data prepared as a learning source for the AI model, from which the machine learning algorithm will attempt to extract the patterns or knowledge contained within that training data. For example, to produce an AI model that recognises images of animals, training data in the form of pairs of animal images and their names is required. The machine learning algorithm will attempt to identify patterns in specific animal images and store these patterns or knowledge within the AI model. It is evident that the quality of the training data significantly determines the quality of the resulting AI model.

The AI model, once built from the training data, is subsequently used to generate decisions or AI technology outputs based on user input. An illustration of the process of using an AI model can be seen in Figure 4. For example, for an AI model designed to recognise animals, based on input in the form of a specific animal image file and the patterns learned from the training data, the AI model will predict the name of that animal.

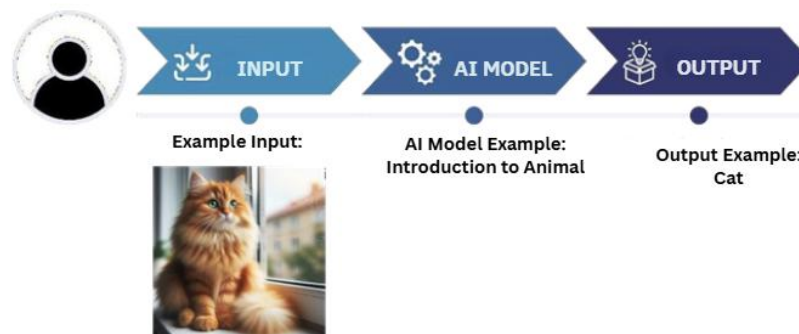


Figure 4. Example of an AI Model Usage Flow

In addition to producing outputs in the form of a single specific value, such as the name of an animal generated by the animal recognition model in Figure 1, GenAI technology can also produce a sequence or group of values or content. An example of the input and output of a GenAI model (image generation model) in the form of a sequence of content can be seen in Figure 5, where the image of a cat (as the GenAI model's output) consists of a sequence of image pixels.

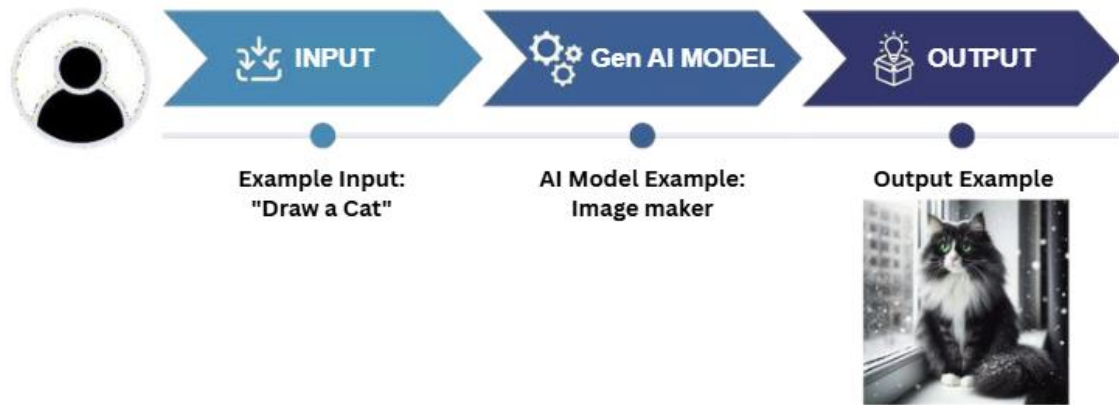


Figure 5. Example of a Workflow Using a GenAI Model to Generate Images

In addition to generating images, GenAI technology can also generate text or documents consisting of sequences of words. An example can be seen in Figure 3. In Figure 6, GenAI was asked to create a pantun, the result of which can be seen at the bottom.

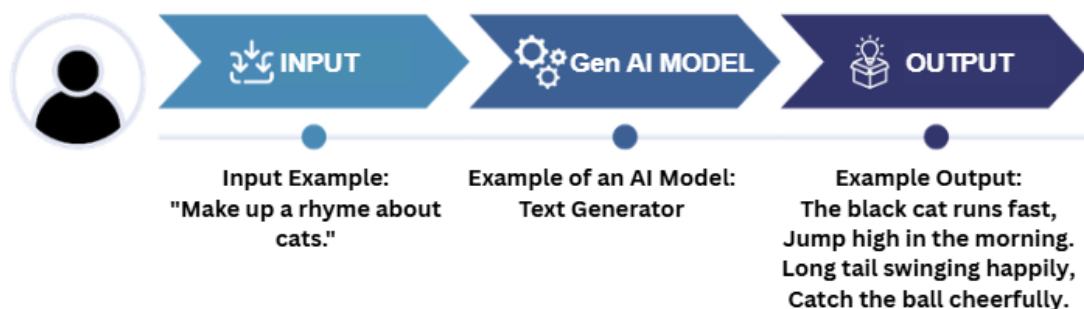


Figure 6. Example of the Workflow for Using a GenAI Model to Generate Text

In GenAI technology, GenAI model files are generated using . These deep learning algorithms are derived from artificial neural networks, where the resulting model consists of a set of numbers often referred to as parameters. When the GenAI model receives input from a user, the set of numbers within the model is processed using various mathematical operations, taking into account the probability values of each element that forms part of an output. It can be said that the GenAI model works by 'guessing' the output based on probability values learned from training data. As the output is generated based on guesswork, the output from GenAI has the potential to contain errors.

The latest development in deep learning algorithms that enhances the performance of GenAI technology is the use of transfer learning. In this approach, an AI model is trained twice. First, the model is trained to produce a pre-trained language model such as a Large Language Model (LLM), Vision Language Model (VLM), Multimodal Language Model, etc. Second, this pre-trained language model is adapted to new data through a fine-tuning process, in which the parameter weights are adjusted to the new training data.

B. CLASSIFICATION OF GENAI

GenAI is developing at a rapid pace. Currently, there are various types of GenAI in development, and they can be used by a wide range of users. Table 2 illustrates the classification of GenAI.

Table 2. Classification of GenAI

Aspect	Classification	Description
Target Users	Students	GenAI can be used to assist students in the learning process. When using this tool, students utilise GenAI as an initial aid, which needs to be finalised by the students.
	Lecturers	Using GenAI for the same purposes as students (e.g. generating text or multimedia), but also for contrasting purposes, such as checking students' work. The use of GenAI by lecturers can open up opportunities for developing learning materials
Interface access	Web	GenAI can be accessed using browsers commonly used to access websites. Chrome, Edge, or Firefox are web browsers that can be used to access GenAI. Most GenAI can be accessed via this type of interface.
	Mobile	GenAI is accessed via a mobile app running on the user's device. Many GenAI solutions can be accessed in this way. There are two types of access: the first type still uses the Internet to connect to GenAI running on a server. The second type is GenAI that runs independently on the device, without requiring a connection or a large server.
	Desktop	GenAI applications can be accessed directly via desktop applications. GenAI access does not use a website, for example in applications such as Adobe Express, Blender, and SheetAI from Microsoft.
	Application Programming Interface (API)	This access is used by other web services to provide GenAI capabilities using the APIs available in other GenAI applications (e.g. ChatGPT, Prosa.AI and so on).
User Licence	Free	These GenAI tools can be used free of charge; some do not even require registration. Most GenAI tools, such as ChatGPT, Gemini and others, offer free access but with limited features.
	Commercial Without educational version	To use this type of GenAI, you must pay subscription. Costs are calculated either on a time-based basis (monthly fee) or based on usage volume.

Aspect	Classification	Description
	Commercial offers an educational version	Some GenAI models offer special pricing for educational users.
Output Type	Text	Most GenAI models generate text based on their training data. This text can take the form of summaries, translations, new articles and so on. Examples of such GenAI models include ChatGPT, JenniAI.
	Images	GenAI systems such as Stable Diffusion and Dall-E generate images. The generated images can range from synthetic-looking visuals (such as sketches or cartoons) to highly realistic ones.
	Video	This GenAI generates videos based on prompts provided by the user. This type can be used to create educational videos that explain learning materials. One example of this type is Invideo [http://invideo.io]
	Voice	GenAI will generate audio, for example via a Text-to-Speech system, or produce music based on specifications in the prompt. An example of this type of GenAI is tts.prosa.ai, which can generate the Indonesian audio version of the given text.
	A combination of various types of output or multimedia	Some GenAI models can combine various outputs into a single multimedia output, such as a presentation with audio and video, or generate a short film. An example of this type is MindJourney.
Language processed	English	Some GenAI models can only accept prompts in English and provide outputs in English. However, they can still accept prompts in other languages and still produces output in English.
	Single language non English	GenAI is designed to accept non-English languages, such as German, and provide output in that language.
	Multiple languages	GenAI is designed to accept non-English languages, such as German, and provide output in that language.

Aspect	Classification	Description
Types of GenAI applications	Standalone	This GenAI application is a standalone application. Therefore, it can operate without requiring other GenAI applications. Applications such as ChatGPT, Gemini are GenAI which work without requiring other GenAI tools.
	Encapsulation of other applications	This GenAI application is actually a wrapper that runs other GenAI applications; for example, it acts as an interface to OpenAI, such as JasperAI is an interface for GPT-4
	Combination of several AI	A GenAI application utilises several GenAI applications as well as other applications to create a AI application

C. POTENTIAL USES OF GENAI

GenAI can be used for a variety of functions, such as:

1. Content creation

Content generated by GenAI technology can take the form of text documents, programme code, audio recordings, images, video recordings, etc. Examples of real-world content that can be generated include syllabus designs, educational video recordings, illustrations based on a text, programme code modules, and so on. An example of this content generation can be seen in Figure 6, where the user asks GenAI to create a pantun.

2. Modifying content

GenAI can be used to modify or transform content, such as summarising, translating, paraphrasing, optimising programme code, correcting grammar, etc. An example of its use can be seen in Figure 7.

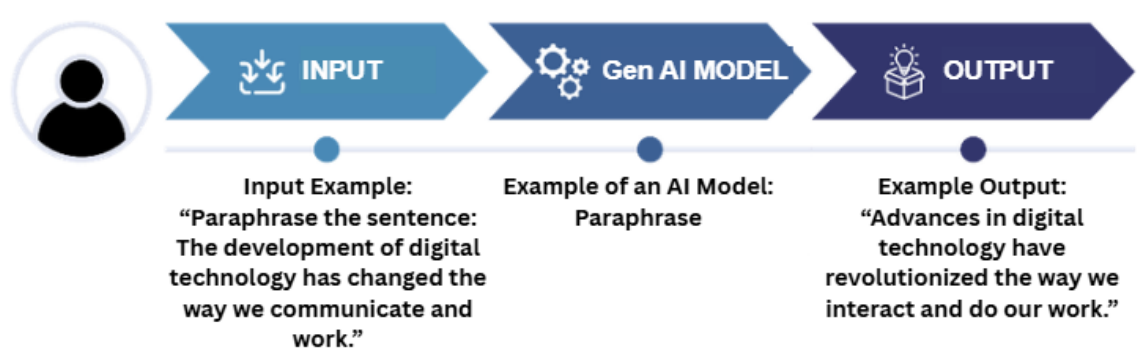


Figure 7. Example of Using the GenAI Model to Generate a Paraphrase

3. Understanding content

Users can utilise GenAI technology to understand content, whether sourced from plain text, programme code, audio recordings, or other formats. To avoid the hallucination effect, which is one of the risks of GenAI, when seeking to understand content, user input should not consist solely of a question but should also include the source material, as illustrated in Figure 8. If the source material is not included as part of the input, the GenAI

output must be verified to ensure its accuracy.



Figure 8. Example of GenAI Model Use in Content Understanding

4. Combining content

GenAI technology can be used to combine multiple input contents to generate output content. For example, from input consisting of several texts, GenAI can be asked to generate a summary of those input texts. The example in Figure 9 shows that with input consisting of one image and one text, GenAI can be asked to generate a new image featuring the action requested in the text input.

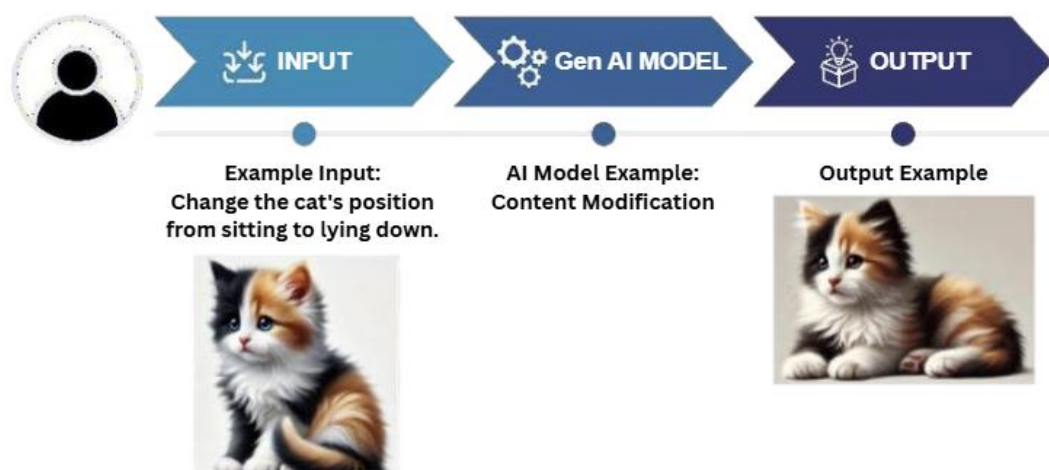


Figure 9. Example of GenAI Model Use in Content Modification

5. Searching for content

GenAI technology can be used to search for content. However, to avoid hallucinations or inaccurate results, the input for GenAI technology must include

specifications of the desired information as well as the content serving as the source of that information. This source content can be generated automatically using search engine technology, currently known as RAG (Retrieval Augmented Generation).

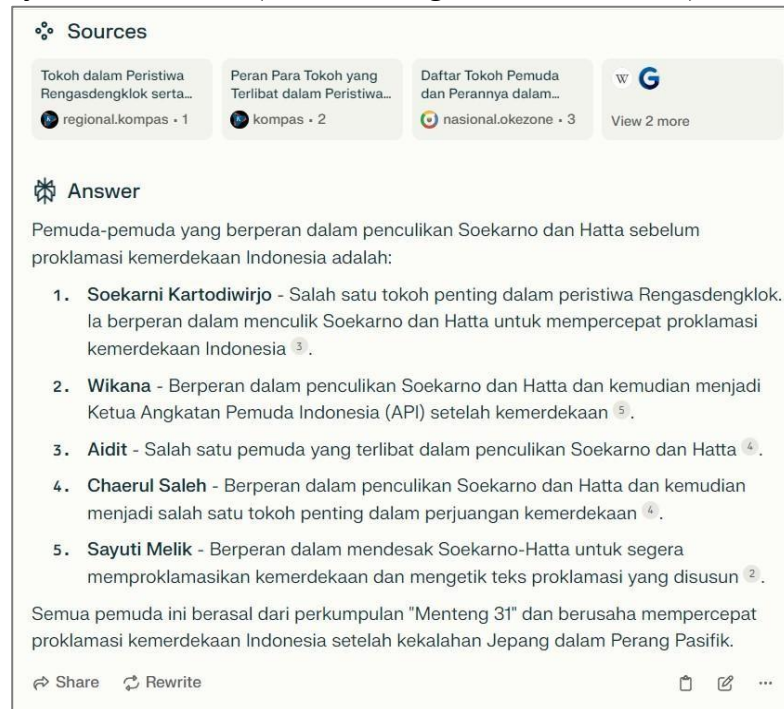


Figure 10 Information Search Results for GenAI Technology with RAG (example: Perplexity.ai)

This technique is used by several available applications such as GitHub Copilot, Gemini, Perplexity, etc. The key feature of this technique is the inclusion of source references for the text generated by GenAI. As shown in Figure 10, RAG technology can produce more reliable information because it provides source references for the answers, enabling users to easily verify the validity or accuracy of the generated information. This differs from ChatGPT, which cannot provide such reference information for the source of the answer; consequently, if ChatGPT's output is inaccurate, users cannot easily verify it. By way of comparison, ChatGPT's output for the same input as in Figure 10 can be seen in Figure 11, where ChatGPT does not provide the correct answer. The answers "Sukarni" and "Soekarni Kartodiwirjo" actually refer to the same person. The answer "Darisman Purbo Pranoto" is incorrect; he was not one of the youths involved in the 1945 Rengasdengklok abduction.

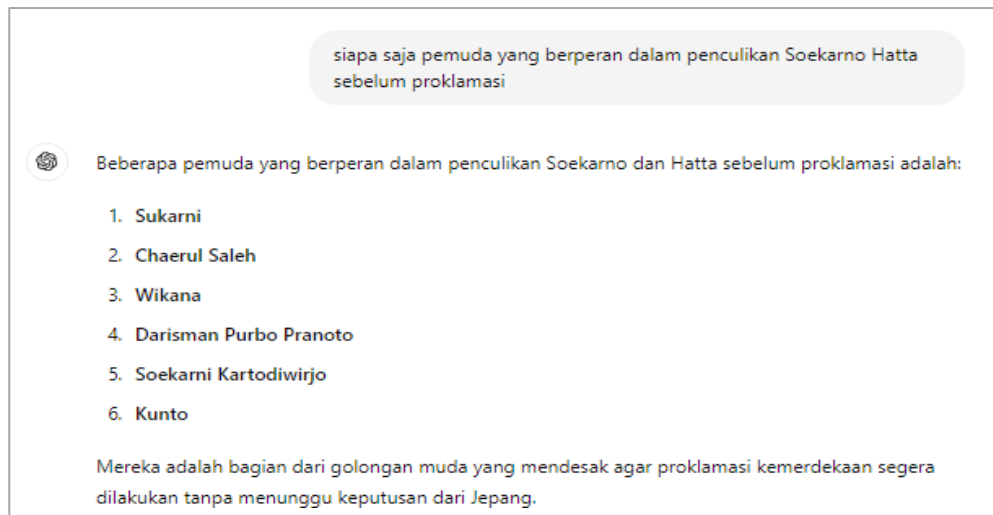


Figure 11. Information Search Results for GenAI Technology using ChatGPT

D. VARIETIES OF GENAI APPLICATIONS

GenAI can accept input from various forms of data, such as text, audio, and video. GenAI can generate outputs in various forms of data according to its capabilities. Therefore, it is necessary to recognise the various GenAI applications, each with different capabilities and limitations.

Table 3. Variety of GenAI Applications

Name GenAI	User	Input	Output	Language	Licence	URL
Generate text						
Gemini	students and lecturers	web, mobile, API	text	multi	free and paid	https://gemini.com
ChatGPT	students and lecturers	web, mobile, API	text	multi	free and paid, with a special educational scheme	https://chat.openai.com/chat
GitHub Copilot	students and lecturers	web, mobile, API	text	English	free and paid	https://github.com/features/copilot
QuickChat	Lecturers	web, mobile, API	text	multi	paid	https://www.quickchat.ai/
Storylab.Ai	students and lecturers	web	text	multi	free and paid	https://storylab.ai/
Writefull Title Generator	students and lecturers	web, mobile, API	text	English	free and paid, there is a special scheme for education	https://x.writefull.com/title-generator
Microsoft Copilot	students and lecturers	web, mobile, API	text	multi-language, 25 languages	free and paid, with a special educational scheme	https://www.microsoft.com/en-us/copilot
Voice Content Generation						
Google text-to-speech	Students and Lecturers	Web, Mobile, Desktop, API	Voice	Multi	Paid	https://cloud.google.com/text-to-speech
TTS Prose	Students and Lecturers	Web, Mobile, Desktop, API	Voice	Indonesian and English	Free and paid, with a special educational scheme	https://tts.prosa.ai/

Name GenAI	User	Input	Output	Language	Licence	URL
Our languages	Students and Lecturers	Web, Mobile, Desktop, API	Text	Multi, Indonesian	Free and paid, with a special scheme for education	https://dikte.in/
Podcastle	Students and Lecturers	Web, Mobile, Desktop, API	Audio, video, Text	Free	free and paid	https://podcastle.ai/tools/podca st recording
OpenAI TTS	Students and Lecturers	Web, Mobile, Desktop, API	Voice	Free	Free and paid, with a special educational scheme	https://openai.com/research/- whisper
Speechify	Students and Lecturers	Web, Mobile, Desktop, API	Voice	Multi- language, over 30 languages	Free and paid, with special educational schemes	https://www.speechify.com
Mubert (Music)	Students and Lecturers	Web, Mobile, API	Sound (Music)	Multi	Free and paid, with a special educational scheme	https://mubert.com
Soundful (music)	Students and Lecturers	Web, Mobile, API	Sound (Music)	Multi	Free and paid options; special educational schemes available	https://soundful.com
Image Content Generation						
Stable Diffusion	Students and Lecturers	Web	Images	Free	Free and paid, with a special educational scheme	https://stablediffusionweb.co m/
DALL-E 3	Students and Lecturers	Web, API	Images	Multi	Paid, special educational scheme available	https://openai.com/index/dal l- e-3/

Name GenAI	User	Input	Output	Language	Licence	URL
Illustroke	Students and Lecturers	Web	Image	Multi	paid for under a special educational scheme	https://illustroke.com/
Midjourney	Students and Lecturers	Web, Discord	Images	Multi	Paid	https://www.midjourney.com/
Stockimg	Students and Lecturers	Web, Mobile, API	Images	English	Paid	https://stockimg.ai/
Flair	Student	Web, API	Image	English	free and paid	https://flair.ai/
Generate video content						
Synthesia	Students and Lecturers	Web, API	Video	Multi	Paid	https://www.synthesia.io/
Sora AI	Students and Lecturers	Web, Mobile, Desktop, API	Video	Multi	Not available (free or paid)	https://openai.com/index/sora/
Lumen 5	Students and Lecturers	Web, Mobile, Desktop, API	Video	Multi-language, over 39 languages	Free and paid, with special educational schemes	https://lumen5.com/
Invideo	Students and Lecturers	Web, Mobile, Desktop, API	Video	Multi-language, over 50 languages	Free and paid, with special educational schemes	https://invideo.io/
Runway	Students and Lecturers	Web, Mobile, Desktop, API	Video	Multi	Free and paid, with a special educational scheme	https://runwayml.com/

Name GenAI	User	Input	Output	Language	Licence	URL
Creating Presentations with Output Combinations						
Tome.App	Students and Lecturers	Web	Text, Images, Video	English	Free and paid	https://beta.tome.app/
Magic Slides	Students and Lecturers	Web, API	Presentations , Images, Video, Charts	Free	free and paid	https://www.magicslides.app/
GPT-4o	Students and Lecturers	Web, Mobile, API, Desktop	Text, Audio, Images	Multi-language, over 50 languages	Free and paid, with a special educational scheme	https://openai.com/gpt-4o
SmallPPT	Students and Lecturers	Web, Mobile, Desktop, API	Presentations (PPT, PDF, etc.)	Free	free and paid	https://smallppt.com/
AIPPT	Students and Lecturers	Web, Mobile, Desktop, API	Presentations (PPT, PDF, etc.)	Free	Free and paid options, with special educational schemes	https://aippt.com/
Search for Content						
Connected Paper	Students and Lecturers	Web	Text	Multi	Free, paid	https://www.connectedpapers.com/
Open Knowledge Maps	Students and Lecturers	Web	Text	Multi	Free	https://openknowledgemaps.org/

Name GenAI	User	Input	Output	Language	Licence	URL
Combining Content						
Asisten You.com	Students and lecturers	Web, Mobile, API	Text	English	Free	https://you.com/code
Revision.AI	Student	Web	Text	English	Free and paid versions available; special educational schemes available	https://www.revision.ai/
SwotBot	Lecturers	Web	Text	Multi	Free and paid	https://www.swotbot.ai/
Knowji	Students and lecturers	Web, Mobile, Desktop	Text	Multi	Free and paid	https://knowji.com
Edit Content						
Clean Up	Students and Lecturers	Web, API	Images	English	Free and paid	https://cleanup.pictures/
Bing Translator	Students and Lecturers	Web, Mobile, API	Text, Voice	Multi	Free	https://www.bing.com/translator
Google Translate	Students and Lecturers	Web, Mobile, Desktop, API	Text, Voice, Images	Multi	Free	https://translate.google.com/
Krisp	Students and Lecturers	Desktop	Voice	Multi	Free and paid	https://krisp.ai/
Clean-voice	Students and Lecturers	Web, API	Voice	Multi, English, French, German and	Paid	https://cleanvoice.ai/

Name GenAI	User	Input	Output	Language	Licence	URL
				Arabic		
Voice remover	Students and Lecturers	Web	Voice	Multi	free	https://vocalremover.org/
Real Fast Reports	Lecturer	Web	Text	English	paid, there is a special scheme for educators	https://realfastreports.com/
Description	Students and Lecturers	Web, Desktop, API	Audio, Video, Text	Free	Free and paid	https://www.descript.com/
DeepL Write	Students and Lecturers	Web, Mobile, Desktop, API	Text	Free	Free and paid	https://www.deepl.com/write
Resume - Worded	Student	Web	Text	English	Free and paid	https://www.resumeworded.com/
Whisper	Students and Lecturers	Web, Mobile, Desktop, API	Text	Free	Free and paid, with a special educational scheme	https://openai.com/index/whisper/
Microsoft Azure Speech to Text	Students and Lecturers	Web, API, Mobile, Desktop	Text	Free	Free and paid	https://azure.microsoft.com/en-us/services/cognitive-services/speech-to-text/
Dragon Pro	Students and Lecturers	Web, Desktop, API	Text	Multi	Paid, special educational schemes available	https://nuance.com/dragon
ClickUp	Lecturer	Web, Mobile, Desktop, API	Text	Multi	Free and paid versions available, with a special educational scheme	https://clickup.com

Name GenAI	User	Input	Output	Language	Licence	URL
Content Understanding						
PerplexityAI	Students and lecturers	Web, Mobile, API	Text	Free	Free and paid	https://www.perplexity.ai/
Claude	Students and lecturers	Web, API	Text	Free	Free and paid	https://claude.ai/
Meeting.AI	Students and lecturers	Web, Mobile	Text	Free	Free and paid	https://meeting.ai/id/
Meemo Prose	Students and lecturers	Web, API	Text	Multi	Free and paid, with a special educational scheme	https://meemo.prosa.ai
Hemingway	Students and Lecturers	Web, Desktop	Text	English	Free and paid	https://hemingwayapp.com/
Sonix	Students and Lecturers	Web, API	Text	Multi	Paid	https://sonix.ai/
QuillBot	Students and Lecturers	Web	text	Multi	Free and paid, with a special educational scheme	https://quillbot.com/
Otter	Students and Lecturers	Web, Mobile	Text	English	Free and paid	https://otter.ai/
Gradescope	Lecturer	Web, Mobile, Desktop, API	Text	Multi	Paid	https://www.gradescope.com

E. CONSIDERATIONS FOR SELECTING GENAI

When selecting a GenAI solution, it is necessary to consider licensing and usage costs, internet connectivity, and intellectual property rights, as explained below.

1. Licensing and Usage Costs

Each GenAI solution employs several usage licensing models, including:

- a) Free. Anyone can use it immediately without the need to register or pay a fee.
- b) Free but registration required. Registration is usually carried out using an email address and other information. For this type, attention must be paid to issues regarding the use of personal data.
- c) Subscription. This GenAI solution offers users two options: a limited-capability option that does not require a subscription fee, and an enhanced-capability option that requires a subscription fee. Subscription fees are paid on a monthly basis and/or based on the number of accesses made. Those who use GenAI services extensively should take these costs into account.
- d) Special subscription rates for Education. Some GenAI solutions offer special subscription rates for students and teachers. ChatGPT Edu is one such GenAI solution that offers pricing options for the education sector.

2. Internet connection

As GenAI requires access to large-scale Large Language Models (LLMs) for its operation, there are essentially three types of internet connection used by these GenAI solutions.

- a) Always requires an internet connection. Most GenAI solutions require an internet connection during use. As the applications and data reside on internet servers, interactions with users take place via a web browser. The availability of an internet connection and the cost of internet usage must be taken into account when using this type of GenAI. Some GenAI solutions with mobile versions require an internet connection to operate.
- b) Requires an internet connection during initial installation. Some GenAI solutions can operate without an internet connection, but this involves a lengthy process when downloading the necessary applications and large language models (LLMs). However, once set up, they can function without an internet connection. Some GenAI solutions running on mobile devices utilise this principle. This type of solution is suitable for areas where internet access remains expensive.
- c) No internet connection is required during operation or installation. This type of GenAI comes pre-loaded with a pre-trained GenAI model upon installation, so it requires significant storage space during setup.

3. IP considerations regarding the use of GenAI

Not all GenAI solutions address IPR issues in generating outputs. To use a GenAI solution, the following considerations must be taken into account:

- a) IP statements. GenAI provides explanations regarding IP in the datasets used in GenAI and the results. Pay attention to the Terms of Service of the GenAI service.
- b) The output generated by GenAI must not infringe on IPR. For example, using an image that violates the licence terms for that artwork.

- c) Copyright of GenAI outputs: who holds the IPR for the results generated by the user's prompts?

F. CONTEXTUALISATION OF GENAI UTILISATION WITHIN UPGRIS

The utilisation of Generative Artificial Intelligence (GenAI) within UPGRIS is regarded as part of the transformation of higher education aimed at improving academic quality, enhancing the effectiveness of institutional governance, and strengthening the tridharma of higher education. The presence of GenAI is not merely understood as the adoption of a new technology, but as a strategic instrument to support more adaptive learning, more productive research, and institutional services that are more responsive to contemporary developments.

As a higher education institution that upholds the values of excellence and identity, UPGRIS positions the utilisation of GenAI within the framework of educational development that is oriented towards human quality, academic integrity, and sustainable innovation. AI technology must be used to strengthen the capacity for thinking, creativity, collaboration, and scholarly reflection among members of the academic community, rather than replacing intellectual processes or the academic responsibilities inherent to human beings.

In this context, UPGRIS adopts a human-centred AI approach, namely the principle that artificial intelligence must remain under human control and be used to support better decision-making, rather than taking over the human role in education. Lecturers remain the primary educators in the learning process, students remain active subjects responsible for their own learning, and academic decisions must continue to be based on scholarly judgement and ethical values exercised by human beings.

The utilisation of GenAI must also be aligned with the implementation of Outcome-Based Education (OBE), Merdeka Belajar Kampus Merdeka (MBKM), and the strengthening of 21st-century competencies, which form the direction of higher education development at UPGRIS. AI technology can support more personalised learning, more adaptive assessment, stronger independent learning, project-based learning, and interdisciplinary collaboration relevant to the needs of the labour market and society. In this way, GenAI becomes part of the university's institutional strategy in building a learning system that is more flexible, relevant, and oriented towards graduate learning outcomes.

Although GenAI offers significant potential, it also has limitations that must be critically understood. One of the major risks is the occurrence of hallucination, a condition in which an AI system produces information that appears convincing but is actually inaccurate, invalid, or even entirely false. This risk may appear in the form of fabricated references, non-existent citations, unverifiable data, or incorrect conceptual explanations. Therefore, GenAI cannot be positioned as a primary source in academic activities. The main sources for learning, research, and scholarly publication must continue to come from academic journals, scholarly books, conference proceedings, official regulations, and other reliable sources.

In addition, the utilisation of GenAI must take into account the protection of personal data, information security, and responsible technology governance. Student data, institutional documents, unpublished research results, and strategic university information must not be entered into public AI platforms without adequate security considerations. The selection of AI platforms must consider the credibility of the service provider, transparency in data usage,

privacy protection, and suitability for academic and institutional needs.

UPGRIS believes that the success of GenAI utilisation is not determined solely by technological sophistication, but by the quality of digital literacy, critical thinking skills, and the integrity of users in managing it. Therefore, strengthening AI literacy among lecturers, students, and administrative staff is an essential part of ensuring that the use of AI genuinely supports the quality of higher education rather than weakening academic culture.

Through this contextualisation, the utilisation of GenAI within UPGRIS is expected to become part of the university's broader strategy in realising higher education that is innovative, adaptive, ethical, and firmly rooted in scholarly and human values. AI must serve as a strategic support tool in producing graduates who are excellent, professional, and of strong character, in line with the identity of Universitas PGRI Semarang as a future-oriented higher education institution.

CHAPTER III

CHALLENGES, LITERACY, AND ETHICS OF GENAI IN HIGHER EDUCATION

A. CHALLENGES OF GENAI

The greatest challenge in the use of artificial intelligence technology is trust. Modern society, which is accustomed to digital technology (digital natives), tends to have a high level of trust in technology. This is reflected in the rapid growth in the number of ChatGPT users, which reached 100 million active users in just two months, whilst other applications such as TikTok took nine months and Instagram two and a half years.

Recent global developments in the use of AI have raised issues regarding the ethical and responsible use of AI, which affect decision-making, employment, social interaction, healthcare, education, access to media and information, the digital divide, personal data protection, the environment, democracy, law enforcement, security, policy-making, and human rights—including freedom of expression, privacy and non-discrimination. The assumption that technology is neutral and therefore will not introduce bias into the decisions it produces remains open to debate. Moreover, artificial intelligence relies on its ability to process data from sources that may be biased due to a lack of balanced data representation.

AI algorithms have the potential to reproduce and even reinforce existing biases, thereby exacerbating discrimination, prejudice and stereotypes. Some applications of AI are even used to perform roles previously carried out only by humans, thereby creating a new context within the environment and ecosystem of human life, particularly for the younger generation who will grow, learn and develop. This raises concerns regarding the potential shift in social and cultural values and human dignity.

For example: data on most professions tends to reflect prevailing stereotypes in society. A woman works as a cleaner or a nurse, whilst a man becomes an engineer or a company director. A Large Language Model (LLM) that bases its training data on a large text corpus derived from societal realities will tend to produce biased outputs that perpetuate the stereotypes of that society. In addition to reinforcing stereotypes, bias in LLMs can also lead to discriminatory treatment based on gender, ethnicity, age and disability. For instance, bias in LLMs regarding GenAI's decisions on selecting job candidates or screening prospective students for a particular field.

Bias in LLMs can also lead to misinformation and disinformation due to a lack of underrepresented sample data, for example:

1. In the field of Healthcare
 - a) **Inaccurate Diagnoses:** If an LLM contains bias in its training data, the medical recommendations provided by the LLM may be inaccurate. For instance, if the training data tends to overlook certain health symptoms in minority groups, the LLM may not recognise those symptoms properly.
 - b) **Treatment Recommendations:** LLMs may provide treatment recommendations that are unsuitable for a patient's condition due to bias in the training data. For instance, if the training data contains a preference for certain medications, the LLM may recommend those medications.
2. In the field of Politics

- a) **The Spread of Political Narratives:** If an LLM contains political bias, it may disproportionately spread narratives that support certain viewpoints. For example, an LLM may generate text that reinforces extreme views or disregards differing perspectives.
- b) **Disinformation:** LLMs that are not critical of their training data may inadvertently spread false information or conspiracy theories. For example, an LLM may generate text that reinforces false claims about vaccination or historical events.

Concerns regarding bias in LLMs are not the sole reason for the limited acceptance of AI systems within society. Some sections of the public are concerned that the use of AI systems will impact people's lives, leading to job losses and economic instability. Trust in AI technology and its applications is a key factor in widespread public acceptance.

To ensure the trustworthiness of an AI system, there are five principles that must be upheld, namely:

1. **Fairness:** how to ensure that an AI model is fair to everyone.
2. **Explainability:** an AI model must be able to explain the dataset, the model used and how the data was trained.
3. **Robustness:** a guarantee that an AI model cannot be deliberately hacked, or used solely to harm or benefit a particular group of people.
4. **Transparency:** providing clear information that a product has been generated by AI and supplying a summary or metadata regarding the AI model used.
5. **Data privacy:** the use of data must ensure the confidentiality of personal data.

Various countries and global organisations are beginning to take initiatives to address these concerns. UNESCO has issued a recommendation on the ethics of AI (Recommendation on the Ethics of Artificial Intelligence, UNESCO, 2022). It emphasises the values that must be upheld, namely:

1. **Respect for, protection of, and promotion of human rights, fundamental freedoms and human dignity.**

In research and teaching, lecturers may use GenAI to produce research materials or teaching resources that respect human rights. For example, GenAI may be used to generate texts that promote gender equality, respect freedom of expression, avoid discrimination, encourage inclusivity, uphold the rights of persons with disabilities, and protect human dignity. Students may also use GenAI in accordance with ethical principles to produce texts that respect human dignity, avoid degrading language, promote inclusive language, and utilise AI technologies that uphold human rights so that no individual or group is disadvantaged.

To avoid bias, lecturers and students must ensure that the training data used are free from bias and stereotypes that may lead to human rights violations, discrimination, or prejudice. In addition, texts generated by GenAI must be critically evaluated, particularly when there are indications of bias or potential violations of human rights.

2. **Caring for and protecting the environment and ecosystems.**

GenAI can be a highly useful tool for developing solutions to protect ecosystems. For example, in developing strategies for mangrove planting, or the restoration of

peatlands in Indonesia to reduce greenhouse gas emissions. Another example is the use of GenAI to explore concepts of local wisdom in the utilisation of natural resources that can maintain ecosystem balance, whilst also preserving and respecting local customs and traditions. When developing GenAI-based solutions, lecturers and students can always prioritise a critical approach in their efforts to safeguard environmental sustainability.

3. Ensuring diversity and inclusivity.

GenAI undoubtedly presents significant opportunities for lecturers to design more adaptive and relevant learning materials. Lecturers can produce content that takes into account students' diverse backgrounds. Among other things, this helps to overcome communication barriers by producing materials in more inclusive language. For students themselves, GenAI can personalise their learning experience by generating materials tailored to individual interests and needs, for example by helping to translate texts into language that is easier to understand.

Ideally, GenAI should be used to produce materials that respect diverse cultures and traditions, utilising inclusive examples and illustrations to allow for different perspectives.

4. A peaceful, just and interconnected society.

If GenAI is used to design community service activities relevant to local conditions and needs, it will undoubtedly strengthen interactions between the various components within the community ecosystem. Lecturers can communicate their research findings more effectively to the community, ensuring that the benefits are felt more quickly. The resulting solutions will be more holistic and have a wider impact. A commitment to social justice and community well-being can serve as a foundation for lecturers and students to develop innovative ideas through the use of AI.

Based on the above, it is concluded that the application and utilisation of GenAI technology must uphold the principles outlined in Table 4 below.

Table 4. Principles for the Utilisation of GenAI

No	Principle	Do's	Don'ts
1	Ensuring security and safety	Evaluating the use of GenAI and identify potential cybersecurity risks	Using GenAI recklessly without considering the level of risk and without proper evaluation or authorisation
2	Fairness and non-discrimination	Critically identify bias generated by GenAI	Assuming that GenAI outputs are always accurate and trusting them without critical judgement
3	Sustainability	Use GenAI tools only when necessary with effective prompting, and avoid overdependence on technology	Exploiting GenAI for unnecessary purposes and failing to apply proper prompt engineering skills

No	Principle	Do's	Don'ts
4	Protecting rights and personal data	Only enter prompts that do not contain sensitive data	Inputting all types of data irresponsibly without permission or consent
5	Ensuring that responsibility at every stage of the GenAI system life cycle remains with humans	Critically assess the impact of GenAI on human emotions and life, ensuring it supports rather than replaces humans	Using GenAI irresponsibly without considering ethical implications
6	Transparency and explainability	Use GenAI tools with clear transparency and explainability	Ignoring transparency issues and the lack of explainability
7	Responsibility and accountability	Clearly disclose information regarding the GenAI tools used and the process of generating outputs	Concealing information regarding the use of GenAI in digital content for the purpose of plagiarism or copyright infringement
8	Awareness and literacy regarding GenAI	Improve GenAI literacy for oneself and the surrounding community	Failing to develop the right mindset regarding GenAI use and underestimating the importance of AI literacy
9	Collaboration and adaptive governance involving multiple stakeholders	Continuously evaluate the impact of GenAI use on all stakeholders to ensure fairness and equality	Failing to conduct comprehensive studies or considering only the interests of one stakeholder group (monopoly)

The use of AI and GenAI technologies in particular also requires the government to play a regulatory role. The implementation of GenAI opens up many opportunities across various sectors and is estimated to boost labour productivity growth by 0.1% to 0.6% per year until 2040, depending on how rapidly the technology is adopted within each sector of employment.

In Indonesia, regulations regarding the deployment of AI technology are governed by the issuance of the Minister of Communication and Information Technology's Circular on Artificial Intelligence Ethics No. 9 of 2023, which is directed at AI-based businesses, as well as operators of both public and private electronic systems.

Circular Letter of the Minister of Communication and Informatics Number 9 of 2023 concerning the Ethics of Artificial Intelligence

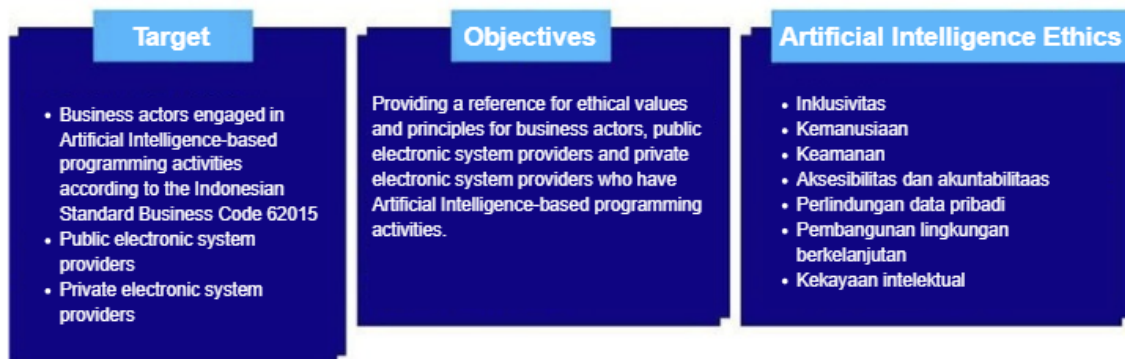


Figure 12. Summary of the Minister of Communication and Information Technology's Circular on Artificial Intelligence Ethics in support of responsible implementation

AI providers have responsibilities that extend beyond technical competence, ethics, and humanitarian and social considerations for society; they also play a role in the development of human resources in Indonesia. The Government, in this case the Ministry of Communication and Information Technology, together with providers and users, plays a role in overseeing the application of AI technology to prevent misuse and/or use that violates laws and regulations.

Some areas of concern include:

1. Providing protection to the public in the implementation of Artificial Intelligence, particularly regarding the use of data.
2. Ensuring that Artificial Intelligence is not used as a policy-maker and/or decision-maker concerning humanitarian issues.
3. Preventing racism and all forms of actions that harm humans.
4. Implementing Artificial Intelligence to enhance innovation and problem-solving capabilities.
5. Implementing regulatory obligations regarding the implementation of Artificial Intelligence with the aim of safeguarding security and user rights in digital media.
6. Providing information regarding the development of Artificial Intelligence-based technology by developers to prevent negative impacts and harm from the resulting technology.
7. To consider risk management and crisis management in the development of Artificial Intelligence.

Following this circular, in 2024, the Ministry of Communication and Information Technology will conduct an assessment of the maturity level of AI implementation and prepare a regulatory sandbox, policy briefs and a business operator reporting system for new technologies to assist the government's oversight mechanisms.

In terms of oversight, lecturers and students, as representatives of the intellectual community from the user perspective, play a crucial role in ensuring the responsible use of by taking the above aspects into account. By way of comparison, the EU AI Act contains a supervisory framework based on risk levels, namely: prohibited, high-risk, and transparency

obligations, as shown in Table 5 below.

Table 5. Risk Categories and Rules for AI Use under the EU AI Act

Transparency Scope	Prohibited (Too Risky)	High Risk	Transparency Obligation
AI Application Criteria	Anything that endangers humanity is prohibited, except for law enforcement purposes.	All systems that negatively impact human safety and rights must be licensed and strictly monitored.	GenAI for the purpose of generating content/media must meet transparency requirements.
Regulated Examples	1. Manipulation of human cognitive behavior 2. Social credit systems (scores) 3. Biometric identification to categorize humans 4. Biometric identification systems such as facial recognition	1. AI systems used in products that meet safety standards (toys, vehicles, medical devices, elevators). 2. AI systems in specialized fields such as: a) Management and operation of critical infrastructure b) Education and training c) Human resource management d) Access to public services e) Law enforcement and support (legal) f) Immigration, asylum, and border management	1. It is mandatory to state that the generated material/context is AI-generated. 2. A model is required to prevent GenAI from producing illegal content (e.g., pornography, crime, and negative behavior). 3. Include a summary of data containing material protected by intellectual property rights.

The use of GenAI in higher education can generally be categorised as low-risk, meaning it only needs to meet transparency obligations (Table 6). However, this is limited to the use of GenAI where the outputs are utilised to generate materials and learning aids for lecturers, enabling them to focus more on designing appropriate learning strategies for each student, supporting the progress of each student’s learning experience—including providing rapid, adaptive, and personalised feedback—and supporting students’ socio-emotional development.

Table 6. GenAI Transparency Support in Higher Education

Transparency Scope	What Lecturers/Students Must Do
1 GenAI-generated output images, audio, video, including deepfakes	Lecturers/Students using GenAI output must clearly label it as AI-generated for easy identification.
2 GenAI Model Developed	Critically evaluate the GenAI system used to determine whether it has mechanisms to prevent attempts to generate illegal content, such as pornography, crime, and other negative behavior. The academic community of higher education institutions is the frontline user, capable of protecting the public from the potential systemic negative impacts of GenAI.
3 Contains data protected by IPR	Lecturers/students are required to uphold intellectual ethics and protect intellectual property rights. If they learn that a GenAI model does not transparently publish a summary of the IPR data used, they are responsible for critically informing the public so that transparency in the AI system can be upheld.

One initiative aimed at promoting transparency in AI models is being led by the Centre for Research on Foundation Models at Stanford University in the United States, which has published the Foundation Model Transparency Index (FMTI). According to FMTI version 1.1, published in May 2024, the CRFM uses 100 indicators divided into three domains: upstream (pre-training), model, and downstream (output/post-training), and measures each evaluated system based on the presence or absence of these indicators.

Figure 13 shows the FMTI scores for various systems evaluated by the CRFM. Although transparency indicators have limitations—including the fact that they cannot be used as a benchmark for developer accountability, the indicators can be manipulated to enhance reputation, and an increase in the transparency index may divert attention from a product’s core strengths, the index can nevertheless serve as a starting point for lecturers and students in higher education to critically evaluate the Artificial Intelligence (GenAI) systems they are currently using or intend to use.



Figure 13. FMTI scores published by the Stanford CRFM in May 2024
(<https://crfm.stanford.edu/fmti/May-2024>)

The development of GenAI applications is progressing so rapidly, with increasingly broad functions and a multimodal nature (combining text, images, audio, and video), that its impact has the potential to be systemic. This warrants particular attention to AI safety aspects, which require continuous risk analysis of the social structures within which these AI systems are embedded, including social institutions, the labour market, and the environment.

Regarding the use of AI technology in the field of education, the EU AI Act also classifies it as a high-risk category. Any AI system falling within the high-risk category must undergo an assessment process prior to entering the market and throughout the product/system’s lifecycle. Any individual has the right to lodge an objection regarding such an AI system with the relevant authorities. Indonesian lecturers should also bear in mind that

the use of AI carries high risks, as shown in Table 7.

Table 7. Types of GenAI System Risk Threats (Weidinger, 2023)

Risk Threats	Definition	Example
Representation & Toxicity	Under-representing, over-representing or mis-representing a particular group, resulting in toxic content, harassment or hate speech	Generates only images of specific religions when given the prompt “place of worship” (Qadri et al, 2023)
Misinformation	Generating and facilitating the spread of false and misleading information, thereby fostering a misguided understanding within society	AI-generated images circulating on Twitter led news media to incorrectly report an explosion at the Pentagon, resulting in the collapse of US stock market (Alba, 2023)
Information and personal data security	Leaks, reproduction, and the generation of sensitive, dangerous, and personal information	AI systems leaked personal images obtained from training data (Carlini et al, 2023)
Misuse	AI systems reduce costs and facilitate malicious actors (fraud, etc.)	AI systems generate deepfakes on a massive scale (Amoroso et al, 2023)
Human Autonomy and Integrity	AI systems reduce the role and control of humans	AI systems become such trusted partners to humans that they render them unable to avoid harmful behaviour (Xiang, 2023)
Socio-economic and Environmental	AI systems reinforce inequality, causing negative impacts on employment, innovation and the environment	Exploitative practices in the data labelling process mean that data annotators are not properly valued (Stoev, et al., 2023)

Taking this background into account, the ethics of GenAI utilisation within the context of higher education learning are divided into two parts. The first part discusses AI literacy as a foundation for understanding the ethical implications for the learning process in higher education, which is discussed in the second part.

B. AI Literacy

Various theories have emerged regarding the use of AI, particularly in the post-Covid-19 era. The concept of AI literacy is necessary not only to explain the importance of understanding how this technology works, but also to ensure its wise, responsible and ethical use. For academics, lecturers and students, AI literacy skills are essential as AI plays an

increasingly significant role in learning, research and administration in higher education. AI outputs are the result of machine processing of databases obtained from various sources. Errors and biases in the data sources can also be amplified by AI systems; for example, ChatGPT is known to be capable of inventing things that do not exist (hallucinations). To address hallucinations, UNESCO has issued guidelines regarding the safe use of ChatGPT, as shown in Figure 14. It is important for academics to possess AI literacy so that they can utilise AI critically by understanding the limitations and potential of the technology.

The general definition of AI literacy is the ability to understand, evaluate, interact with, and make decisions based on information obtained from AI technology in daily life.

This encompasses an understanding of the fundamental principles of AI, recognising its applications, being aware of the ethical, social, and privacy implications, and understanding the impact and value of AI on humans and their emotions, all with a view to the responsible use of AI.

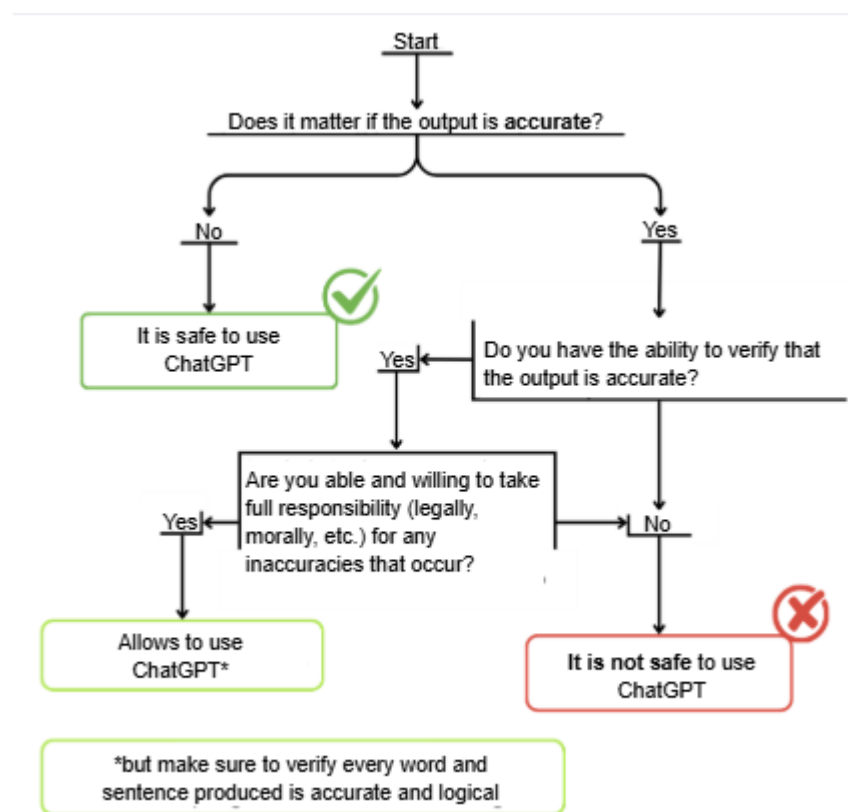


Figure 14. UNESCO guidelines regarding the safe use of ChatGPT.

AI literacy has five main components, namely:

1. Understanding of AI concepts, including machine learning, neural networks and data processing. This understanding is useful for utilising AI efficiently and being aware of the limitations of AI systems.
2. Knowledge of AI applications across various relevant fields to support productivity within the technology ecosystem.
3. Understanding the influence of AI on human emotions, so that one can interact with AI technology by prioritising emotional intelligence and empathy.
4. Knowledge of AI security and safety, including the potential risks posed by an AI

system—such as privacy breaches, algorithmic bias, and their consequences—so that one can protect personal information/data, digital footprints, and practise responsible data management when utilising AI technology.

5. Responsible use of AI is the pinnacle of AI literacy, emphasising the ethical and responsible use of AI to avoid misuse and dependency. In this regard, it begins with the ability to evaluate the GenAI technology being used, followed by the ethical and responsible application of GenAI.

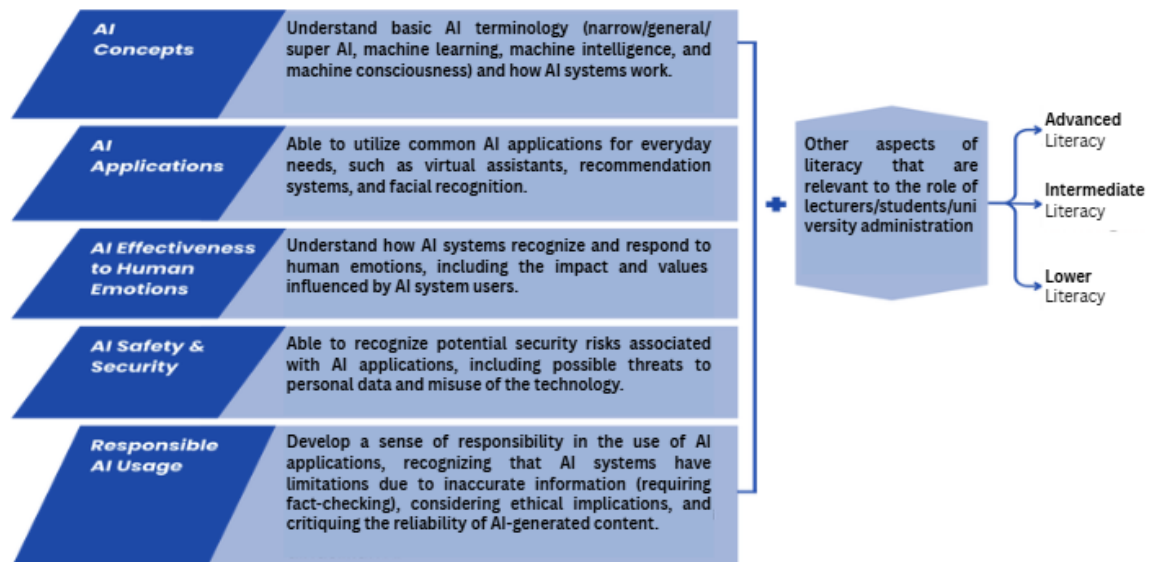


Figure 15. AI Literacy Model

The benefits of AI literacy in higher education include critical thinking skills, career readiness, improved writing skills, language learning tools, and innovative learning strategies as outlined below.

1. Critical thinking skills

Students need to possess critical thinking skills, particularly in evaluating the strengths and weaknesses of AI technology and how to use it ethically.

The essence of the critical thinking process lies in the ability to pose profound and thought-provoking questions. In response to developments in digital learning, it is important to redesign reasoning approaches to include the ability to analyse information critically, evaluate sources effectively and make independent decisions. AI can be utilised effectively and rapidly to connect and synthesise generated ideas, as well as to produce concepts based on concrete evidence and published research sources (such as ChatPDF). GenAI can assist students in analysing and visualising complex scientific data, helping them identify patterns, trends and anomalies that are beneficial for the development of their critical thinking skills.

2. Career readiness

The use of AI will become increasingly important across various industrial sectors; graduates with AI literacy who are able to utilise AI technologies such as GenAI will be better prepared to pursue their careers.

A study by EY-Parthenon (https://www.ey.com/en_gl/careers/parthenon) indicates that 59% of jobs globally are exposed to GenAI. Furthermore, there is a strong positive

correlation between income levels and the extent of AI utilisation in the workplace. This fact makes AI literacy increasingly important and relevant not only for students entering the workforce, but also for lecturers and academic staff at universities.

3. Improving writing skills

GenAI can enhance students' writing skills through the various responses it generates. Although there is a risk of technological dependency, students can utilise it to improve the quality of their writing and their communication skills.

GenAI is a useful tool for getting started with research on a topic. Proficiency in prompt engineering supports this process. Various AI-based tools and applications, such as Gamma AI, Canva, Visme AI and Tome, can help students and lecturers create effective presentation materials quickly. Lecturers can encourage their students to use AI to explore alternative perspectives, incorporate additional evidence or rework the structure of their presentations.

4. Language learning tools

GenAI can be used as a tool for learning a language through interactive dialogue.

It cannot be denied that one of the major strengths of AI today lies in its ability to translate and generate speech transcripts in multiple languages with increasingly high quality. For academics who rely on verbal and written communication to convey ideas, arguments, and scholarly perspectives, AI serves as an effective communication partner.

Several AI-based tools and applications are available for academics to review and improve their written work, such as Jasper AI, Enago Read, and Turnitin Feedback Studio. These tools can help improve students' writing skills, prevent plagiarism, and enable them to receive independent feedback on the quality of their academic writing.

5. Innovative learning strategies

Integrating AI into learning strategies will enable lecturers to open up innovative learning opportunities to further encourage students to learn actively.

AI-powered tools such as Learning Assistant make it easy for students to receive personalised support tailored to their individual learning stages. Videos, animations and simulations can be easily created using AI tools, thereby helping lecturers to produce more contextual and effective visual learning materials. By involving students in using the same AI tools to present their learning outcomes through audio-visual media, this will even foster their creativity and innovative abilities.

C. ETHICS OF GENAI USE

Higher education institutions must ensure that the utilisation of Generative Artificial Intelligence (GenAI) is carried out ethically, responsibly, and in alignment with the academic values that form the fundamental foundation of higher education. To guarantee this, every university should establish internal policies regarding the use of GenAI in learning as an integral part of its institutional academic policies. These policies must take into account the principles of trustworthiness, the responsible use of AI, and must not conflict with academic integrity, professional ethics, and the scholarly culture upheld within higher education institutions.

Within UPGRIS, policies on the utilisation of GenAI form part of the university's commitment to maintaining educational quality, scholarly integrity, and the protection of the academic community amid the digital transformation of higher education. AI must not be positioned as a substitute for human thinking processes, but rather as a strategic support tool that strengthens the quality of learning, research, and academic governance.

The ethics and regulation of GenAI continue to evolve alongside technological advancement and the changing needs of higher education. Therefore, policies governing the use of GenAI must be understood as living documents that are adaptive, open to evaluation, and subject to revision in accordance with developments in knowledge, national regulations, and institutional needs.

In the national guidelines, the ethics of GenAI use consist of four main aspects: academic integrity, security and data protection, equality and accountability, and environmental impact. To strengthen implementation within UPGRIS, the fundamental principles of AI utilisation must also be clearly emphasised as the normative foundation for the use of this technology. These principles include academic integrity, transparency, accountability, fairness and inclusivity, data security and privacy, and a human-centred AI approach. The ethics of GenAI use for learning in this guide consist of four main points, namely: (a) Academic Integrity as an embodiment of a university's core values, (b) Data Security and Protection, which carry the highest potential for vulnerabilities and risks when associated with digital technology, (c) Equity and accountability in addressing potential disparities arising from the use of GenAI, and (d) Environmental impact resulting from the use of GenAI.

1. Academic Integrity

The ICAI (International Centre for Academic Integrity) identifies six values related to academic integrity, namely: honesty, trust, fairness, respect, responsibility, and courage. Honesty is the foundation for every learning interaction that fosters trust in a person or entity within the academic environment, cultivates a sense of justice, honourable behaviour and mutual respect, as well as the courage to take responsibility for every behaviour and action of every individual (lecturers, students, academic staff).

One of the negative responses to GenAI from the education sector is the increasing ease with which such tools facilitate dishonesty and misinformation. On the one hand, the use of GenAI, such as ChatGPT, makes it easier for students to complete assignments, compile reports and write; on the other hand, academic requirements demand that students carry out their work independently.

Students' critical thinking needs to be fostered in the classroom when using GenAI, as the content generated is machine-generated output that may not necessarily reflect proper analytical processes; it may be inaccurate, potentially misleading, or even fabricated (often referred to as 'hallucinations'). In certain situations, lecturers may even prohibit the use of content generated by GenAI. The challenge lies in how lecturers and students can identify and distinguish between content generated by GenAI and that which is not.

The industry has responded to this challenge with various tools such as Turnitin AI Detection, Copyleaks, and GPT Zero, which enable the detection of GenAI usage in written work or assignments submitted by students. For example, Turnitin Originality

(Figure 16) is claimed to be capable of detecting new forms of academic misconduct caused by the use of GenAI, such as GenAI-generated text, cheating, and AI paraphrasing—which is often used to obscure content generated by tools like ChatGPT.

However, there are certainly various ways to continue utilising GenAI whilst evading these detection tools, including:

- Rewriting every title that forms the framework of the text generated by GenAI in one's own words, Using GenAI solely as a research and information-gathering tool, not as a content generator, so that students retain control over their ideas and the outcomes of their thinking,
- Maintaining a human touch in written work by not relying entirely on sentence structures generated by applications, such as Grammarly, and retaining one's own writing style,
- Avoiding and resisting the temptation to use applications such as Quilibot for paraphrasing, and instead formulating one's own words so that the flow of the text remains intact, clear and coherent.
- Ensure a clear writing structure from the introduction, through citations, to the conclusion. When quoting arguments from other works, it is vital to cite correctly so that the text is not mistaken for GenAI content.
- Avoid terms, keywords and pronouns frequently used by GenAI; where possible, use detection tools to manually rewrite sections identified as GenAI output.

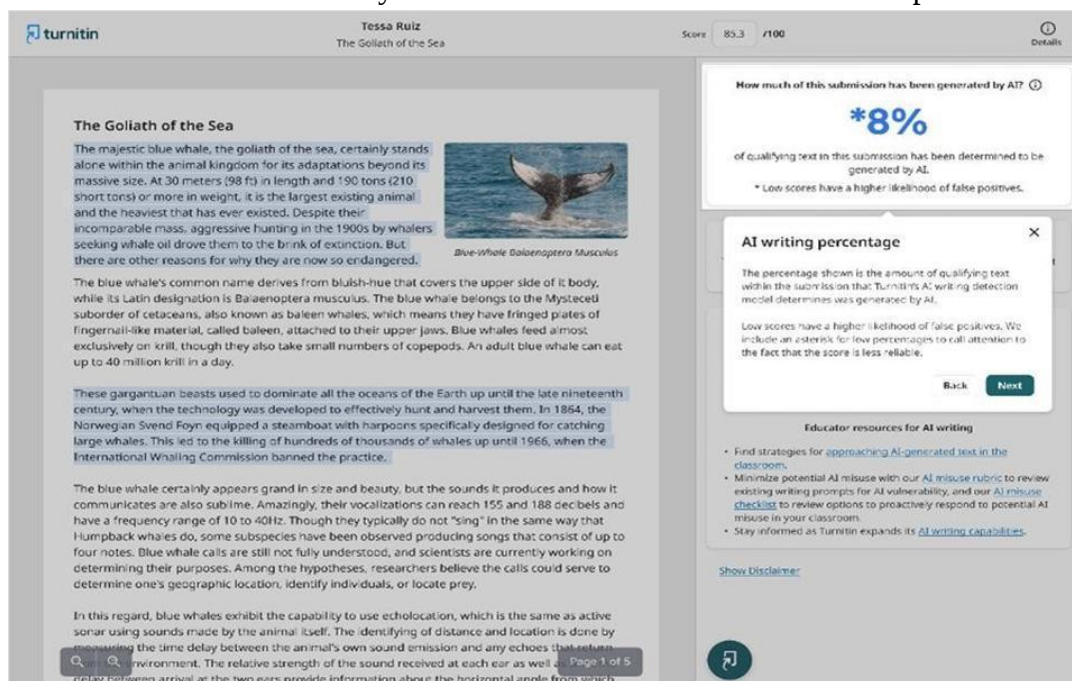


Figure 16. Turnitin AI Detector (Originality) interface

The use of technology in academic work is now unavoidable. Lecturers need to prioritise the process rather than relying solely on learning outcomes, to motivate students, stimulate curiosity, and encourage critical and ethical thinking through evaluative and reflective feedback, as well as opportunities for revision. Teaching methods such as Student-Centred Learning (SCL), Higher Order Thinking, and Flipped Learning have become an alternative to classroom learning activities compared to traditional

lectures traditional. Each session is used for discussions that reflect on individual students' understanding and mastery of the tasks they are working on, for example through presentations followed by a question-and-answer session or discussion.

Various forms of feedback and questions that can be provided include:

- a) Asking students to describe how they utilised GenAI to complete the assignment and to reflect on the process they experienced, the challenges and difficulties encountered, how they overcame these challenges, and the key lessons learnt.
- b) Asking students to practise how to formulate effective prompts.
- c) Ask students to critically evaluate the GenAI output obtained in terms of its accuracy, reliability, bias, quality, and so on.
- d) Requiring students to conduct investigations, fact-check, critique, and edit or rewrite texts generated by GenAI.
- e) Develop students' metacognitive skills to reflect on the role of GenAI in complementing, contributing to, or even failing to replace their own contributions, by comparing their independent work with the results obtained from GenAI. This helps students recognise their own strengths, tendencies, and perspectives.

In addition to implementing learning strategies that critically utilise GenAI, lecturers can also take various steps to prevent breaches of academic ethics and integrity, namely by emphasising the consequences of cheating and providing guidelines on matters to be considered regarding assignment completion and the use of GenAI. A checklist-style guide can be found in the Appendix – AI Ethics Checklist for Students. For example: Before completing an assignment: “Have I made an effort to maintain the writing style and language used in this assignment? (Yes/No)”. When submitting the assignment: “Have I clearly explained or outlined my writing structure, which sources were used and which were not, why I chose those sources, how I selected the examples/evidence provided, and have I included my own opinions, ideas, or personal experiences in the text? (Yes/No)”. Students are asked to reflect on the process of completing their assignment by striving to meet the criteria on the checklist, and if they answer ‘no’, they are asked to explain what steps they took in an effort to address or meet those criteria.

In addition to efforts to prevent ethical breaches, lecturers can also develop forms of activities/assignments centred on human behaviour, as follows:

- a) Clearly communicate written expectations and their relevance to the assigned task or activity. Specify when the use of GenAI is permitted and when it is prohibited. When permitted, ensure students document and clearly cite attribution, and demonstrate their critical process in validating or verifying the output generated by GenAI.
- b) Allow collaborative practice amongst students to jointly identify errors, correct/revise, and represent their thought processes.
- c) Provide opportunities for students to revise and resubmit their work to encourage their growth and development.
- d) Encourage multimodal and creative forms of communication/presentation of assignment results (audio, memos, podcasts, videos, infographics, websites, presentations, etc.).
- e) Encourages students to connect their learning material with real life, thereby

intrinsically motivating them to learn within a personal context.

- f) Fostering a “growth mindset” by training students to set their own learning goals and reflect on the progress they have made throughout the semester.

2. Security and Safety in the Use of GenAI

GenAI technology, which is based on Large Language Models (LLMs), poses potential threats to the security of users’ personal data. When interacting with AI, users may intentionally or unintentionally input personal data that will become part of the training data for the AI model. The potential leakage of personal data in this process threatens the security and safety of individuals as the owners/sources of that data.

In Indonesia, the protection of personal data is governed by Law No. 27 of 2022 on the Protection of Personal Data. The use of GenAI is not without risks to data safety and security. Every user should bear in mind at least the following four points:

a) Data security

Data exchange via the internet carries a high risk of interception, collection of confidential data and data falsification. Therefore, every user needs to understand the methods of criminal activity that threaten data security. The use of encryption technology, anonymity and strong authentication, such as two-factor authentication, should be prioritised whenever possible when using various information technology products and utilising GenAI.

b) Data confidentiality

When lecturers or students use GenAI, it is important to be cautious when entering prompts. Avoid entering data classified confidential, such as non-public research data, financial data, HR data, student data, and medical information. GenAI applications are generally not configured to operate in a closed/private manner, thus potentially leaking such sensitive/personal information to unauthorised parties. Where it is deemed necessary to input such data, an assessment and approval from the unit responsible for information security at the university are required.

c) System security

Caution is required when granting permissions or access to GenAI applications, as hidden malware threats could lead to data theft and the irresponsible misuse of access rights. Users must exercise greater caution when granting permissions or access to the various applications they use, including communication channels such as email, messages, and phone calls (voice).

GenAI technology has the potential to be misused to lure potential victims through phishing or even deepfakes (in the form of video/audio that falsifies a person’s identity), so every user of digital technology must exercise caution. The unit responsible for information security at the university must actively organise activities (training, seminars, awareness-raising) to heighten the academic community’s vigilance against system security threats.

d) Awareness of tracking activities

Tracking activities by technologies such as GenAI may utilise activity tracking mechanisms as part of improving the efficiency and quality of their services.

Technologies such as web cookies can speed up browsing activities, but they carry the potential for activity tracking or data leaks beyond their original intended purpose.

Most information technology service providers generally provide information regarding the tracking activities they undertake in their guidelines or terms and conditions pages; however, due to the length of these pages, users often do not read them carefully and simply agree to them in order to gain access to the services they require. Therefore, preventive measures should be taken, such as clearing unnecessary cookies (or regularly deleting the cache/cookies), using security applications (antivirus/antimalware) on their computers (or using a secure browser), and, where necessary, enabling tracker blockers on the computers or smartphones they use.

The growing concern regarding the ethical implementation of GenAI technology means that the industry and its developers are required to pay greater attention to privacy issues and apply personal data protection standards to their systems. For users, this means having the opportunity to choose which GenAI service providers meet these requirements (compliance) and which that is not the case. Although this is still merely a recommendation, various initiatives will soon emerge to develop it into a standard that users can easily identify. This will protect users when they are choosing the technology products they need, without having to go through the process of carefully reading lengthy terms and conditions that may not be understood by the general public. Some industry standards relating to security and the protection of personal data are ISO 27001 and ISO 27701.

GenAI technology is not only utilised by end users, but can also form part of a business process (process flow) for specific activities. A lecturer using GenAI to assess their students' assignments, for example, might utilise other students' work to detect signs of plagiarism, or even use it as a benchmark for assessment, or to provide automatic feedback to their students. It is not uncommon for the material used to contain sensitive information, or even to be biased, outside the context of both the academic discipline and the subject being studied. Lecturers' understanding of GenAI data sources, the risks of potential bias, and the potential for data leaks is crucial to ensuring the responsible use of GenAI technology.

3. Equity, Transparency, and Accountability

Concerns regarding equity in the context of Generative AI were highlighted in the 2023 World Economic Forum (Data Equity: Foundational Concepts for Generative AI) in the form of four types of equity:

a) Representation Equity

Marginalised groups are often under-represented in the datasets used for training, which can lead to bias that users must address wisely.

b) Feature Equity

In addition to groups and communities, the datasets used must also include inclusive features and attributes such as race, gender, location and income to further reduce bias and inequality. In the application of GenAI, such inequalities influence the outputs generated by GenAI.

c) Access Equity

The use of technology cannot be separated from the AI literacy gap. Not all GenAI users have access to the same technological facilities, nor to the same quality of facilities.

d) Outcome Equity

The outputs of GenAI must be fair and unbiased. In addition to ensuring that the models used are free from bias, it is crucial to ensure that the outputs of GenAI technology do not result in injustice for any group of individuals. These efforts must be accompanied by transparency and openness regarding information (particularly regarding the objectives of GenAI usage), and attitudes shared responsibility when utilising AI technology, particularly with regard to affected targets or subjects.

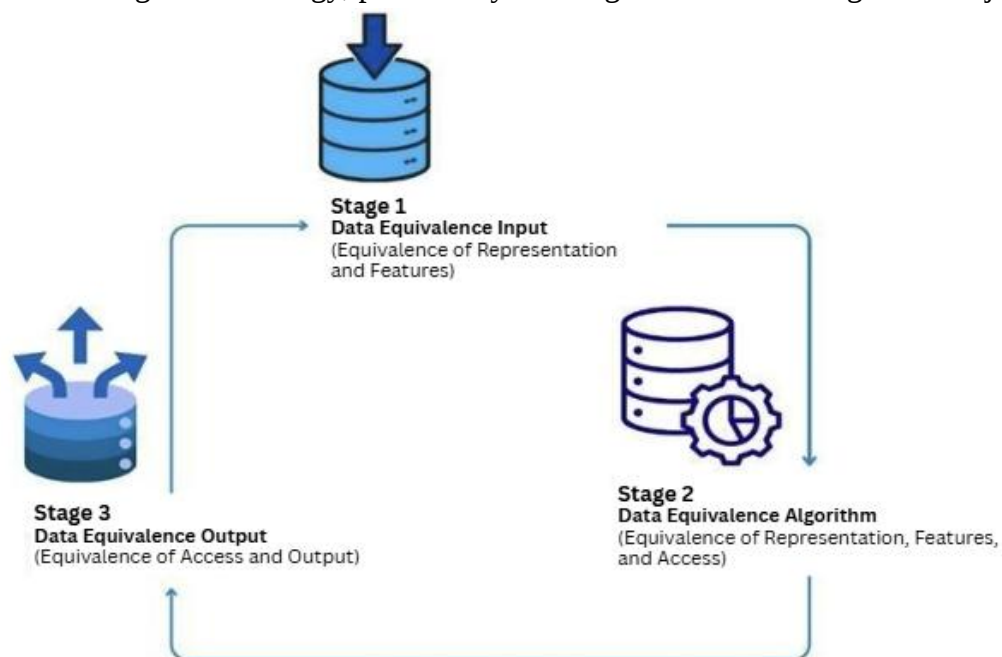


Figure 17. Equity within a Data Cycle in Generative AI Technology (WEF: Data Equity Concepts Generative AI 2023)

Figure 17. illustrates the existence of different types of equity based on the data lifecycle in AI technology. From the user's perspective, the equity of immediate concern is access and output equity at stage 3 (Data Output). However, this does not mean that other aspects of equity can be ignored. An understanding of feature equity and representational equity is crucial to ensuring that the output equity generated by GenAI can be achieved.

Higher education institutions need to take these equity factors seriously. Academics often worry more about the impact of GenAI on academic integrity than the risk of bias inherently embedded in the algorithms used in computer programmes. Yet the use of GenAI in higher education is not limited solely to the learning process, but also extends to various supporting learning activities. For example: GenAI can be used to identify applicants and conduct the selection process, as well as to predict students' success in their studies. Such forms of utilisation have the potential to replicate structural biases that may already exist (for instance: a tendency to select students from specific schools or particular

regions/cities).

The potential for bias in the outputs generated by GenAI must be critically addressed by lecturers and articulated to students within GenAI-based learning processes. Methods employed to foster critical thinking skills, whilst beneficial for enhancing academic quality and integrity, are also highly relevant in addressing bias. Indeed, indications of bias can serve as a compelling topic for discussion when fostering learning reflection in the classroom.

In addition to output equity, another important issue to be mindful of is access equity. There are many GenAI applications that are only available through paid subscription schemes. For example, all students can access ChatGPT for free, but only a handful of students can afford to access ChatGPT Plus – which is more flexible and more accurate – at a cost of \$20 per month. Access gaps based on purchasing power will lead to differences in the quality and learning experience of students, which ultimately affect learning outcomes.

In addition to purchasing power, geographical conditions, the quality and capacity of devices or gadgets owned, and the quality of internet access (bandwidth and coverage) also contribute to the access gap. The issue of equitable access must be addressed by providing affordable information access infrastructure for every student at higher education institutions. Internet access services for all students, and computer facilities/computer laboratories with sufficient computing capacity for the responsive use of GenAI, are examples of efforts that higher education institutions can undertake to address these access equity challenges.

To provide a clearer picture of equity issues, here is an example of a scenario that might occur at a university.

A lecturer from the Social and Humanities group utilizes GenAI technology to assist with consultations and evaluations of students' learning in his class. Students are also permitted to utilize GenAI technology in their learning process and when completing assignments.

At the beginning of the lecture, information on the use of GenAI technology is clearly communicated to students, along with the purpose of its use:

1. To provide students with access to interactive consultations to help them understand the lecture material (students understand that GenAI will assist in discussions and provide responses to student questions).
2. Assignments submitted are assessed by GenAI to verify the authenticity of their work based on the entire collection of assignment data (including that obtained from ongoing classes). An authenticity score is the minimum requirement for assignment acceptance. Students can access the detection tool directly.
3. Students are permitted to utilize GenAI technology in formulating their work, but must adapt it to reflect their own ideas and critical thinking.
4. In addition to verifying authenticity, lecturers also utilize GenAI to provide feedback to students on their learning progress.

- a) Access Equity: when implementing this GenAI-based learning method, lecturers must first assess the students' access to the technology and tools being used. Most students state that they are only able to use free GenAI tools, which have limited capabilities; however, some students are able to access paid services with far greater capacity and speed. This will lead to an output gap within the class.
- b) Equity of Outcomes: this disparity in access results in the class being segmented into three groups:
 - 1) The group that no longer considers GenAI to influence their learning outcomes. This group is not interested in utilising GenAI technology to aid their learning process and tends to complete assignments using conventional methods, conducting literature reviews, and using search engines. Feeling marginalised, they frequently question the lecturer's policy of over-reliance on GenAI in teaching and take issue with GenAI feedback deemed inappropriate for the context and subject matter being studied.
 - 2) The group using free GenAI and attending classes as they are. This group completes assignments to the best of their ability and relies on authentication tools to check their work to meet minimum requirements. Feedback from GenAI encourages them to seek alternative solutions combining GenAI with conventional literature reviews.
 - 3) The group using paid GenAI. This group was also divided into two: those who effectively utilised their technological access to optimise the quality of their learning, and those who became overly reliant on the technology, thereby failing to hone their critical thinking skills when completing their assignments or responding to the feedback provided.

Lecturers must, of course, address this issue of output parity and implement appropriate interventions. The following interventions are necessary:

- 1) Lecturers should evaluate and determine which GenAI applications may be used based on the capabilities, limitations, ethical considerations, potential biases and data security of each application.
- 2) Ensuring that every student uses GenAI critically by applying the strategies discussed in the section on academic integrity.
- 3) Enforcing the following prohibitions on students:
 - i. Not completing assignments entirely using GenAI. Students must be able to demonstrate critical thinking and learning experiences in their work. GenAI is merely a tool and is not intended to replace these processes.

- ii. Not using GenAI for cheating or unethical practices. Students must not use GenAI to commit academic dishonesty (referring to the academic ethics policies of the programme/university).
- iii. Do not enter sensitive information or personal data into GenAI applications to ensure the security and protection of such data.
- iv. Do not assume that GenAI is always correct or accurate. Students must be aware of the potential for hallucinations and always verify the accuracy and relevance of the generated responses.
- v. Do not neglect citation obligations even when using GenAI
- vi. Do not rely entirely on GenAI for learning. For certain assignments, students are required to collaborate with their classmates.

When intervening, lecturers also focus on aspects of transparency and accountability.

Regarding transparency, lecturers stipulate that any material or content generated by GenAI must be accompanied by clear information on how that content was produced. This ensures transparency for GenAI users and protects them from accountability claims regarding the content or material they generate.

The lecturer issues guidelines for creating proper attribution as part of acknowledging the content generated by GenAI. Figure 18 shows an example of GenAI content attribution; with this mechanism, academic integrity is better safeguarded.

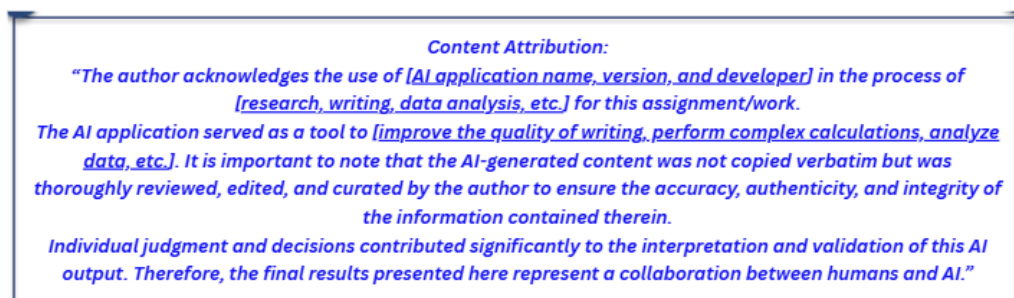


Figure 18. Example of Attribution for Content Generated by GenAI

4. Human-Centred AI

UPGRIS positions the utilisation of Generative Artificial Intelligence (GenAI) within a human-centred AI approach, namely the principle that artificial intelligence must remain under human control and be used to strengthen human capacity rather than replace it. This approach emphasises that technology serves as a strategic support tool in higher education, while human beings remain the central focus in the learning process, decision-making, character development, and the advancement of knowledge.

In the context of higher education, AI has the capability to generate text, analyse data, formulate recommendations, and provide responses that appear intelligent and convincing. However, AI does not possess moral awareness, empathy, pedagogical intuition, ethical responsibility, or the wisdom inherent to human beings. AI operates based on probabilistic patterns derived from training data, rather than on an understanding of values, social context, or human considerations. Therefore, AI cannot replace the role

of lecturers as educators, mentors, and character builders, nor can it replace students as active participants in the learning process.

Lecturers remain the primary actors in education. Their role extends beyond delivering content to guiding critical thinking, instilling academic values, fostering scholarly culture, and developing students' character. AI may assist lecturers in preparing teaching materials, designing assessments, analysing learning outcomes, or providing initial feedback, but pedagogical decisions must remain the responsibility of lecturers based on professional judgement and academic ethics.

Likewise, students must remain the principal agents in the learning process. GenAI must not be used to replace thinking, writing, research, or reflective learning. Students must remain the owners of their ideas, the primary authors of their academic work, and the parties responsible for their scholarly outputs. Excessive dependence on AI may weaken critical thinking, creativity, problem-solving abilities, and independent learning, all of which are central objectives of higher education.

The human-centred AI approach also emphasises that academic decisions must not be entirely delegated to AI systems. The assessment of learning outcomes, evaluation of student achievement, graduation decisions, student admissions, academic promotion, and institutional policymaking must remain under human authority. AI may be used as an analytical tool or decision-support system, but it must not serve as the final decision-maker. This is essential to prevent algorithmic bias, systemic injustice, and the loss of accountability in academic governance.

In research, AI may assist with literature exploration, preliminary data analysis, language editing, and information visualisation, but it cannot replace scientific reasoning, methodological judgement, or the ethical responsibility of a researcher. Researchers remain fully responsible for ensuring data validity, analytical accuracy, and the scholarly integrity of the entire research process.

The principle of human-centred AI is also closely related to character development and human values. Higher education is not only intended to produce graduates who are academically competent, but also individuals who possess integrity, social empathy, moral responsibility, and the ability to make wise decisions. These values cannot be generated by technology; they are formed through human interaction, learning experiences, ethical reflection, and a healthy academic culture.

As a higher education institution that upholds the values of excellence and identity, UPGRIS affirms that the utilisation of AI must support the strengthening of human quality rather than create technological dependence that weakens intellectual capacity and academic character. Technology should be used to expand intellectual capacity, accelerate innovation, and improve the effectiveness of learning, while always remaining within the framework of human responsibility.

Thus, human-centred AI serves as a fundamental principle in the utilisation of GenAI within UPGRIS. AI must be understood as a strategic partner in higher education, not as a replacement for human beings. Humans remain the central focus of education, while technology functions as a means to strengthen the quality of learning, research, community service, and sustainable university governance.

5. Digital Literacy and AI Literacy

The effective, safe, and responsible utilisation of Generative Artificial Intelligence (GenAI) requires adequate digital literacy and AI literacy among all members of the academic community. The presence of AI in higher education cannot be addressed merely through the ability to use applications or technological platforms; it requires a deeper understanding of how the technology works, its opportunities, limitations, risks, and ethical implications.

Digital literacy refers to an individual's ability to access, understand, evaluate, use, and produce information through digital technology in a critical, safe, and responsible manner. In the context of higher education, digital literacy includes the ability to identify valid academic sources, understand data security, maintain ethical behaviour in digital environments, avoid misinformation, and utilise technology to support learning processes and the advancement of knowledge.

AI literacy, meanwhile, is an extension of digital literacy that specifically focuses on understanding artificial intelligence technology. AI literacy does not simply mean being able to use ChatGPT, Gemini, Copilot, or other GenAI applications, but also understanding how these systems operate, how outputs are generated, and how users should critically respond to the results produced by AI.

The national guidelines emphasise the importance of AI literacy as the ability to understand the fundamental principles of AI, evaluate generated outputs, recognise potential bias, and understand the social and ethical implications of its use. In practice, many users assume that AI responses are always correct because they are presented convincingly, whereas GenAI operates based on probabilistic prediction rather than absolute truth. This creates the risk of hallucination, where information appears valid but is actually incorrect, inaccurate, or even entirely fictitious.

For this reason, students and lecturers must have the ability to verify, validate, and critically assess every output generated by AI. References provided by AI must be checked against primary sources such as academic journals, scholarly books, conference proceedings, official regulations, or other reliable databases. AI must not be treated as a primary source in academic writing, but only as a tool for initial exploration, the development of conceptual frameworks, or support in analytical processes.

AI literacy also includes the ability to construct effective prompts (prompt literacy). The way users provide instructions significantly determines the quality of the output generated by AI. Students and lecturers need to understand how to formulate questions that are clear, specific, contextual, and aligned with academic objectives so that AI can provide more relevant and accurate support. However, the ability to create prompts is not the final objective; rather, it is part of the critical thinking process in using technology intelligently.

In addition, AI literacy requires awareness of algorithmic bias and data inequality. AI systems are trained using vast amounts of data that are not always free from social, cultural, economic, or geographical bias. As a result, users must understand that AI outputs may reproduce inequalities that already exist within society. Critical awareness of such bias is an essential part of maintaining academic fairness and the quality of learning.

Within UPGRIS, strengthening digital literacy and AI literacy is an important part of higher education transformation. Students need to be equipped with the ability to use AI productively without losing independent learning capacity, while lecturers need to develop pedagogical competence in order to utilise AI appropriately in teaching, assessment, and curriculum development.

UPGRIS must provide continuous training, workshops, mentoring, and reskilling programmes for lecturers, students, and administrative staff so that the use of AI is not merely technical, but also critical, reflective, and ethical. AI literacy must become part of academic culture rather than simply an additional skill.

Ultimately, the success of GenAI utilisation is not determined by the sophistication of the technology used, but by the quality of the people managing it. Digital literacy and AI literacy form the fundamental foundation that enables the academic community to use technology intelligently, responsibly, and while continuing to uphold scholarly values and humanity in higher education.

6. Environmental Impact and Sustainability

The utilisation of Generative Artificial Intelligence (GenAI) in higher education must not only be viewed from the perspectives of academic practice, ethics, and data security, but also from the perspective of environmental impact and sustainability. The increasingly widespread development of digital technology, including the use of AI in learning, research, and institutional governance, carries ecological consequences that are often not immediately visible to users.

Every digital activity fundamentally requires substantial computational infrastructure, such as servers, internet networks, cloud computing, and particularly data centres. GenAI systems operate through highly intensive computational processes and depend heavily on data centres that consume large amounts of electrical energy and require significant volumes of water for cooling systems. The national guidelines emphasise that the use of digital technology, including GenAI, is directly linked to high energy consumption and water resource usage, thereby requiring awareness and responsibility in its application.

Activities that appear simple, such as searching for information through AI, storing documents in the cloud, sending emails, using chatbots, or processing documents through GenAI, actually contribute to the digital carbon footprint. The greater the intensity of uncontrolled digital technology use, the greater the environmental impact, particularly in the form of carbon emissions, energy consumption, and the use of natural resources.

In the context of higher education, digital transformation must not be oriented solely towards efficiency and convenience, but must also consider the principle of sustainability. Higher education institutions carry a moral responsibility not only to produce graduates who are academically capable, but also individuals who possess ecological awareness and social responsibility towards environmental sustainability.

Therefore, the use of AI must be carried out wisely, proportionately, and efficiently. Members of the academic community should avoid excessive use of technology without clear academic purpose. The utilisation of GenAI should be oriented towards substantive

needs rather than merely following technological trends. Efficient use of digital devices, proper data storage management, the use of relevant systems, and the reduction of unnecessary digital activity all form part of ecological responsibility in the AI era.

In addition, higher education institutions should begin to consider environmental aspects in the selection of technological platforms and solutions. Service providers that demonstrate commitment to energy efficiency, environmental protection, and sustainable governance should be taken into account in institutional decision-making. In the future, sustainability issues may even become an important component in evaluating the quality of educational technology providers.

The utilisation of AI also opens new opportunities for research and innovation related to environmental sustainability. Universities can encourage research examining the relationship between AI, energy, climate change, carbon emissions, and the development of green technology. In this way, AI becomes not only a source of energy consumption, but also a tool for generating solutions to global environmental challenges.

As a future-oriented higher education institution, UPGRIS believes that digital transformation must progress alongside ecological responsibility. The use of AI must support sustainable development rather than increase the environmental burden that future generations will have to bear. This awareness is aligned with educational values that focus not only on intellectual achievement, but also on moral and social responsibility.

Thus, the principle of environmental impact and sustainability emphasises that the use of GenAI must always consider the balance between technological innovation and environmental preservation. AI must become part of the solution towards a sustainable future, rather than a new source of problems for the continuity of human life and the global ecosystem.

7. Responsible Educational Transformation

The utilisation of Generative Artificial Intelligence (GenAI) must form part of a responsible, well-directed transformation of higher education that is oriented towards improving academic quality, rather than merely adopting technology in response to changing times. Digital transformation in education should not be understood simply as the use of new tools or applications, but as a paradigm shift in the processes of learning, teaching, research, and institutional management in higher education so that they become more adaptive, relevant, and sustainable.

The presence of AI offers significant opportunities to strengthen the quality of learning through personalised learning materials, adaptive assessment, stronger independent learning, analysis of learning outcomes, and the development of more flexible learning systems. However, technology must not displace the primary purpose of higher education, which is to develop individuals who think critically, uphold integrity, possess social awareness, and are capable of making meaningful contributions to society.

Responsible educational transformation means that the use of AI must remain grounded in clear pedagogical objectives. Technology should be used to strengthen the learning process, not to replace it. Lecturers are not merely providers of content, but

facilitators of learning, intellectual mentors, and builders of character. Students are not simply users of technology, but active learners who are capable of reflective, creative, and independent thinking.

In the context of UPGRIS, AI-based educational transformation must be aligned with the implementation of Outcome-Based Education (OBE), Merdeka Belajar Kampus Merdeka (MBKM), and the strengthening of 21st-century competencies. AI can support the design of outcome-based learning, the development of authentic assessment, interdisciplinary collaborative projects, problem-based learning, and learning experiences that are more contextual and relevant to the needs of the labour market and society.

The use of AI must also support the strengthening of Student-Centred Learning (SCL), Higher Order Thinking Skills (HOTS), and reflective learning. Academic tasks should no longer focus solely on final outputs, but on thinking processes, the ability to analyse, evaluate, create, and students' ability to reflect on their own learning processes. In this context, AI can serve as a support tool that enriches these processes, provided that it does not replace students' intellectual responsibility.

Responsible educational transformation also requires changes in learning evaluation systems. Lecturers need to adjust assignment formats, assessment methods, and teaching strategies so that they remain relevant in the AI era. Assessment should not rely solely on final products, but must emphasise process, argumentation, reflection, presentations, discussions, and the ability to justify one's work. This approach helps preserve academic integrity while ensuring that students genuinely learn rather than merely produce outputs with technological assistance.

Beyond learning processes, responsible educational transformation also includes institutional governance. AI may be utilised to support quality assurance systems, academic data analysis, student services, data-driven decision-making, and the efficiency of university administration. Nevertheless, the use of AI in governance must continue to uphold the principles of transparency, fairness, accountability, and the protection of the rights of the academic community.

As a higher education institution that upholds the values of excellence and identity, UPGRIS must ensure that digital transformation does not undermine academic identity and the human values that form the foundation of the institution. Technology should strengthen scholarly culture, professionalism, collaboration, and social responsibility, rather than create dependency or reduce the quality of human interaction in education.

Responsible educational transformation also requires institutional readiness through clear policies, the enhancement of lecturers' and students' competencies, the strengthening of digital infrastructure, and monitoring systems that are adaptive to technological developments. Without sound governance, the use of AI may instead create new problems, such as inequality of access, academic misuse, and a decline in learning quality.

Ultimately, the success of educational transformation in the AI era is not measured by how much technology is used, but by how significantly it contributes to improving graduate quality, strengthening academic integrity, and enhancing the value of education for society. AI must serve as a strategic instrument for producing graduates who are

excellent, professional, adaptive, and of strong character.

Thus, responsible educational transformation emphasises that the utilisation of GenAI within Universitas PGRI Semarang must always be directed towards strengthening the quality of the tridharma of higher education and realising higher education that is innovative, ethical, and sustainable in the era of artificial intelligence.

BAB IV UTILISATION OF GENAI WITHIN UPGRIS

GenAI has the potential for widespread use in higher education, as shown in Figure 19.

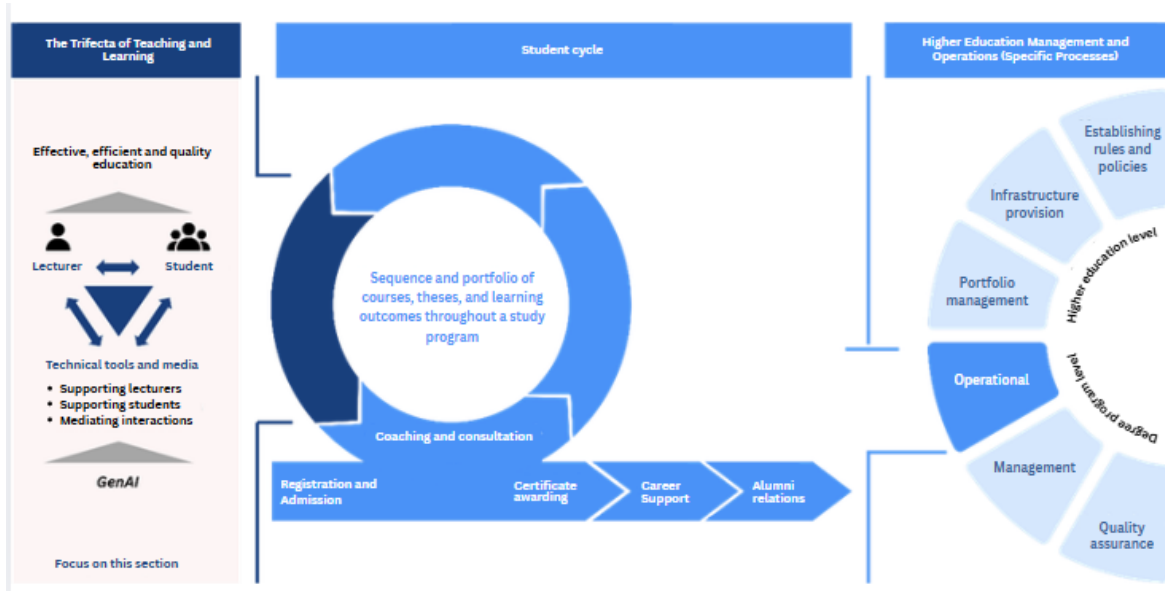


Figure 19. Potential Applications of GenAI in Higher Education

The use of GenAI can be classified according to its purpose: (a) Use by students for learning. Students can utilise GenAI to acquire knowledge more quickly and efficiently. Student assignments can be completed more effectively, (b) Use by lecturers for the learning process. GenAI can enhance the effectiveness, efficiency and quality of higher education, and (c) Use for the administration of higher education institutions. With GenAI, higher education institutions can be managed more efficiently and effectively.

A. USE OF GENAI BY STUDENTS

1. Potential Uses of GenAI by Students

Students can utilise a variety of available GenAI applications, both paid and free, for example to:

- a) Assisting with finding references and reading materials. GenAI can help students find relevant references and literature. One example of GenAI's application in searching for references and reading materials is through applications such as Open Knowledge Maps and Connected Paper. Open Knowledge Maps enables students to explore various interconnected fields of knowledge, visualise relationships between concepts, and discover new relevant topics. The information obtained from Open Knowledge Maps can then be used for prompting on platforms such as Connected Paper. Connected Paper enables students to find scientific articles related to the topics they are studying, taking into account the context and relevance to their field of research or study.

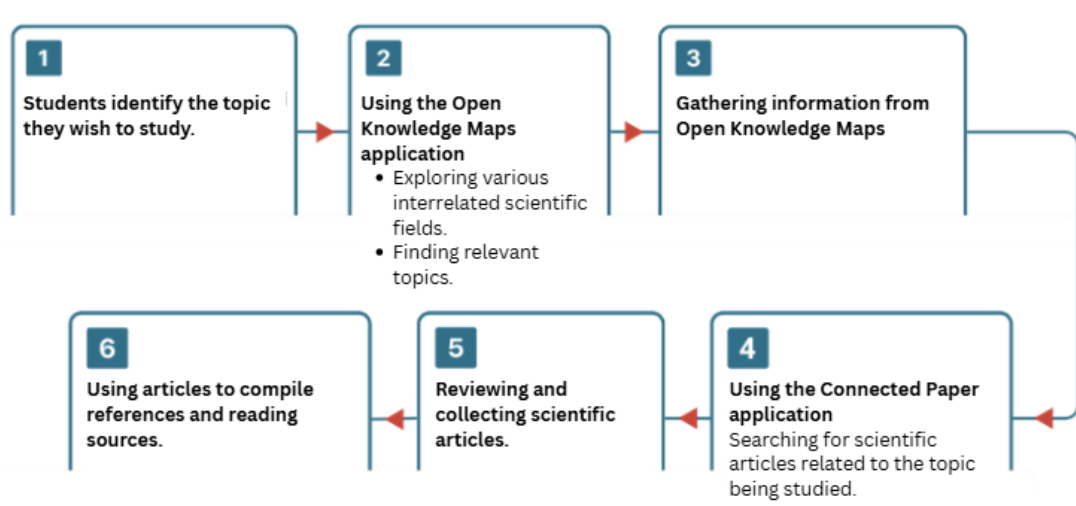


Figure 20. GenAI to Help Students Find References and Reading Materials

- b) Helping to generate writing ideas. GenAI can be used to generate relevant writing ideas and help students develop their writing. One GenAI application that can be used is OpenAI ChatGPT. Students begin by entering a general topic they wish to write about into ChatGPT; ChatGPT will then generate various ideas that can serve as inspiration. Students can select the idea that is most interesting and relevant to their interests, and then use that idea as a basic framework to develop their writing.

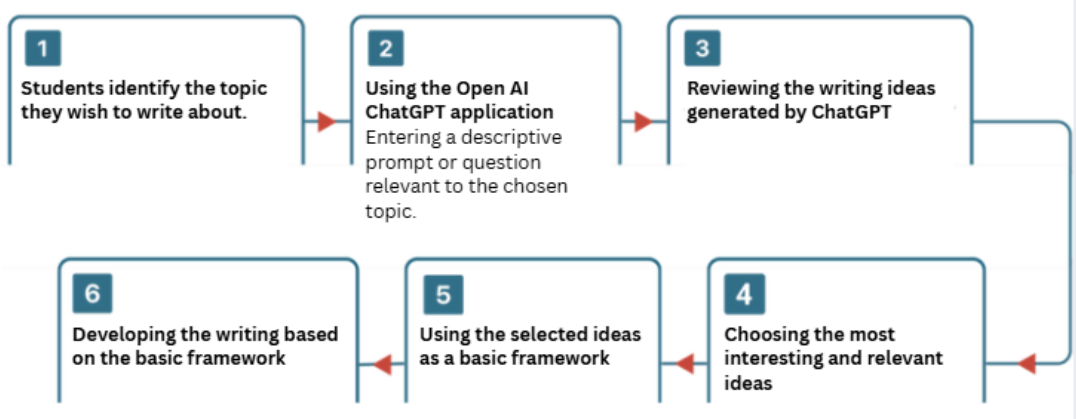


Figure 21. GenAI to help students generate writing ideas

- c) Assisting with writing, creating presentations and multimedia content. GenAI can help students with their writing, create presentations by providing appropriate design and content suggestions, and organise multimedia content more efficiently. One GenAI application that can be used is Magic Slides to help students create initial drafts of their presentations. Students can use prompts such as “Help me create a presentation on ‘The Impact of Climate Change on Marine Ecosystems’.” Magic Slides will provide slide design suggestions that align with the theme and recommended content based on the information entered, enabling students to quickly create engaging and informative presentations.

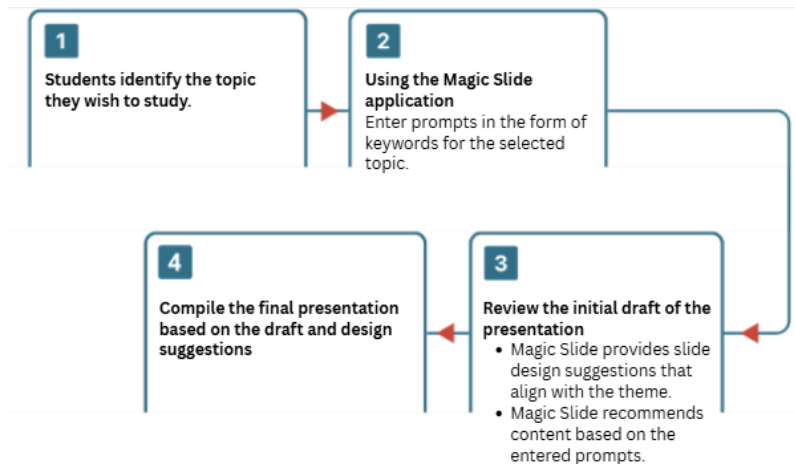


Figure 22. GenAI to help students create presentations

- d) Generating learning exercise materials. GenAI can create practice questions tailored to students' learning needs. One GenAI application that can be used is QuizBot to create practice questions relevant to their study topics. Students can use a prompt with their desired topic, for example, "Microeconomic Theory." QuizBot will use generative algorithms to generate a set of questions on the desired topic. These questions can be tailored to the desired level of difficulty or specific focus required, such as the application of concepts or case analysis.

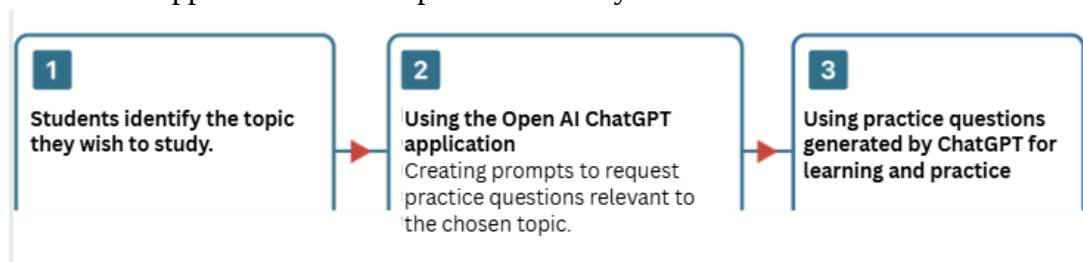


Figure 23. GenAI for generating learning practice materials

- e) Helping to understand difficult study material. GenAI can explain difficult concepts in a way that is easier to understand, helping students grasp the subject matter. One GenAI application that can be used is ChatGPT. Students can start by entering a concept or topic that is difficult to understand, for example, "Quantum Theory in Physics." By using ChatGPT, students can submit a prompt such as "Please explain 'Quantum Theory in Physics' in simple terms." ChatGPT will generate an explanation that is easier to understand, breaking down complex concepts into simpler language. This explanation may include analogies, examples, or illustrations that help students gain a better understanding of the difficult subject matter.

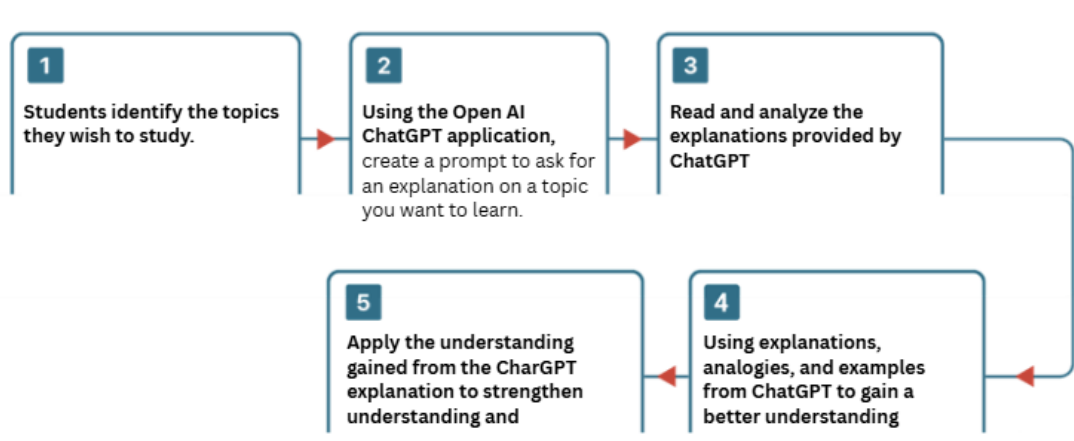


Figure 24. GenAI to help students grasp difficult study material

2. Recommendations for Students

These recommendations aim to help students make effective use of ChatGPT technology in their learning process. By understanding and following these guidelines, students can ensure that they use ChatGPT ethically and productively, whether as a writing tool, a learning partner, or a means of enhancing their coding skills.

Firstly, it is recommended that students use AI responsibly; therefore, they need to possess competencies ranging from basic to advanced levels. These student competencies are outlined by UNESCO (2024) in the AI Competency Framework for Students, as adapted in Table 8.

Table 75. UNESCO's AI Competency Framework for Students

Competency Aspects	Stages		
	Understanding	Application	Creation
Human-centred mindset	Human agency - Understanding that AI is a human creation. - Understanding that humans control AI. - Critically understanding the dynamics of the relationship between humans and machines.	Human accountability - Understanding that humans have legal obligations as creators, users, and providers of AI services. - Understanding that humans bear legal responsibility for the application of AI in matters of humanity. - Understanding that competence is required to use AI responsibly.	Citizenship in the age of AI - Understanding one's role as a critical AI citizen. - Explaining social and personal obligations within an AI society. - Engaging in reflection on the use of AI as a tool for productivity and lifelong learning throughout one's life.

Competency Aspects	Stages		
	Understanding	Application	Creation
Ethics of AI	Embodied ethics - Explaining ethical dilemmas and conflicts related to AI. - Explaining ethical principles in AI and their implications in context. - reflect on and internalise the ethical principles of AI.	Safe and responsible use - Developing habits regarding ethical principles in the responsible application of AI. - Demonstrating the discipline to use AI responsibly. - Explaining the applicable local regulations regarding the responsible use of AI.	Ethics by design - Assessing and deciding on the contextual use of AI based on AI ethical principles. - Critically explain design principles based on AI ethics. - Explain social responsibility in AI regulations based on ethics-based design.
AI techniques and applications	AI foundations - distinguish between AI and non-AI applications. - Explain the working principles of data-driven and algorithm-based AI. - Explain the benefits and drawbacks of AI, as well as a multidisciplinary approach to AI. - Explain considerations in the design and utilisation of AI.	Application skills - skilfully using data modelling, engineering and analysis. - using basic technical AI programming skills. - possessing analytical and synthesis skills in the contextual use of AI.	Creating AI tools - creating AI applications - AI applications for specific tasks. - Using creativity in creating AI applications and coding. - Using testing strategies to optimise AI applications.

Competency Aspects	Stages		
	Understanding	Application	Creation
AI system design	Problem scoping - Explaining when AI should not be used. - Identifying problems that can be solved through the use of AI. Skilled in evaluating AI systems based on data, algorithms and sources.	Architecture design - selecting various AI architectures for problem-solving. - Developing AI system prototypes for specific tasks.	Iteration and feedback loops - Possessing the ability and skills to critique AI systems. - possess the ability to evaluate AI based on social responsibility and multidisciplinary skills. - be able to collaborate (as a co-creator) in creating AI applications.

Furthermore, it is recommended that students engage in personal reflection, comply with the law, academic regulations and ethics, and be aware of potential risks, so that they can maximise the benefits of this technology whilst minimising potential negative impacts. The nine recommendations are shown in Figure 25.



Figure 25. Recommendations for Students

The explanation of these recommendations is as follows.

- a. Respect the law and examination regulations
It is important to always comply with applicable laws and regulations in an academic and examination context.
- b. Reflect on your learning objectives
Always reflect on and define your learning objectives so that your use of ChatGPT is

more focused and beneficial.

c. Use ChatGPT as a writing partner

Use ChatGPT to assist with the writing process, whether for brainstorming ideas, drafting, or revising your work.

d. Use ChatGPT as a study partner

Treat ChatGPT as a tool that can provide explanations, examples, and practice questions to deepen your understanding of the material being studied.

e. Iterate and discuss with ChatGPT

Use ChatGPT to discuss and iterate on concepts that are difficult to grasp; this helps to clarify and reinforce your understanding.

f. Summarise learning material with ChatGPT

ChatGPT can help summarise learning material, making it easier to remember and understand.

g. Improve your coding skills with ChatGPT

Use ChatGPT to improve your coding skills by asking for code examples, explanations or help with debugging.

h. Be aware of the risks when using ChatGPT

Be aware of and understand the risks that may arise when using this technology, such as inaccurate information or potential bias in the data.

i. Read the checklist at the end of this section before using ChatGPT Ensure you read and understand the checklist provided at the end of this section to maximise the benefits and minimise the risks of using ChatGPT.

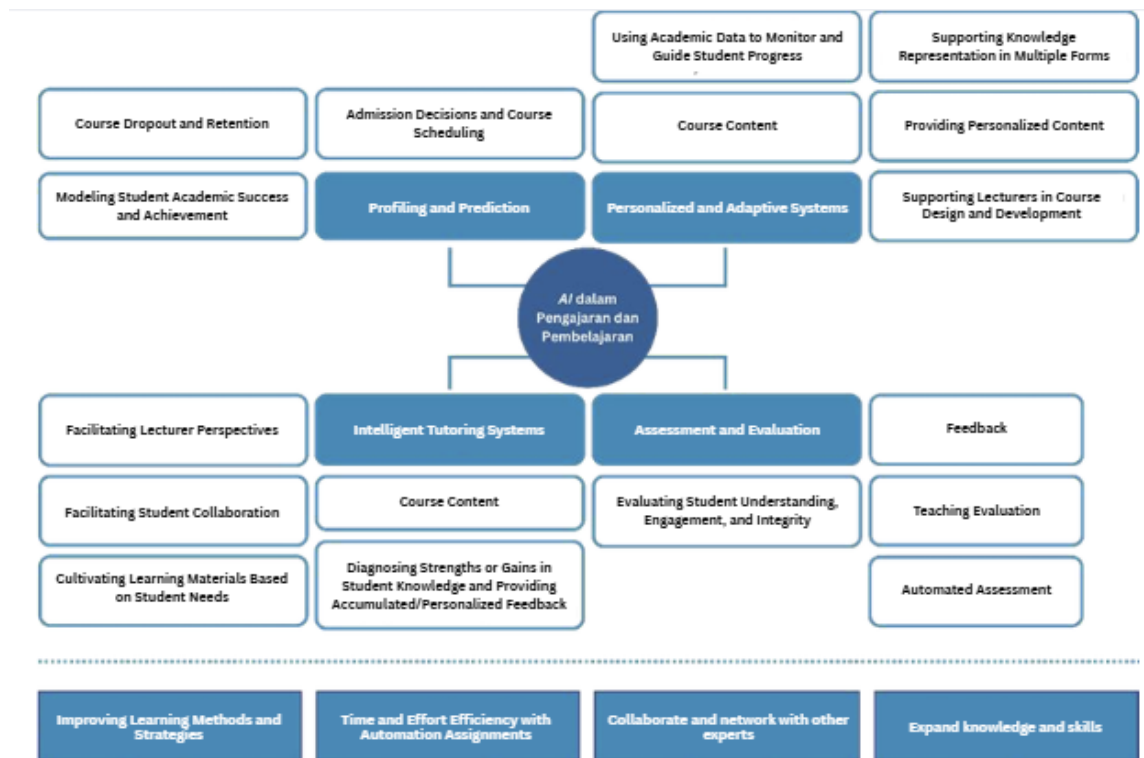
B. USE OF GENAI BY LECTURERS

1. Potential Uses of GenAI by Lecturers

Artificial Intelligence (AI) can be used for various purposes by lecturers, as shown in Figure 26.

Artificial Intelligence has actually been used in education for a long time, long before the rise of the GenAI trend. Essentially, AI-based tools are used to:

- a) Enhance teaching methods and strategies
- b) Enhancing knowledge and skills
- c) Automating manual tasks
- d) Supporting collaboration in the learning process



.Figure 26. GenAI as a Tool for Lecturers

AI-based tools provide the following functions:

- Performing profile analysis and prediction, to analyse student profiles and assessments and predict outcomes.
- Based on this pattern recognition capability, a personalised and adaptive system can be implemented.
- Providing an intelligent system to offer tutoring facilities for students. Delivering flexible learning materials tailored to the learning group's profile and desired outcomes.
- Conducting more accurate and comprehensive assessments.

GenAI technology offers several advantages, thereby increasing the popularity of Artificial Intelligence (AI). Lecturers can utilise GenAI for various needs within the learning process, as follows.

- Personalising teaching materials. GenAI can help lecturers create teaching materials tailored to students' needs and abilities, particularly for students with special needs, thereby making learning more effective, as shown in Figure 27. For example, lecturers can use the Speechify app to convert text from lecture materials, journal articles, or written assignments into audio format to help improve the quality of learning and understanding for students with special needs such as dyslexia.

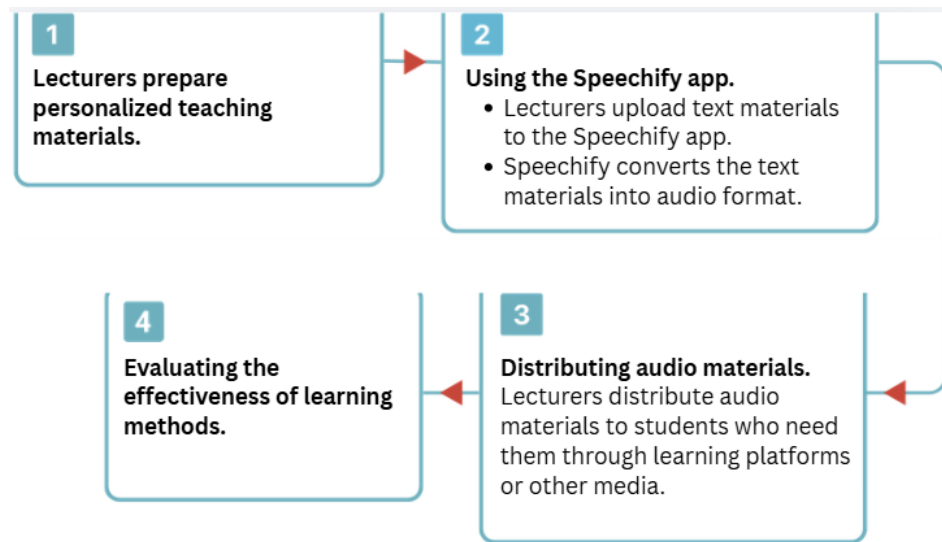


Figure 27. GenAI to assist lecturers in personalising teaching materials for students

- b) Curriculum design based on OBE and references from the Book of Knowledge in the relevant field. GenAI can assist lecturers in designing a curriculum based on Outcome-Based Education (OBE) and references from the Book of Knowledge to ensure that the curriculum remains relevant to advancements in scientific knowledge, as shown in Figure 28.

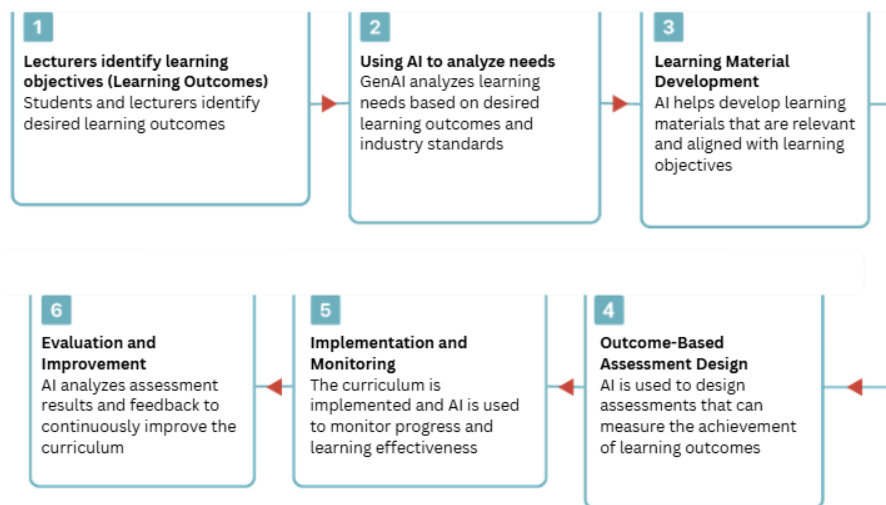


Figure 28. GenAI for Outcome-Based Education (OBE) Curriculum Design

- c) Preparation of course materials. GenAI can assist lecturers in preparing course materials, including syllabuses, lesson plans, and assessment of learning outcomes, as shown in Figure 49. GenAI can also personalise course materials by generating questions or interactive activities based on students' knowledge, skills, and learning styles. One GenAI application that can be used is OpenAI ChatGPT. For example, if a lecturer is teaching the course "Introduction to Economics", they can start by using ChatGPT to draft a syllabus and lesson plans using a prompt such as "Please create a syllabus for the course 'Introduction to Economics' covering key topics, weekly lesson plans, and assessment methods." ChatGPT will generate a draft syllabus covering the key topics. Next, the lecturer can use ChatGPT to create practice questions and

interactive activities with the prompt “Create some practice questions and interactive activities for the topic ‘Microeconomics’.” ChatGPT will generate a variety of practice questions covering the basic concepts of the topic, as well as interactive activities.

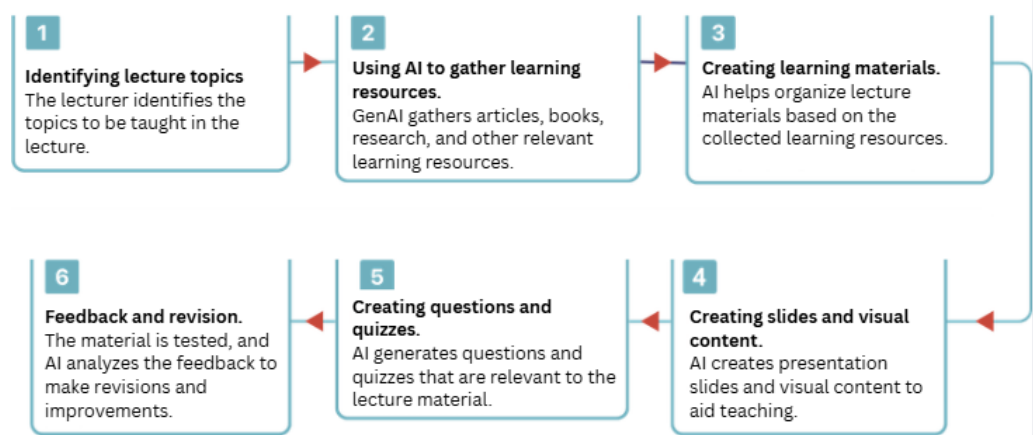


Figure 29. GenAI for Course Material Development

- d) Restructuring existing teaching materials. GenAI can assist in creating new teaching materials, such as questions for quizzes and exercises, as well as concept explanations and summaries of teaching materials, as shown in Figure 50. For example, using GenAI such as Generative Adversarial Networks (GANs), low-quality images can be restored to help identify important details in a work of art.



Figure 30. GenAI for Restructuring Existing Teaching Materials

- e) Creating AI-based tutoring systems. GenAI can be used to create virtual tutoring systems, where students can interact with a virtual tutor and receive real-time feedback and support, as shown in Figure 31.

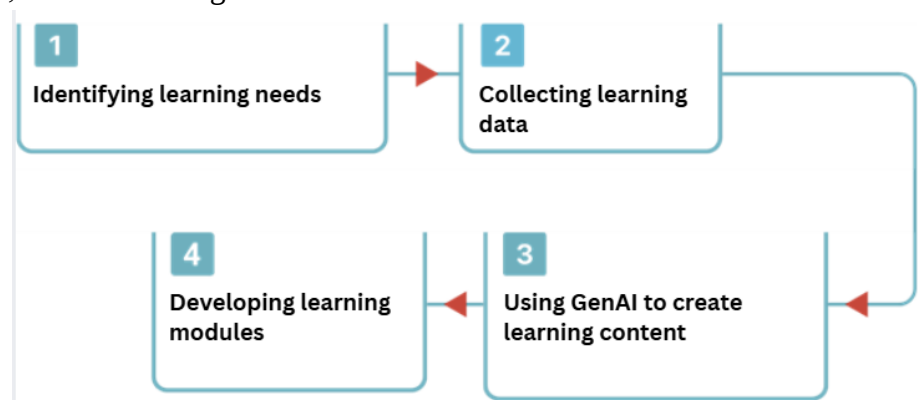


Figure 31. GenAI for Creating AI-Based Tutoring Systems

- f) Assessing students. GenAI can assist lecturers in assessing student performance to provide more objective assessment results. This is particularly useful for qualitative assessments. Student assessment based on specific profiles. This is illustrated in Figure 32.

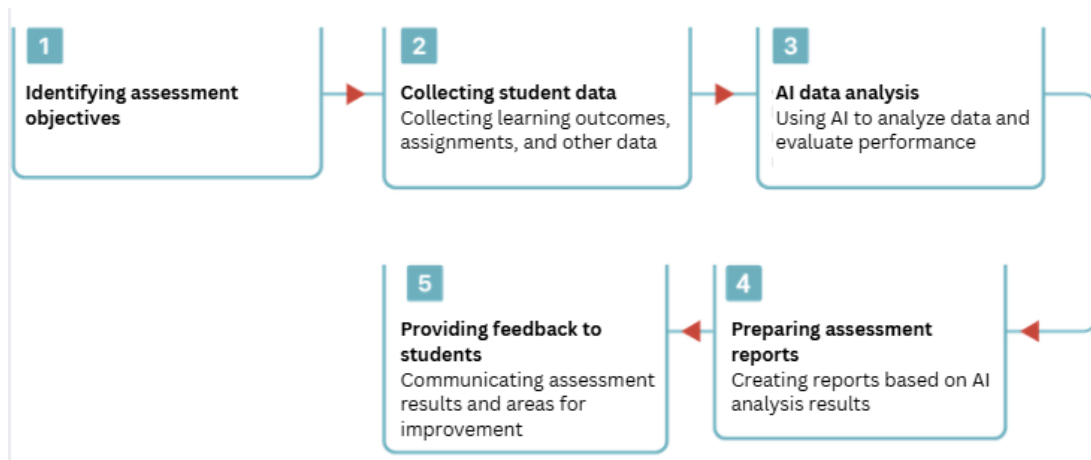


Figure 32. GenAI for Student Assessment

- g) Grouping study groups according to student profiles. GenAI can group students into study groups based on their profiles, ensuring each group receives learning tailored to their needs. This is illustrated in Figure 33.

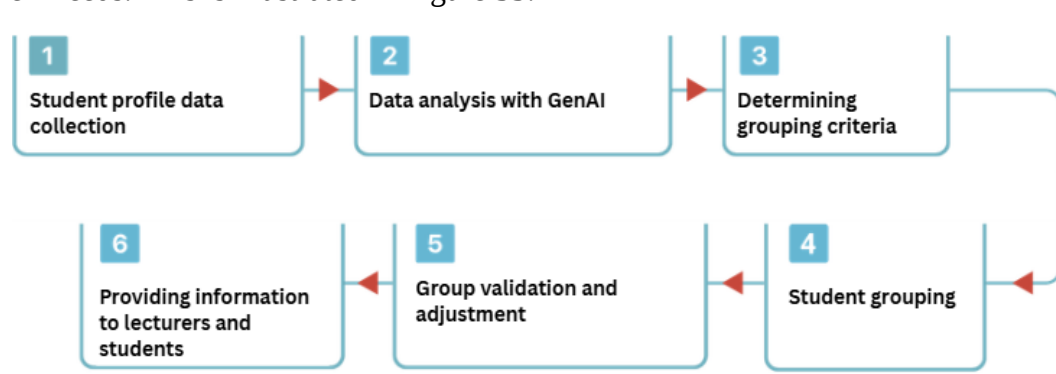


Figure 33. GenAI for Grouping Study Groups According to Student Profiles

2. Recommendations for Lecturers

ChatGPT is a highly popular generative AI widely used by lecturers. The following are recommendations for using ChatGPT in the teaching process within higher education. Lecturers are encouraged to reflect on their learning objectives and utilise ChatGPT as a tool to help create learning materials, support students through quizzes, and enhance the overall learning process. By encouraging the use of ChatGPT, lecturers can help students become more active in their learning process, thereby achieving a deeper and more comprehensive understanding of the material being taught. This is illustrated in Figure 34.

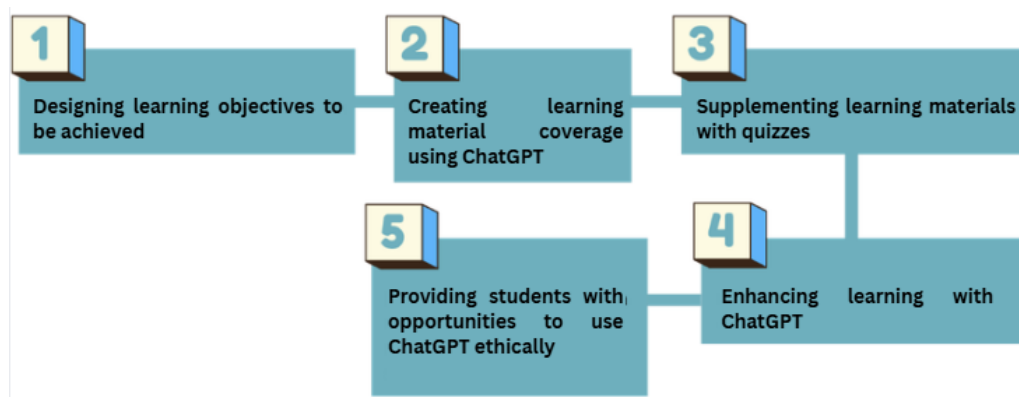


Figure 34. Recommendations for Lecturers in Teaching

Currently, there is confusion and scepticism among academics regarding the widespread use of GenAI, as expressed in the Chronicle of Higher Education journal in an article titled ‘Caught Off Guard by AI’. Therefore, clear and practical guidance from institutions is required.

To understand the use of GenAI in education, Bloom’s Taxonomy can be utilised. GenAI capabilities can be used effectively in education; however, human skills must also be considered in its application. Using Figure 35, which is based on Bloom’s Taxonomy, lecturers need to reconsider how learning activities and assessment are designed, particularly in the context of GenAI capabilities and how GenAI might alter the role of human skills in education.

At levels C1 (Remember) through to C4 (Analyse), there is a high likelihood that learning activities and assessment will need to be updated. This is because GenAI’s capabilities in recalling information and analysing data are highly advanced, meaning tasks that rely solely on these capabilities can be easily completed by GenAI. Therefore, it is important to ensure that assessment at this level remains relevant by incorporating human skills that cannot be replaced by GenAI, such as contextualising answers within emotional, moral, or ethical considerations.

For higher-order thinking levels, such as evaluating (C5) and creating (C6), human skills such as metacognitive reflection and ethical judgement become crucial. GenAI can assist by providing various alternatives or identifying the strengths and weaknesses of different actions; however, final decisions and interpretations involving value or moral judgements still require human involvement. In this context, GenAI functions as a supporting tool that enables humans to focus on the more complex and nuanced aspects of decision-making.

GenAI can generate various types of content almost instantly. Furthermore, GenAI can access vast amounts of information without feeling overwhelmed or constrained by capacity. Using GenAI is akin to instantly leaping five levels up the Bloom’s Taxonomy. There is no need to recall, understand, apply, analyse, or evaluate information.

Overall, the ‘Bloom’s Taxonomy’ approach emphasises the need for a balance between the use of GenAI and the development of human skills in education. Whilst GenAI offers powerful tools for enhancing efficiency and accuracy in education, unique human skills such as creativity, ethical judgement, and critical thinking must remain the primary focus when designing learning activities and assessments. Lecturers can use the

table above as a guide to adapt learning activities and ensure that learning remains relevant and meaningful in an era of rapidly evolving technology.

THINKING LEVELS	AI CAPABILITIES	DISCIPLINARY HUMAN SKILLS	LEARNING ACTIVITIES AND/OR ASSESSMENTS
C6 CREATE	Propose various alternatives, mention potential drawbacks and advantages, and describe successful real-world cases.	Combine elements into a cohesive or functional whole; rearrange elements into new patterns or structures through generation, planning, or production.	Research proposal: AI can provide a draft of the overall proposal. Treatment plan: AI can provide a draft of the treatment plan.
C5 EVALUATE	Make assessments based on rubrics; identify the strengths and weaknesses of various actions; develop rubrics.	Make assessments based on the criteria outlined in the rubric and standards through checking and testing.	Peer review activities: AI can be used to review other students' work; or students can be asked to critique AI-generated responses.
C4 ANALYZE	Comparing and contrasting data or information, deducing trends and themes, calculating, and predicting.	Breaking material into its component parts, determining how those parts relate to each other and to the overall structure or purpose.	Case studies: AI can be used for this task, and its use is to conduct an initial analysis of a case using a framework or guided questions.
C3 APPLY	Utilizing processes, models, and methods to illustrate how to complete quantitative research.	Implementing or using procedures through implementation or application.	Quizzes and exams: In some fields, such as Chemistry, students need to use procedures to solve problems in quizzes or exams.
C2 UNDERSTAND	Describe concepts using different words, recognize related words, provide examples, and translate.	Construct meaning from visual, written, and graphic forms through interpretation, explanation, summation, inference, comparison, and clarification.	Quizzes and exams: AI may provide correct answers. Essays and discussions: AI may provide reasoned responses to essay or discussion prompts.
C1 REMEMBER	Recalling factual information, recognizing possible answers, defining terms, and establishing basic chronology.	Retrieving, recognizing from lists, and recalling relevant knowledge from long-term memory.	Quizzes and exams: AI may provide the correct answers to most quiz questions. Lecturers need to be cautious about this.

Figure 35. The use of GenAI in relation to Bloom's Taxonomy

Most learning mechanisms, including assessment, must be reviewed in light of GenAI's increasingly sophisticated capabilities. Emphasis should be placed on the importance of collaboration between GenAI and humans; GenAI can assist with technical and analytical tasks, whilst humans can guide creativity, judgement, and interpretation. Thus, learning becomes not merely a process of memorisation and repetition, but a deeper and more meaningful process.

GenAI can serve as a valuable tool in addressing information overload and cognitive overload. However, it must be understood that the information generated may sometimes be incorrect, inaccurate, or lacking in detail. This leads some parties to tend to disregard the use of GenAI in higher education. Consequently, there is a need for learning and

assessment designs that integrate new technologies.

When integrating GenAI into learning and assessment, the approach must be reversed, starting with creation rather than memorisation. GenAI becomes a partner in learning, a co-creator that may accelerate insights. For example, students are encouraged to use GenAI to develop business models for new entrepreneurial ventures. These business models are then evaluated and analysed using various tools explored during the module. Students apply the results of the evaluation and analysis and consider, for example, the implementation of strategies related to sustainable business. Finally, face-to-face assessments such as presentations, oral exams, or reflective debates can be used to ensure students' understanding.

GenAI is merely a tool created by humans. What is put in determines what is obtained. As creators and disseminators of knowledge rooted in robust and ethical research, it is our responsibility to utilise digital tools in ways that ensure the application of GenAI benefits our profession and society in the long term.

The framework for the use of GenAI in education comprises three main levels, as shown in Figure 36, which illustrates how to integrate the flexibility of AI with educational design, including:

1) Big Idea

The core of this big idea is to harness the flexibility of generative AI with evidence-based educational design. This includes the use of AI technology to create more effective, data-driven teaching methods.

2) Educational Applications

At this stage, GenAI is being applied in various aspects of education, such as:

- a) Content Authoring: Using AI to create learning materials.
- b) Conversational Agents: AI acting as conversational agents capable of interacting with students.
- c) Text Data Mining: Analysing text data to gain useful insights for education.

3) Prompt Engineering

This level focuses on techniques to guide GenAI to produce the desired output. Some of the techniques used include:

- a) Chain-of-Thought Prompting: Guiding AI to think step by step.
- b) Zero-shot vs. Few-shot Prompting: Providing prompts without examples or with a few examples to guide the AI.
- c) Refining Prompts: Refining prompts to achieve better results.
- d) Evaluating Outputs: Assessing the results generated by the AI.
- e) Top-down Design: A top-down design approach to guiding the AI.

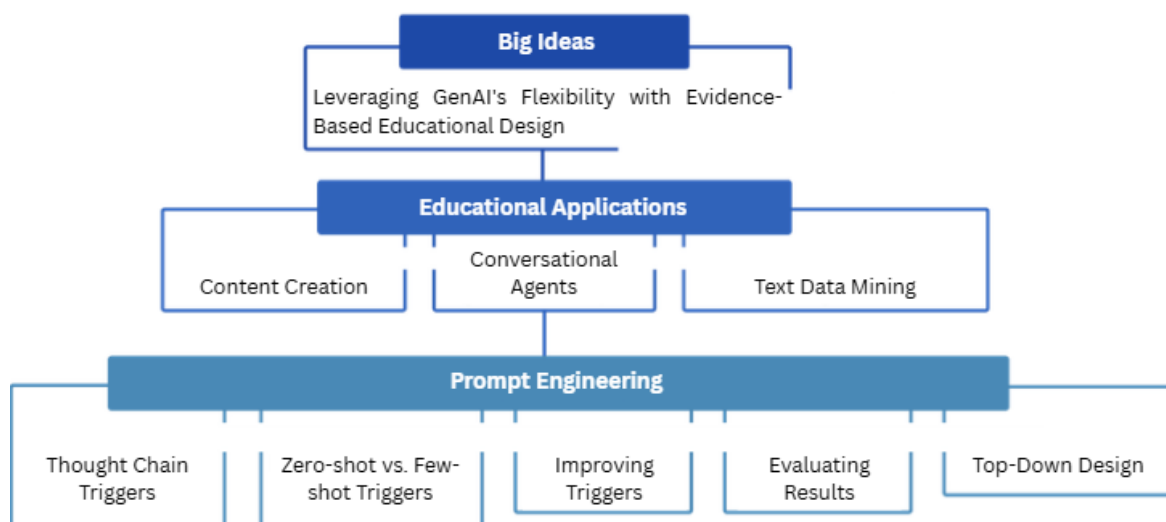


Figure 36. Framework for the Use of GenAI in Education

Furthermore, UNESCO (2024) states that for lecturers to be able to use AI responsibly and sustainably, there are four aspects of competence that lecturers must possess. These four aspects of competence include 1) a human-centred mindset, 2) the ethics of AI, 3) AI techniques and applications, and 4) AI system design, as illustrated in Table 9 below.

Table 9. UNESCO's AI Competency Framework for Teachers

Competency Aspects	Stages		
	Acquisition (AI Literacy)	Deepening	Creation
A human-centred approach - Human agency - Human accountability - Citizenship in the era of AI	- explains humans as the creators of AI. - explains various ethical issues related to the application of AI. - explains the advantages and benefits of utilising AI. - Identifying the benefits of AI implementation in education to facilitate lesson planning, the learning	- Possess the critical skills to utilise AI correctly and responsibly in various contexts. - Internalise the ethics of using AI correctly, safely and responsibly. - Using a variety of AI applications for learning and personal development. - Integrating the use of AI	- Actively contributing to the creation of an inclusive AI community based on AI ethical principles. - Critically advocating for the ethical use of AI. - Be able to use and adapt AI applications contextually. - Critically evaluating the impact of AI
Ethics of AI - Embodied ethics - Safe and responsible use - Ethics by design			
AI techniques and applications - AI fundamentals - Application skills - Creating AI tools			

AI system design • Problem scoping • Architecture design • Iteration and feedback loops	• process, and introductory activities. • Using a variety of AI applications for professional development and learning.	• into student-centred learning. • Using a variety of AI applications to contribute to the professional community.	• use in learning processes, assessment, and cross-disciplinary learning support. • Be able to use and modify AI applications contextually in the development of sustainable professional capacity sustainable professional development.
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The AI Competency Framework for Teachers specifically uses the term ‘AI’ (Artificial Intelligence) rather than ‘GenAI’ (Generative AI), on the assumption that AI has a broader meaning and encompasses GenAI. Furthermore, it is hoped that teachers are expected not only to use GenAI, but also to be able to create a variety of AI applications that are useful for teaching practice and their daily lives.

C. UTILISATION OF GENAI BY ADMINISTRATIVE STAFF AND INSTITUTIONAL GOVERNANCE

The utilisation of Generative Artificial Intelligence (GenAI) within higher education is not limited to students and lecturers in the learning process, but also plays a strategic role in supporting the performance of administrative staff and strengthening institutional governance as a whole. In the context of UPGRIS, AI-based digital transformation must be understood as a systematic effort to improve the effectiveness of academic services, administrative efficiency, the quality of decision-making, and the strengthening of internal quality assurance systems.

Administrative staff play an important role in supporting the smooth operation of academic processes and university administration, ranging from academic administration, student services, data management, and information systems to other institutional services. The presence of GenAI can help improve the quality of these services through the automation of routine processes, faster data analysis, and the provision of more responsive and accurate services.

One form of GenAI utilisation is in academic services through chatbots and virtual assistants. These systems can be used to help students obtain information regarding class schedules, academic calendars, administrative procedures, course registration, payments, library services, and other academic information quickly and in real time. With AI support, information services can operate more efficiently without relying entirely on administrative working hours.

In academic data management, GenAI can assist with student profile analysis, attendance monitoring, evaluation of learning outcomes, detection of academic risks, and prediction of potential study delays. AI systems can help academic units identify students who require early support so that academic intervention can be carried out more accurately and preventively.

At the level of study programmes and faculties, GenAI can be utilised to support the evaluation of Graduate Learning Outcomes (CPL), assessment result analysis, accreditation report preparation, curriculum evaluation based on Outcome-Based Education (OBE), and the implementation of Continuous Quality Improvement (CQI). AI's ability to process large volumes of data and identify patterns can support more effective evidence-based decision-making.

Within internal quality assurance systems, AI can also support the analysis of student satisfaction, graduate tracer studies, evaluation of learning processes, lecturer performance monitoring, and the mapping of institutional development needs. Data that were previously scattered and difficult to analyse can be integrated into strategic information that assists university leaders in formulating more targeted policies.

GenAI may also be used in preparing administrative documents such as academic correspondence, institutional reports, meeting minutes, evaluation summaries, and institutional document management more efficiently. However, the use of AI in administration must remain under human verification to ensure the accuracy of information and consistency with institutional policies.

In student services, AI can support recommendation systems for self-development activities, initial digital counselling services, scholarship information systems, and the mapping of student interests and potential. Such utilisation must still be carried out carefully so that it does not replace the essential human interaction required in character development and student mentoring.

Despite its significant benefits, the use of GenAI in institutional governance must not be carried out without clear boundaries. Strategic academic decisions such as graduation approval, academic promotion, staffing decisions, final performance evaluations, and institutional policy decisions must remain under human authority. AI functions only as an analytical tool and decision-support system, not as the final decision-maker. This principle is consistent with the human-centred AI approach, which places humans at the centre of system control.

In addition, the protection of personal data and information security must remain a primary concern in the use of AI for institutional governance. Student data, lecturer data, financial information, strategic university documents, and sensitive research results must not be processed through public AI platforms without adequate security guarantees. The use of AI systems must comply with data protection policies, digital governance standards, and applicable institutional regulations.

As a higher education institution that upholds the values of excellence and identity, UPGRIS believes that the utilisation of GenAI in institutional governance must support the realisation of a university that is adaptive, efficient, transparent, and accountable, without reducing the values of humanity, professionalism, and institutional integrity. AI must serve as an instrument to strengthen high-quality higher education services, rather than merely as a tool for administrative automation.

Thus, the use of GenAI by administrative staff and in institutional governance forms an important part of sustainable university digital transformation. The success of its implementation is determined not only by the sophistication of the system, but also by the quality of governance, the readiness of human resources, and the collective commitment to maintaining academic integrity and responsible public service.

D. LIMITATIONS ON THE USE OF GENAI

The utilisation of Generative Artificial Intelligence (GenAI) within UPGRIS provides many opportunities to improve the quality of learning, enhance academic effectiveness, and increase the efficiency of institutional governance. However, the use of GenAI cannot be

carried out without clear limitations. As a technology capable of generating content quickly and on a large scale, GenAI also has significant potential for misuse, which may lead to violations of academic integrity, legal risks, unfairness, and institutional harm.

Therefore, clear boundaries are required to ensure that the use of AI remains within the framework of academic ethics, professional responsibility, data protection, and sound higher education governance. These limitations apply to all members of the academic community, including students, lecturers, administrative staff, and university leaders.

1. Prohibition of Plagiarism and Academic Dishonesty

GenAI must not be used to produce assignments, scholarly works, research reports, undergraduate theses, master's theses, doctoral dissertations, or academic publications in ways that entirely replace the user's own thinking process and intellectual contribution. Copying AI-generated content in full without understanding, without critical engagement, and without clear attribution constitutes academic plagiarism.

Students must remain the primary authors of their academic work, while lecturers remain fully responsible for the scholarly works, research, and publications they produce. The use of AI for the purpose of avoiding the learning process, falsifying academic ability, or obtaining academic advantage dishonestly constitutes a serious violation of academic integrity.

2. Prohibition of Data Fabrication and Manipulation

GenAI must not be used to create fictitious research data, manipulate research results, generate false survey responses, falsify experimental outcomes, or produce citations and references that cannot be verified. One of the major risks of GenAI is hallucination, namely the ability of AI to generate information that appears convincing but is in fact incorrect.

In research activities, all data, analytical results, and academic references must be scientifically accountable. The use of AI for data fabrication constitutes a very serious violation of research ethics and may result in both academic and legal sanctions.

3. Prohibition of Using AI for Examination and Assessment Misconduct

GenAI must not be used in examinations, quizzes, structured assignments, authentic assessments, or other forms of learning evaluation where its use has not been authorised by the lecturer or institution. Using AI covertly to answer examination questions, complete individual assignments, or carry out assessments intended to measure personal competence constitutes academic misconduct.

Lecturers have the authority to establish the limitations of AI use in each course through the Semester Learning Plan (RPS) and the course agreement. Students are required to comply with these provisions as part of academic discipline.

4. Prohibition of Using AI as the Final Decision-Maker

In institutional governance, GenAI must not be used as the final decision-maker in strategic matters concerning the academic rights, careers, and future of members of the academic community. Final grade determination, graduation decisions, academic promotion, lecturer performance evaluation, staffing decisions, student admissions, and institutional policy decisions must not be delegated entirely to AI systems.

AI functions only as an analytical tool and a decision support system, while final decisions must remain under human authority in accordance with the principle of human-centred AI.

5. Prohibition of Uploading Confidential Data and Sensitive Information

Students, lecturers, and administrative staff are not permitted to upload personal data, confidential institutional documents, unpublished research results, financial

information, staff records, strategic university documents, or other sensitive information to public AI platforms without adequate guarantees of data protection.

The risks of data leakage, information misuse, and loss of control over documents are major concerns in the use of cloud-based GenAI. All use of AI must comply with Personal Data Protection Law, information security policies, and the university's internal regulations.

6. Prohibition of Replacing the Pedagogical and Professional Role of Lecturers

Lecturers are not permitted to delegate the entire teaching process, assessment, feedback provision, or academic decision-making to AI systems without professional verification and active involvement. AI may assist in the preparation of teaching materials, preliminary analysis, or administrative evaluation, but it cannot replace the pedagogical responsibility of lecturers as the primary educators.

The academic relationship between lecturers and students must continue to be built through meaningful human interaction, intellectual guidance, and character development, all of which cannot be replaced by technology.

7. Prohibition of Misusing AI for Information Manipulation and Disinformation

GenAI must not be used to create false information, manipulate documents, spread misinformation, falsify identities, produce harmful deepfakes, or engage in any other activities that violate ethics, law, and academic norms. The misuse of technology for manipulative purposes not only damages academic integrity, but may also result in legal consequences and harm the institution's reputation.

8. Prohibition of Excessive Dependence on AI

Excessive use of GenAI that reduces critical thinking, creativity, scholarly reflection, and independent learning must also be avoided. AI should be used as an academic support tool (assistive technology), not as a substitute for human intellectual processes.

Students and lecturers must continue to develop analytical, argumentative, and reflective abilities as the core of higher education. Excessive dependence on AI may weaken the quality of learning and reduce the overall standard of graduates.

These limitations are established not to hinder innovation, but to ensure that the utilisation of GenAI within UPGRIS continues to support the objectives of high-quality higher education that is grounded in integrity and human development. With clear boundaries in place, AI can be utilised productively without compromising academic values and institutional responsibility.

E. TRANSPARENCY AND DISCLOSURE OBLIGATIONS

The utilisation of Generative Artificial Intelligence (GenAI) in academic and institutional activities must be accompanied by the principles of transparency and openness. Transparency is an essential part of academic integrity because it ensures that the use of AI can be scientifically, ethically, and professionally justified. Any form of AI assistance that makes a significant contribution to learning processes, research, academic writing, or institutional decision-making must be clearly declared in order to prevent misunderstanding, academic manipulation, or violations of scholarly honesty.

In the context of higher education, disclosure means the honest acknowledgement of the extent to which AI has been used, which parts of the work have been supported by AI, and how the AI-generated output has been verified by the user. Such disclosure is not a sign of academic weakness, but rather a form of scholarly and professional responsibility demonstrating that the user remains the primary party controlling the academic process.

Within UPGRIS, the obligation of transparency applies to students, lecturers, administrative staff, researchers, and all parties who utilise GenAI in academic or institutional activities. This principle aims to maintain academic trust, protect the originality of scholarly work, and ensure that AI is used proportionately and responsibly.

1. Transparency for Students

Students are required to declare the use of AI whenever GenAI is used significantly in the preparation of assignments, reports, papers, presentations, research proposals, undergraduate theses, master's theses, or other forms of academic work. Significant use includes assistance in developing conceptual frameworks, generating main ideas, preliminary data analysis, academic writing development, substantial editing, or technical support that affects the main content of the academic work.

Students are not required to report the use of AI for minor activities such as simple grammar checking or minor technical corrections that do not affect academic substance. However, the distinction between minor and significant use must be understood ethically and responsibly.

Disclosure may be provided through a brief note at the end of an assignment, within the methodology appendix, or in another format determined by the course lecturer or study programme. Students remain fully responsible for the entire content of their academic work, even when assisted by AI.

2. Transparency for Lecturers

Lecturers are required to explain policies regarding the use of AI in each course through the Semester Learning Plan (RPS), course agreements, or assessment guidelines provided to students. This explanation should include the limitations of AI use, the types of assignments in which AI is permitted or prohibited, and the academic consequences in cases of misuse.

In the preparation of teaching materials, learning modules, assessment questions, or other academic materials, lecturers must also maintain transparency when AI is used significantly in the design process. Although AI may help improve work efficiency, pedagogical and academic responsibility remains with the lecturer as the primary educator.

In scholarly publications, journal articles, and research activities, lecturers must follow applicable national and international publication ethics guidelines regarding the use of AI. AI cannot be listed as an author because it does not possess moral responsibility or scholarly accountability. However, the use of AI that makes a substantial contribution to manuscript preparation must be openly declared in the methods section, acknowledgements, or disclosure statement in accordance with the publisher's requirements.

3. Transparency in Research and Scholarly Publication

In research activities, the use of AI for literature exploration, preliminary data analysis, language editing, information visualisation, or other forms of technical support must be disclosed proportionately when it has an impact on the research outcomes. Researchers remain fully responsible for ensuring methodological validity, data integrity, and the scholarly reliability of research findings.

The use of AI must not conceal the actual research process or create the impression that the entire scholarly process was conducted independently when, in fact, significant AI intervention was involved. Transparency in research is essential for maintaining scholarly credibility and public trust in research outcomes.

4. Transparency in Institutional Governance

In institutional governance, the use of AI for data analysis, recommendation systems,

academic services, and administrative decision-making must also be managed transparently. Members of the academic community need to be informed when a system uses AI as part of its service or evaluation process, particularly when it affects academic rights, administrative services, or institutional decisions.

Such transparency is essential for maintaining institutional accountability, preventing hidden algorithmic bias, and ensuring that decisions remain open to review and can be justified through human responsibility.

5. The Principle of Accountability in Disclosure

Disclosure is not merely about acknowledging the use of AI, but also about ensuring that users understand and take responsibility for all outputs produced. Users cannot transfer responsibility to AI systems when errors occur, such as incorrect information, fabricated references, biased analysis, or other academic violations.

The principle of accountability emphasises that AI is only a support tool, while final responsibility always remains with human beings. Therefore, every form of disclosure must be accompanied by verification, critical evaluation, and quality control by the user.

UPGRIS considers transparency and disclosure to be fundamental principles in building an honest, open, and professional academic culture in the era of artificial intelligence. Declaring the use of AI is not a sign of academic weakness, but rather part of scholarly ethics that reflects intellectual maturity and moral responsibility.

Thus, the obligation of transparency and disclosure ensures that the utilisation of GenAI within UPGRIS continues to operate within the framework of academic integrity, scholarly trust, and responsible higher education governance.

F. MONITORING MECHANISM AND ACADEMIC ENFORCEMENT

The utilisation of Generative Artificial Intelligence (GenAI) within UPGRIS requires a clear monitoring system and consistent academic enforcement to ensure that the use of such technology remains within the framework of ethics, academic integrity, and sound higher education governance. The increasing accessibility of AI creates significant opportunities for innovation in learning, but it also increases the potential for misuse, such as plagiarism, data fabrication, assessment manipulation, privacy violations, and more complex forms of academic dishonesty.

Therefore, the university must establish monitoring mechanisms that are not only repressive through the imposition of sanctions, but also preventive through education, guidance, and the strengthening of a healthy academic culture. Academic enforcement must be carried out fairly, transparently, proportionately, and with an orientation towards development and improvement rather than punishment alone.

1. Monitoring at the Course Level

Lecturers, as the primary persons responsible for the learning process, play an important role in monitoring the use of AI at the course level. Every lecturer is required to establish rules regarding the use of GenAI in the Semester Learning Plan (RPS), course agreement, or assignment guidelines provided to students.

These rules should clearly explain which types of assignments permit the use of AI, which assignments limit its use, and which assignments completely prohibit it. Lecturers must also explain disclosure mechanisms, the forms of students' academic accountability, and the consequences in the event of violations.

Assessment design must be directed towards strengthening thinking processes, argumentation, reflection, oral presentations, academic discussions, authentic assessment, and Student-Centred Learning (SCL), so that learning evaluation does not focus solely on

final products that can easily be generated by AI. This approach helps reduce the potential misuse of AI in academic assignments.

2. Monitoring at the Study Programme and Faculty Level

Study programmes and faculties are responsible for ensuring that AI usage policies are implemented consistently across all courses and academic activities. Heads of study programmes, academic coordinators, and faculty leaders must supervise the implementation of AI policies, including in the preparation of final projects, proposal seminars, undergraduate theses, master's theses, doctoral dissertations, and scholarly publications.

In final project processes, the use of AI must be monitored through more reflective supervision, research progress seminars, oral examinations, and verification of students' understanding of their own research content. The use of AI must not replace the actual research process or eliminate students' intellectual contribution.

Study programmes must also conduct periodic evaluations of the effectiveness of AI usage policies and adjust them in accordance with technological developments and continuously changing academic needs.

3. Monitoring at the University Level

At the university level, monitoring is carried out through institutional policies, internal quality assurance systems, academic monitoring units, and relevant ethics committees. The university should establish or designate a unit responsible for coordinating AI utilisation policies, developing technical guidelines, providing training for the academic community, and handling academic violations related to the use of AI.

Plagiarism detection systems, evaluation of the quality of academic assignments, learning audits, and monitoring compliance with disclosure policies may form part of the institutional monitoring system. However, system-based detection must not become the sole basis for decision-making, as AI detection tools also have limitations in terms of accuracy.

Institutional monitoring must continue to prioritise human academic verification and the principle of human-centred AI.

4. Handling Alleged Violations

If indications of AI misuse are identified, the handling process must be conducted objectively and based on the principles of academic fairness. Alleged violations may arise from lecturers' evaluations, reviews of academic assignments, research findings, reports from other parties, or the results of internal quality audits.

The handling process must go through stages of clarification, verification, and sufficient evidence-based examination. Students, lecturers, or administrative staff suspected of violations have the right to provide explanations and academic defence before a decision is made.

This approach is important to avoid misjudgement caused by the limitations of AI detection systems or by unfounded assumptions. Academic enforcement must uphold the principles of fairness, objectivity, and professionalism.

5. Forms of Academic Sanctions

Violations of GenAI usage policies are subject to sanctions according to the level of the violation, its academic impact, and the provisions of university regulations. Forms of sanctions may include:

- a. academic warnings;
- b. revision or repetition of assignments;
- c. cancellation of assignment or examination grades;

- d. postponement of academic processes;
- e. cancellation of research results or publications;
- f. ethical sanctions for lecturers or administrative staff;
- g. student disciplinary sanctions in accordance with academic regulations;
- h. other actions in accordance with legal provisions and university regulations.

The imposition of sanctions must be carried out proportionately and with consideration for educational guidance, particularly in cases where violations occur due to limited AI literacy rather than deliberate manipulative intent.

6. Continuous Guidance and Prevention

Effective academic enforcement does not depend solely on sanctions, but also on continuous guidance and preventive measures. The university must provide socialisation programmes, training, workshops, AI literacy initiatives, and mentoring for students, lecturers, and administrative staff so that the use of AI can be properly understood from the outset.

A healthy academic culture is built through collective awareness rather than formal supervision alone. Therefore, education on academic integrity, the ethics of AI use, data protection, and professional responsibility must become an integral part of both the learning process and institutional development.

UPGRIS views monitoring mechanisms and academic enforcement as essential components of maintaining the quality of higher education in the era of artificial intelligence. Monitoring is not intended to restrict innovation, but to ensure that the utilisation of AI genuinely strengthens the quality of learning, research, and academic governance.

Thus, a strong monitoring system and consistent academic enforcement will enable GenAI to function as a productive, ethical, and responsible support tool in advancing UPGRIS as a university that is excellent and firmly grounded in its identity.

G. INTEGRATION OF AI WITH OBE AND QUALITY ASSURANCE

The utilisation of Generative Artificial Intelligence (GenAI) within UPGRIS must be systematically integrated with the implementation of Outcome-Based Education (OBE) and the university's internal quality assurance system. AI should not merely be positioned as a technical support tool in learning, but as a strategic instrument to strengthen planning, implementation, evaluation, and continuous improvement of academic quality and the achievement of graduate learning outcomes.

Outcome-Based Education (OBE) places Programme Learning Outcomes (PLO) as the primary orientation of all higher education processes. Curriculum design, learning processes, assessment, and quality evaluation must all be structured based on the learning outcomes that students are expected to achieve. In this context, GenAI can support lecturers, study programmes, and institutions in ensuring that educational processes are more measurable, adaptive, and data-driven.

1. Integration of AI in OBE-Based Curriculum Design

GenAI can be utilised to support the development of OBE-based curricula that are more systematic and relevant to the advancement of knowledge, labour market demands, and societal needs. Lecturers and study programmes may use AI to conduct curriculum needs analysis, benchmarking against national and international standards, and mapping the alignment between graduate profiles, PLO, Course Learning Outcomes (CLO), subject matter, and courses.

AI may also support the preparation of Semester Learning Plans, the development of learning strategies, the creation of assessment rubrics, and the integration of interdisciplinary learning that supports the implementation of Merdeka Belajar Kampus Merdeka (MBKM). However, academic decisions related to curriculum design must remain under the authority of lecturers and curriculum teams as the primary academic decision-makers.

2. Integration of AI in Assessment and Evaluation of Learning Outcomes

One of the main challenges in OBE is ensuring that assessment genuinely measures students' achievement of learning outcomes in a valid and authentic manner. GenAI can assist lecturers in developing more diverse, adaptive, and Higher Order Thinking Skills (HOTS)-based assessment instruments, including case studies, problem-based projects, academic reflection, and other forms of authentic assessment.

AI may also be used to analyse student learning outcomes, identify strengths and weaknesses in learning achievement, and provide faster and more personalised feedback. With AI support, learning evaluation can be conducted more accurately, allowing academic interventions to be implemented earlier and more effectively.

However, final assessment decisions must remain with lecturers as the principal evaluators. AI functions only as an analytical support tool, not as the determinant of final grades.

3. Integration of AI in the Evaluation of Programme Learning Outcomes (PLO)

The evaluation of Programme Learning Outcomes (PLO) is central to the implementation of OBE. GenAI can assist study programmes in processing assessment data, mapping CPL achievement, identifying areas requiring improvement, and systematically developing follow-up recommendations.

AI systems can be used to identify patterns of student achievement across semesters, analyse relationships between academic performance and teaching methods, and evaluate curriculum effectiveness in relation to the intended graduate profile. This data-driven analysis strengthens the process of Continuous Quality Improvement (CQI), which is a crucial part of OBE.

4. Integration of AI in the Internal Quality Assurance System

Within the Internal Quality Assurance System (Sistem Penjaminan Mutu Internal / SPMI), GenAI can support continuous monitoring, evaluation, control, and improvement of academic quality. AI can assist in analysing learning evaluation results, student satisfaction, graduate tracer studies, lecturer performance monitoring, academic quality audits, and the preparation of self-evaluation and accreditation reports.

AI's capacity to manage large volumes of data (big data) enables the university to carry out more accurate and efficient evidence-based decision-making. Information that was previously dispersed across multiple systems can be integrated into a stronger basis for strategic institutional policymaking.

5. Integration of AI in Continuous Quality Improvement (CQI)

Continuous Quality Improvement (CQI) is a core principle of OBE and quality assurance that emphasises ongoing improvement based on measurable evaluation results. GenAI can help accelerate the CQI cycle through automated analysis of assessment outcomes, evaluation of learning processes, student feedback, and curriculum development needs.

With AI support, study programmes can identify academic issues more quickly, formulate improvement strategies more effectively, and monitor the impact of implemented changes more accurately. This ensures that quality enhancement is no longer

merely administrative, but becomes a more reflective and sustainable academic process.

6. The Principle of Human-Centred AI in OBE and Quality Assurance

Although AI has significant potential to support OBE and quality assurance, all processes must remain grounded in the principle of human-centred AI. Academic decisions, quality standards, performance evaluations, and judgements regarding educational success must remain under human authority as the primary decision-makers.

AI must not replace academic judgement, institutional policy, or the professional responsibility of lecturers and university leaders. Technology should be used to strengthen the quality of decision-making, not to remove human accountability.

UPGRIS views the integration of AI with OBE and quality assurance as a strategic step in building a higher education system that is excellent, adaptive, and future-oriented. Digital transformation must support educational quality, not merely administrative modernisation.

Thus, the utilisation of GenAI integrated with OBE and quality assurance systems will strengthen UPGRIS's capacity to produce graduates who are competent, professional, of strong character, and ready to face global challenges in the era of artificial intelligence.

H. INFRASTRUCTURE READINESS AND INSTITUTIONAL GOVERNANCE

The utilisation of GenAI within higher education institutions requires not only the readiness of human resources, but also adequate digital infrastructure, institutional governance, monitoring systems, as well as data protection and information security. The Joint Ministerial Decree of 2026 emphasises that educational institutions must identify the readiness of human resources, infrastructure, governance, data management, academic ethics, artificial intelligence ethics, and digital literacy in the implementation of AI.

In the context of UPGRIS, the utilisation of AI must be supported by a structured institutional system so that the use of technology is not individual and sporadic, but becomes part of an institutional transformation that is planned, measurable, and sustainable. Adequate digital infrastructure is a fundamental prerequisite to ensure that AI utilisation can be carried out safely, effectively, and in accordance with the principles of academic integrity.

Infrastructure readiness includes the availability of sufficient internet access, network security systems, protection of institutional servers and databases, user account management, and the selection of credible AI platforms that are suitable for academic needs. The university must consider the use of AI platforms that have clear data security standards, including the possibility of developing institution-based internal AI systems to support academic activities and university governance.

In addition, the utilisation of AI also requires stronger institutional governance through the designation of management units responsible for monitoring, evaluation, and the development of AI policies. Units such as the Curriculum Centre, Quality Assurance Institute, Information Technology Unit, as well as faculty and study programme leaders, need to collaborate to ensure that AI implementation is carried out consistently across the university environment.

Monitoring and evaluation of AI utilisation must be conducted periodically to assess implementation effectiveness, compliance with guidelines, potential misuse, and the need for policy improvement. This evaluation may be carried out through academic audits, learning reviews, curriculum evaluation, and unit reporting as part of the university's internal quality assurance system.

UPGRIS must also pay attention to the risks of AI misuse related to digital identity manipulation, deepfakes, academic impersonation, and the spread of false information that may harm members of the academic community. Preventing these risks requires education,

verification systems, personal data protection, and strong digital security policies.

With strong infrastructure readiness and sound institutional governance, the utilisation of AI within UPGRIS can be carried out in a safer, more transparent, accountable, and sustainable manner, while also supporting the realisation of a university that is excellent, adaptive, innovative, and firmly grounded in its identity in the era of artificial intelligence.

CHAPTER V

GUIDANCE AND PREVENTION OF GENAI MISUSE

Alongside the significant benefits, discussions regarding the dangers of GenAI also need to be considered. Can the dangers of GenAI be avoided or minimised? This depends on users' knowledge of GenAI itself, including its benefits and risks. According to UNESCO's guidance on Generative AI (GenAI) in education, eight main controversies have been identified (Guidance for Generative AI in education and research – UNESCO Digital Library). Table 10 outlines these controversies and the impact of each.

Table 10. GenAI controversies according to UNESCO

No	Controversy	Description	Impact
1	Exacerbating the Digital Divide	GenAI requires access to big data, high computing power, and a good internet connection, which are only available to certain people.	This widens the digital divide between those with access to advanced technology and those without, and exacerbates digital inequality.
2	The Pace of GenAI Development	GenAI technology is developing faster than national regulatory frameworks can adapt.	Inadequate regulation leads to misuse of the technology, including data security issues and bias in its application.
3	Copyright Infringement	GenAI often uses content without explicit permission from the copyright holders.	This raises legal and ethical issues, as well as the potential for legal action from copyright holders.
4	'Black Box' Nature	Many GenAI models are difficult to explain or understand in terms of how they generate their outputs.	Reduced transparency and accountability, as well as the difficulty in detecting and correcting bias or errors in GenAI outputs.
5	Decline in Information Quality	Content generated by GenAI can spread across the internet, thereby reducing the quality of information.	This erodes public trust in digital information and increases the spread of misinformation or misleading content.
6	Poor Contextual Understanding	GenAI does not understand real-world context, resulting in inappropriate responses.	There is a potential for misinformation and disinformation, and it may mislead users who rely on GenAI for accurate information.
7	Reduction in Diversity of Opinion	GenAI can reduce diversity of opinion and marginalise already marginalised voices.	Reduced representation of minority voices exacerbates bias and injustice in public discourse and policy-making.
8	Increase Deep Fakes	GenAI is capable of generating more sophisticated deep fakes	This increases the risk of disinformation and manipulation, and threatens the integrity of

No	Controversy	Description	Impact
		(fake images).	information and public trust.

Furthermore, there are ethical and legal issues surrounding GenAI (Guidelines for the Use of Generative AI in Teaching and Learning), including:

1. Inaccuracy and misinformation

As explained in Chapters 2 and 4, GenAI can provide inaccurate information and cannot indicate where that information originates from. Several techniques/methods can address this, one of which is retrieval-augmented generation (RAG), which will be discussed in the following section.

2. Bias

GenAI is trained using vast amounts of data to mimic and identify patterns within that data. The problem that arises is that the data it learns from may contain biased information, causing the GenAI model to become biased as well. GenAI, such as ChatGPT, is a closed-source model; therefore, testing for potential bias and misinformation within this model is, of course, not possible.

3. Privacy and security

GenAI collects conversation and interaction data from all users; even when a user's account is deleted, this data may still be retained by the GenAI service provider.

In this context, strategies for guidance and the prevention of GenAI misuse become highly important, considering the ethical controversies and challenges that exist. UNESCO emphasises the expansion of ethical guidelines, transparency, and user education as essential measures to mitigate risks. Effective monitoring mechanisms and the involvement of stakeholders from various sectors are also crucial to ensuring the responsible, ethical, and sustainable use of GenAI.

There are at least three approaches to preparing students, lecturers, and administrative staff to adapt to GenAI technology, particularly in the field of education. The first strategy is guidance and reskilling, including GenAI literacy and knowledge of how to use the technology appropriately, as well as understanding its potential limitations and risks. The second strategy is strengthening risk prevention systems through clear policies, academic monitoring, and the reinforcement of a culture of integrity, rather than relying solely on repressive sanctions. The third strategy is the transformation of learning processes so that they can adapt effectively to the presence of GenAI.

In the context of UPGRIS, a preventive approach must be prioritised over a repressive one. Preventing the misuse of AI cannot rely solely on prohibition, but must be built through literacy, mentoring, appropriate assessment design, and the strengthening of a healthy academic culture. In this way, GenAI can be utilised as a strategic support tool without compromising academic integrity and the quality of higher education.

A. TRAINING AND RESKILLING

1. AI Literacy and Reskilling

Capacity building for the academic community to adapt to technological developments, particularly regarding GenAI, needs to be carried out on a regular basis. One way to achieve this is through workshops, seminars, and training sessions on the potential and risks of the latest technology. Raising awareness of GenAI within the academic environment is crucial in today's digital age. Introducing GenAI through workshops, seminars, and mentoring sessions not only broadens perspectives on positive

potentials, such as efficiency in research and teaching, but also prepares lecturers and students to identify and avoid the misuse of this technology in an academic context. This includes training on how to integrate GenAI into academic activities whilst maintaining academic integrity and ensuring the responsible use of GenAI.

Table 11. Example of a training module syllabus for a GenAI workshop (adapted from the Generative AI in Education Info Series | Digital Learning & Innovation)

Module	Sample Syllabus
<i>Understanding Generative AI</i>	A basic introduction to GenAI, its working principles, and its various applications in education.
<i>Implications for Teaching & Learning</i>	A discussion of GenAI's impact on learning methods and how this technology can enhance the learning experience.
<i>Communicating AI Use in Courses</i>	Strategies for explaining the use of GenAI in syllabi and course materials to students, as well as ethics and transparency in using GenAI.
<i>Developing Course Materials</i>	How to use GenAI tools to create and organize learning materials more efficiently and creatively.
<i>Student Perspectives</i>	Student perspectives on the use of GenAI in learning, including its benefits and challenges.
<i>AI's Impact on Learning Assessment</i>	An analysis of how GenAI can be used for learning evaluation and assessment, and its impact on traditional assessment methods.
<i>Exploring AI Tools</i>	An exploration of the various GenAI tools available for education, demonstrations of their use, and practical exercises in real-world classroom applications.

One of the main forms of capacity building is through workshops, seminars, training programmes, and mentoring sessions that specifically address GenAI literacy. These activities are important for increasing academic awareness of changes in the learning ecosystem in the digital era. Introducing GenAI is not only intended to broaden understanding of its positive potential, such as improving efficiency in research, learning, and academic governance, but also to prepare the academic community to identify and avoid the misuse of technology in academic contexts.

AI literacy training should include a basic understanding of how GenAI works, the distinction between AI as a support tool and AI as a source of information, the risks of hallucination, algorithmic bias, data security, AI-based plagiarism, and the principles of academic integrity in the use of technology. Students need to understand that GenAI is not a tool for replacing the thinking process, while lecturers need to understand how AI can be appropriately utilised in pedagogy, assessment, and curriculum development.

Seminars, in particular, may address GenAI outputs that may be biased or inaccurate, as well as methods for detecting and overcoming such issues. This is essential for maintaining academic quality in higher education. By understanding both sides of GenAI, its potential and its risks, the academic community can be better prepared to utilise it ethically and responsibly. As an example, Table 11 presents a sample syllabus that may be used for workshop activities on GenAI literacy, particularly in the context of learning.

In the context of teaching and learning, training must also be directed towards integrating GenAI into academic activities without reducing the quality of the learning

process. Lecturers need to be equipped with the ability to design learning that continues to emphasise Higher Order Thinking Skills (HOTS), Student-Centred Learning (SCL), and authentic assessment despite the ease of access to AI. Students need to be guided to use AI as a tool for reflection, exploration, and strengthening understanding, rather than as a shortcut for completing assignments.

UPGRIS also needs to develop systematic internal training modules on GenAI literacy for new lecturers, new students, and administrative staff. These modules may include the basic introduction to GenAI, the ethics of AI use, data security, prompting techniques, information validation, and best practices in the use of AI for learning and research. This approach will help the university build an academic culture that is adaptive to technology while remaining grounded in scholarly integrity.

In addition to formal training, capacity building may also be carried out through communities of practice, academic discussion forums, peer mentoring among lecturers, and cross-unit collaboration in sharing experiences of AI use. This approach enables more contextual and sustainable learning because real experiences from users become a source of collective reflection.

Reskilling does not only mean learning new technologies, but also adjusting professional competencies to changes in ways of learning and working in the AI era. Lecturers need to develop new pedagogical competencies, administrative staff need to adapt to digital service systems, and students need to build stronger independent learning competencies.

As a future-oriented higher education institution, Universitas PGRI Semarang views AI literacy as a fundamental academic necessity rather than an additional skill. Capacity building and reskilling are long-term investments to ensure that digital transformation genuinely improves educational quality, strengthens academic integrity, and produces graduates who are prepared to face the challenges of the labour market and social change in the era of artificial intelligence.

2. Prompt Engineering

Knowledge of how to interact with GenAI is one of the essential competencies that must be mastered by anyone who intends to utilise GenAI technology, particularly text-based systems such as ChatGPT.

Prompting is the process of providing instructions, questions, context, or commands to an AI system so that it generates responses that meet the user's needs. Meanwhile, prompt engineering refers to the technique of designing prompts systematically so that the outputs produced are more accurate, relevant, specific, and academically accountable.

In the context of higher education, prompting techniques are not merely intended to obtain quick answers, but also to support critical thinking, idea exploration, problem analysis, and academic reflection. A well-designed prompt helps users obtain higher-quality results, whereas a poorly designed prompt may produce responses that are superficial, biased, or inconsistent with learning objectives.

The following are several guidelines that can be applied based on curated contemporary prompting techniques (Prompt Engineering Guide), with some examples illustrated in Figure 37.

a) Instruction Clarity

Instruction Clarity is a prompting technique that ensures the instructions given to a Large Language Model (LLM) are clear, specific, and unambiguous. This is essential for obtaining the desired results. The clearer the question or command provided, the greater the likelihood that AI will generate a response that meets the user's needs.

For example, the question “Explain statistics” is too broad and may result in a very general answer. In contrast, a prompt such as “Explain the concept of normality testing in quantitative educational research, including examples of its application” will generate a more focused and academically relevant response. Clarity of instruction is crucial to avoid misinterpretation by the AI system.

b) Context Provision

Context Provision is a prompting technique that provides sufficient context so that the model can understand and respond to instructions more accurately. This involves providing relevant additional information to help the model interpret the question or task more effectively.

With complete context, the response generated will be far more accurate. For example, if a user requests assistance in preparing questions, a better prompt would be: “Create five HOTS questions on the topic of the Pythagorean Theorem for Year 8 junior secondary school students using a contextual approach” rather than simply writing “Create Pythagorean questions.” With fuller context, the response becomes more relevant, level-appropriate, and useful for learning purposes.

c) Role Assignment

Role Assignment is a prompting technique in which the model is assigned a specific role or identity in order to adjust its response accordingly. This helps the model respond in a way that is more relevant and specific to the assigned role.

Users may ask AI to act as a lecturer, researcher, journal reviewer, curriculum expert, or academic evaluator. For example: “Act as an international journal reviewer and provide critical feedback on the following research abstract.” This technique helps generate responses that are more specific, structured, and aligned with professional or academic needs.

d) Constraints and Conditions

Constraints and Conditions is a prompting technique in which specific boundaries or requirements are set to ensure that the model produces the desired response. This helps guarantee that the answer aligns with particular criteria and remains relevant.

These constraints may include word limits, response format, writing style, educational level, or a particular methodological approach. For example: “Explain the concept of Outcome-Based Education in 200 words using formal academic language and include an example of implementation in higher education.” With clear constraints, AI can generate more controlled and suitable responses.

e) Iterative Refinement

Iterative Refinement is a prompting technique in which prompts are gradually improved and repeated in stages to achieve the desired result. This process involves initial testing, evaluation of the output, and prompt adjustment until an optimal response is obtained from the model.

For example, after receiving an initial answer that is too general, the user may add further instructions such as: “Clarify the critical analysis section and include examples of implementation in the context of Indonesian higher education.” This process demonstrates that the use of AI still requires active involvement and reflective thinking from the user.

Within UPGRIS, prompt engineering skills should become part of the new academic literacy for lecturers, students, and administrative staff. Students need to understand that a good prompt supports the learning process rather than simply generating instant answers. Lecturers need to utilise prompting techniques to support the preparation of teaching

materials, assessment, research, and learning evaluation.

However, prompting techniques must not be understood as a way of “tricking” AI into automatically generating assignments without genuine learning. Prompt engineering must be positioned as a tool for thinking, not as a means of avoiding academic responsibility.

By understanding appropriate prompting techniques, members of the academic community can utilise GenAI more productively, accurately, and responsibly. This competence forms an important part of educational transformation in the era of artificial intelligence and supports the development of an academic culture that is adaptive, critical, and grounded in integrity.

Example Prompts	Example Prompts
Instruction Clarity	✓ Provide a brief summary of this article, covering the main points about the impacts of climate change. ✗ Provide a summary.
Context Provision	✓ Climate change refers to long-term changes in temperature and weather patterns around the world. Discuss the main causes of climate change and its impact on marine ecosystems. ✗ Explain what climate change is.
Role Assignment	✓ As a climate scientist, discuss the main causes of climate change and its impact on marine ecosystems. ✗ Explain what climate change is.
Constraints and Conditions	In 250 words , explain how solar panels convert sunlight into electricity, list their main components, and discuss common household applications.
Iterative Refinement	Prompt 1: How do solar panels work? Output 1: Solar panels convert light into electricity. Prompt 2: Explain how solar panels convert sunlight into electricity and list their main components. Output 2: Solar panels use photovoltaic cells to convert sunlight into electricity. The main components are PV cells, an inverter, and a battery. Prompt 3: Explain how solar panels convert sunlight into electricity, list their main components, and discuss common household applications. Output 3: Solar panels convert sunlight into electricity using photovoltaic (PV) cells made of silicon. The main components include PV cells, an inverter to convert direct current (DC) to alternating current (AC), and a battery to store the energy. Common household applications include water heating and lighting.

Figure 37. Examples of recommended prompting techniques

3. Improving accuracy with RAG

There are still many challenges concerning the precision and accuracy of information generated by Generative Artificial Intelligence (GenAI). One of the main weaknesses of

GenAI is its ability to produce answers that appear convincing but are actually inaccurate, incomplete, or even entirely incorrect. This phenomenon is known as hallucination, where an AI system generates information that seems true but has no valid source basis. In an academic context, this condition is highly problematic because it may lead to conceptual errors, fabricated references, and a decline in the quality of scholarly work.

As explained in the section on prompting techniques, GenAI can produce more accurate responses when users provide relevant context as part of the prompt. However, manual context provision is often not sufficient to guarantee information accuracy, especially when users require answers based on academic documents, official regulations, or specific scholarly sources. Therefore, a more systematic approach is needed to improve the accuracy of AI-generated responses.

One of the most widely used methods is Retrieval-Augmented Generation (RAG). RAG is a method that combines the strengths of a Large Language Model (LLM) with an external information retrieval system in order to improve the precision, relevance, and validity of generated responses. This approach is particularly important in higher education because it helps ensure that AI does not merely “guess” answers based on language patterns, but also refers to sources that are more academically reliable.

Several GenAI platforms already support RAG systems, where users can upload documents to serve as source material or contextual references for prompts, such as ChatGPT, Gemini, Claude, Perplexity, and other platforms. In this way, AI can respond based on the provided documents rather than relying solely on its general training data.

RAG, as a method combining a generative model with a retrieval model, involves two main stages:

a) Retrieval

The first stage is retrieval, which is the process of obtaining relevant information from external sources such as databases, journals, official documents, digital books, or other academic resources. The retrieved information is then used as additional context for the prompt that will be processed by the AI.

For example, when a lecturer asks AI to assist in analysing learning outcomes based on a study programme curriculum document, the system first searches for relevant information within that curriculum document before generating a response.

b) Generation

The second stage is generation, which is the process in which AI uses the information obtained from the retrieval stage to produce a response that is more accurate, contextual, and informative.

With context drawn from reliable sources, AI-generated answers become academically stronger and are less likely to contain incorrect or biased information.

As an illustration, if a user asks the question: “What is climate change?”, the RAG system will first search for relevant information from indexed sources such as books, scientific articles, and digital documents. After identifying suitable sources, the system selects the most important information and then organises it into a coherent answer, for example: “Climate change is a long-term alteration in Earth’s temperature and weather patterns that may be caused by human activities such as greenhouse gas emissions, which contribute to global warming.”

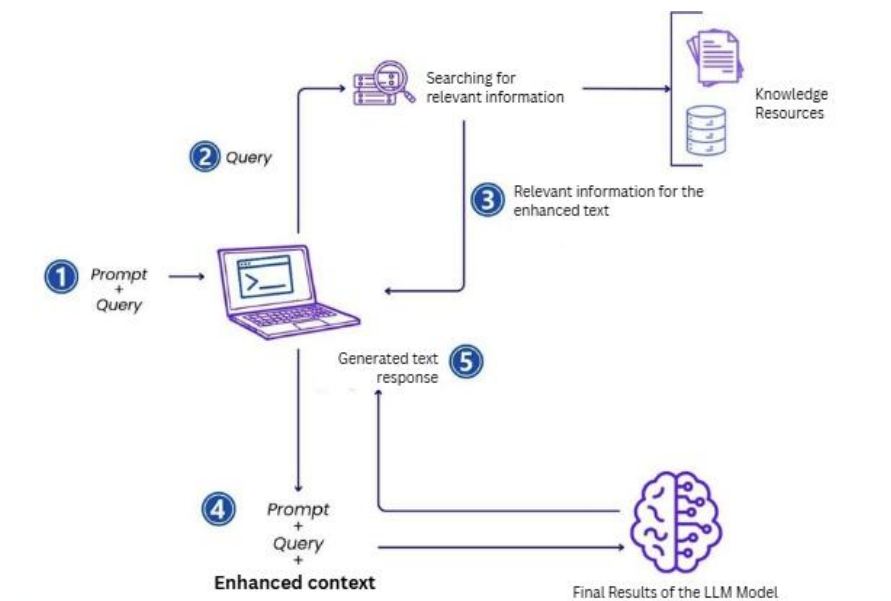


Figure 38. Retrieval-Augmented Generation (RAG)

Through this process, the responses generated become not only more convincing in language, but also stronger in substance because they are supported by relevant sources. This is particularly important in academic writing, research, and policy development within higher education institutions.

The use of RAG can significantly improve the precision and relevance of responses provided by Large Language Models (LLMs). The combination of external information retrieval and text generation capabilities enables AI systems to provide responses that are more accurate and informative. By understanding how RAG works, users can improve the quality of the prompts and queries they provide, ensuring that the results obtained are more aligned with academic needs.

Within UPGRIS, the utilisation of RAG is highly relevant in learning activities, research, curriculum development, OBE evaluation, quality assurance, and institutional document management. Lecturers may use RAG to support the analysis of academic documents, students may utilise it for initial literature exploration, and administrative staff may apply it to support more accurate institutional data management.

However, an important concern when using GenAI based on closed or paid models is that users should not upload sensitive documents such as personal data, corporate documents, unpublished research materials, or strategic institutional documents into public GenAI applications. The risks of data leakage and loss of control over information remain major concerns. Therefore, the use of RAG must always be accompanied by careful consideration of data security, privacy protection, and compliance with institutional policies.

Thus, RAG is not merely a technique for improving AI accuracy, but also an important part of academic literacy in the era of artificial intelligence. Understanding RAG helps members of the academic community use AI more critically, responsibly, and in accordance with the principles of scholarly integrity.

B. RISK PREVENTION STRATEGIES

The use of Generative Artificial Intelligence (GenAI) in higher education offers many opportunities to improve efficiency, innovation in learning, and research productivity. However, alongside these benefits, there are also risks of misuse that may threaten academic integrity, the quality of learning, data security, and public trust in higher education institutions.

Therefore, universities need to implement effective risk prevention strategies to ensure that the utilisation of GenAI remains ethical, responsible, and sustainable.

Risk prevention strategies cannot rely solely on prohibiting the use of AI, because an overly repressive approach may worsen digital inequality and reduce the readiness of the academic community to face technological transformation. Effective prevention must be built through clear policies, the strengthening of academic systems, continuous guidance, and proportionate monitoring.

Within UPGRIS, risk prevention strategies aim to ensure that GenAI is used as an academic support tool (assistive technology), rather than as a means of academic dishonesty, data manipulation, or other ethical violations. Prevention must also be directed towards strengthening a culture of academic integrity so that students, lecturers, and administrative staff develop collective awareness regarding the responsible use of AI.

There are at least three main approaches to risk prevention strategies: clear and strict policies, the use of supporting technologies, and the development of alternative assessment methods that are more authentic and process-oriented. These three approaches form an essential foundation for building a higher education system that is adaptive to AI while maintaining academic quality.

1. Clear and Strict Policies

Prohibiting the use of Generative Artificial Intelligence (GenAI) entirely is not an appropriate solution in higher education, as it may instead worsen digital poverty and lead to low levels of AI literacy among members of the academic community. What is more necessary is a shared agreement regarding the ethical, responsible, and well-directed use of GenAI at the institutional level, within the curriculum, and in classroom learning agreements.

The utilisation of GenAI must be positioned as part of a higher education transformation that is adaptive to technological development while continuing to uphold academic integrity, scholarly honesty, data protection, and professional responsibility. Clear policies help students, lecturers, and administrative staff understand the appropriate boundaries of AI use so that technology can be utilised productively without causing academic violations.

a) GenAI Regulation at the Curriculum Level

Policies regarding the use of GenAI need to be integrated directly into the higher education curriculum. This integration requires clear guidance, objectives, and expectations for both lecturers and students so that the use of AI is not merely technical, but becomes part of a responsible learning process.

Universities may encourage every study programme to include GenAI literacy within the curriculum, whether in the form of a dedicated course, as part of relevant subjects, through academic workshops, or through additional competency development programmes. The objective is to ensure that students and lecturers possess adequate understanding of the potential, risks, ethics, and limitations of AI use in academic contexts.

In addition, the syllabus and Semester Learning Plan (RPS), as the main instruments of teaching and learning, must explicitly include policies regarding the use of GenAI. Lecturers may explain forms of AI use that are permitted, such as brainstorming, initial idea exploration, grammar checking, or technical editing. The use of GenAI may also be allowed with proper acknowledgement, such as stating the prompts used, explaining the contribution of AI, and following the applicable academic citation style.

Table 12 illustrates examples of statements that may be included in the syllabus, particularly in the assessment methods section. In this way, the integration of GenAI into the curriculum can be carried out responsibly, in accordance with the principles of academic integrity, while also strengthening GenAI literacy.

Table 12. Example of the integration of GenAI use in the syllabus

Use Effectively	Example sentences in the syllabus
Use with Prior Permission	Students can use GenAI tools like ChatGPT for final-semester projects. GenAI may be used to draft concepts, obtain feedback, and check grammar. Using GenAI for other assignments is not permitted, as it is intended to compare results with and without GenAI.
Use with Acknowledgement	"Students may use GenAI tools for data analysis assignments, group presentations, and research papers. Any use of GenAI must be acknowledged by citing the prompt used and following MLA citation style."
Free Use Without Acknowledgement	"Students may use GenAI for this creative assignment without acknowledging its use. However, it is recommended to keep a record of the prompt and answers for personal reflection."
Prohibited Use	"The use of GenAI is not permitted in this assignment to ensure the development of critical and analytical thinking skills. The use of GenAI will result in a grade reduction for the assignment."

In certain types of assignments, the use of AI may be limited or even completely prohibited, particularly when the learning objectives focus on developing students' critical, analytical, argumentative, and reflective thinking skills. Lecturers must also explain the limitations of GenAI, such as the potential for bias, inaccurate information, and the risk of hallucination, so that students do not use AI passively without academic verification.

Thus, the integration of GenAI into the curriculum is not merely about permitting or prohibiting the use of AI, but about ensuring that its utilisation remains aligned with learning outcomes, the principles of Outcome-Based Education (OBE), and academic integrity.

b) GenAI Regulation at the Institutional Level

At the institutional level, the university must establish official guidelines regarding the use of GenAI in learning, research, community service, and institutional governance. These regulations must provide clear definitions of what forms of AI use are permitted and what forms are prohibited, while also serving as the basis for consistent academic decision-making across all units.

Institutional guidelines should also include examples of ethical and unethical uses

of GenAI so that they are easily understood by all members of the academic community. For example, the use of AI to assist in developing a conceptual framework may be permitted, whereas using AI to generate an entire academic assignment without the user's own intellectual process constitutes a violation of academic integrity.

In addition, policy dissemination is an essential component. Good guidelines must not only be written, but also understood. Therefore, the university needs to conduct seminars, training sessions, workshops, and open communication regarding the use of AI so that students, lecturers, and administrative staff share the same awareness of the boundaries and responsibilities involved in using GenAI. Figure 39 presents a brief guideline on how and where GenAI should be used in accordance with ethics, privacy, and data security principles.

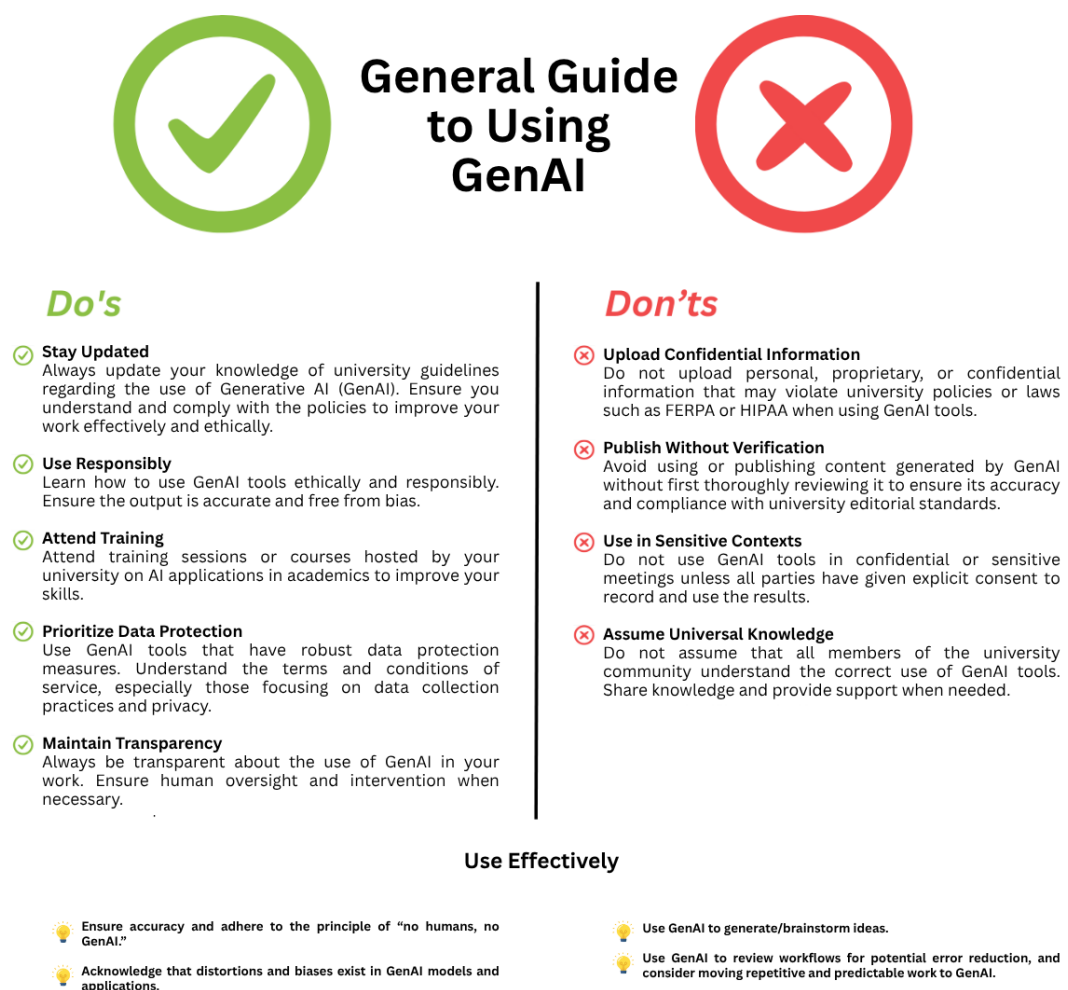


Figure 39. Example of Recommendations and Dissemination of GenAI Usage

More detailed provisions regarding usage limitations, disclosure obligations, academic monitoring, and the enforcement of sanctions are regulated in Chapter IV of this Guideline. Therefore, the emphasis in this section is focused on building shared understanding and ensuring consistency in policy implementation.

c) Sanctions and Consequences

The implementation of GenAI usage policies must be accompanied by clear academic consequences in order to maintain academic integrity. Sanctions are required not merely as a form of punishment, but as a mechanism for guidance and the enforcement of academic responsibility.

Violations such as using AI to cheat during examinations, AI-based plagiarism, research data fabrication, the use of false references, or uploading confidential institutional data to public AI platforms constitute forms of misuse that must be addressed seriously. Sanctions should be applied proportionately according to the severity of the violation, ranging from academic warnings and assignment revisions to grade cancellation and disciplinary sanctions in accordance with university regulations.

Transparency regarding the consequences of violations is also very important as part of the prevention strategy. Students and lecturers need to understand that irresponsible use of AI carries real academic consequences. Therefore, information regarding types of violations, handling mechanisms, and academic consequences must be communicated openly.

Nevertheless, the primary approach should remain preventive and educational. The enforcement of sanctions must be accompanied by guidance, AI literacy, and mentoring so that members of the academic community are not merely afraid of punishment, but genuinely understand the importance of using GenAI ethically and responsibly.

2. Supporting Technology

The development and utilisation of supporting technologies form an important part of risk prevention strategies in the use of GenAI. Higher education institutions may use various supporting tools to detect potential AI misuse, such as plagiarism detection systems, AI-generated text detectors, academic activity monitoring systems, and digital learning audit systems.

Several platforms, such as ZeroGPT, QuillBot AI Detector, and similar tools, may be used to help identify the possibility of text generated by GenAI. However, it must be understood that AI detection technology still has limitations in terms of accuracy and cannot yet be fully relied upon as the sole basis for academic decision-making. Figure 40 provides an example of text detection to determine whether content has been generated by GenAI or not.

Therefore, detection results must always be accompanied by academic verification by lecturers or authorised personnel. Alleged violations must not be determined solely on the basis of automated system results without a fair and professional clarification process.

Supporting technologies may also be used to monitor compliance with AI disclosure obligations, evaluate the quality of academic assignments, and strengthen the university's internal quality assurance system.

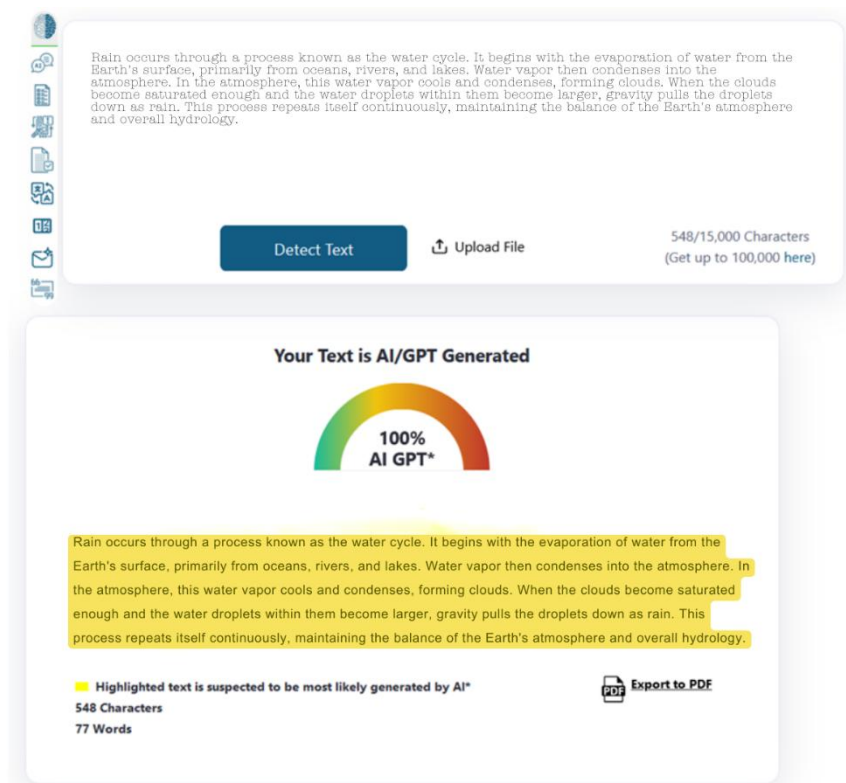


Figure 40. Detection of text generated by GenAI using ZeroGPT

3. Alternative Assessment

One of the most effective strategies for preventing the misuse of GenAI is to design assessment methods that focus not only on final outcomes, but also on thinking processes, argumentation, reflection, and students' ability to justify their own work.

Alternative assessment methods such as oral examinations, presentations, proposal seminars, open examinations, written reflections, portfolios, project-based learning, and authentic assessment can help lecturers validate students' understanding more deeply. This approach makes dependence on AI more difficult because students must demonstrate their intellectual process directly.

A focus on critical and analytical thinking processes also helps develop Higher Order Thinking Skills (HOTS), which are one of the main objectives of higher education. Assessment no longer measures only the ability to produce answers, but also the ability to understand, analyse, evaluate, and create solutions.

In this way, academic integrity can be maintained without having to reject the presence of AI entirely.

UPGRIS believes that risk prevention strategies must be built through a balance between regulation, education, and pedagogical innovation. Effective monitoring is not intended to restrict creativity, but to ensure that technology is used to strengthen the quality of learning and a healthy academic culture.

Through clear policies, appropriate technological support, and the transformation of adaptive assessment systems, the utilisation of GenAI can be carried out productively without compromising academic integrity, fairness, and the quality of higher education.

C. TRANSFORMING THE LEARNING PROCESS

To maintain the quality of education and ensure that students continue to use logical, critical, and reflective thinking in learning, it is important to carry out a transformation of learning processes that is adaptive to the presence of GenAI. This transformation is not intended to reject technology, but to ensure that the presence of AI strengthens the quality of learning rather than weakening students' intellectual processes.

Assessment becomes one of the most critical points in this transformation because it is the main indicator used to determine whether students have genuinely achieved the intended learning outcomes. The presence of GenAI creates new challenges for lecturers, particularly when academic tasks such as essays, reports, or written responses can be easily generated by AI without reflecting genuine understanding.

Various universities around the world have shown that the main issues related to GenAI in learning include academic misconduct, unclear policies regarding AI usage, the need for assessment redesign, the limitations of AI detection technology, data security concerns, the need for training for lecturers and students, and issues of equal access to technology. Therefore, educational transformation must be directed towards strengthening the learning process rather than merely evaluating final outcomes. Table 13 presents several GenAI-related issues in learning assessment identified through surveys conducted at some of the world's leading universities.

Table 13. GenAI issues in GenAI policies at several in the world

Category	What is the issue?	Example
Academic misconduct	Students may not submit their own original work for assessment	"Content generated by AI platforms, such as ChatGPT, does not constitute the student's own original work and is therefore considered a form of academic misconduct that must be dealt with in accordance with the University's disciplinary procedures."
Policies & Guidelines	A lack of clear expectations and guidance (from course lecturers) regarding students' use of GenAI in assessment	"Lecturers must clearly and consistently communicate to students their expectations regarding the use of GenAI in their assignments and classes, including when it is permitted and when it is not, as well as what use of GenAI is considered a breach of academic integrity."
Assessment design	Current assessment tasks must be redesigned to address both the opportunities and challenges presented by GenAI	"Ensure that assessments are developed to evaluate learning outcomes that test and award credit for higher-order thinking skills that cannot yet be replicated by GenAI, such as critical thinking and the synthesis of new ideas, and ensure that the specific questions asked in assessments are updated regularly."

Category	What is the issue?	Example
Technology (Technological limitations)	GenAI generates inaccurate and biased information	“Although their outputs may appear plausible and well-written, AI tools are often incorrect and cannot be relied upon for factual accuracy.”
Technology (Technological limitations)	Tools detection GenAI unreliable	“We believe that detection and monitoring tools are not an effective way to identify or prevent the use of GenAI. These tools are unreliable and appear to be biased. We do not recommend that staff use these tools.”
Technology (Technological limitations)	The use of GenAI raises data security and privacy concerns	“GenAI systems, applications, and software products that process, analyse, or transfer confidential data require a security review prior to acquisition, even if the software is free.”
Training and Support	Lecturers and students need receive relevant training	“Introducing training for students to highlight the key features of AI content-generation tools and, in particular, their limitations.”
Equity	Issues of equality and fairness arise from the use of GenAI in assessment	“If assessment guidelines permit the use of GenAI, measures will be taken to ensure fair access.”

Lecturers and curriculum teams need to develop the capacity to innovate in designing learning in the era of GenAI. Greater emphasis must be placed on process-oriented assessment, both in formative and summative forms. The primary focus should no longer be solely on the final product submitted by students, but on how students think, construct arguments, engage in reflection, and justify their own learning processes.

The following are several alternative assessment methods that may be used in the transformation of learning in the GenAI era.

1. Authentic Assessment

Authentic assessment focuses on real-world problems and high levels of complexity, thereby requiring high-quality cognitive processes. Through authentic assessment, students are expected to produce meaningful solutions that can be applied in real contexts. Authentic assessment requires students to demonstrate not only the application of their knowledge, but also their professional skills and attitudes.

For example, Problem-Based Learning (PBL) or Inquiry-Based Learning encourages students to generate multiple possible solutions supported by strong reasoning. When problems are situated within highly specific, local, and concrete contexts, it becomes more difficult for GenAI to generate accurate answers automatically. Assessment of these learning outcomes may also involve practitioners from relevant industries.

a) Project-Based Learning (PBL)

Project-Based Learning involves students in long-term projects that require them to investigate and respond to complex questions, problems, or challenges. In PBL, assessment focuses on both the process and the final product, with students regularly reflecting on their progress and receiving feedback that helps improve their work.

PBL enables students to apply their knowledge in real situations while fostering critical thinking and problem-solving skills.

b) Video Assessment

Video assessment involves students creating videos as part of their assignments or projects. These videos may include presentations, experimental demonstrations, or academic discussions.

Video assessment allows students to demonstrate their understanding creatively and enables assessors to observe students' abilities in a more authentic context, including how they communicate and present ideas. In addition, video assessment helps students develop communication and presentation skills.

c) Published Assessment

Published Assessment involves students publishing their work, either online or in print form. Knowing that their work will be publicly available often encourages students to be more serious and careful in completing their assignments.

Published Assessment also provides students with opportunities to receive feedback from a wider audience, not only from lecturers or peers.

2. More Personalised Assessment

When students are asked to provide brief reflections explaining the reasoning behind their approach to a particular problem, a portfolio-based approach can be applied. Collecting various forms of evidence from the learning process allows for more personalised assessment. Gathering draft sections from different stages of evaluation enables a formative approach and provides a clearer understanding of each stage of students' abilities and their development over time.

The use of information technology can also strengthen trust in personalised assessment methods, for example through the submission of assignments in the form of podcasts or narrated presentation recordings rather than relying solely on written reports.

a) Self-Reflection

Reflective assessment requires students to reflect on their own learning processes, identify what they have learned, the difficulties they have encountered, and how they can improve in the future. Self-reflection helps students develop metacognitive awareness and critical thinking about their own learning journey.

b) Live Assessment

Live assessment creates stronger opportunities for academic interaction between lecturers and students through oral presentations, oral examinations, proposal defences, open examinations, or direct academic discussions.

This approach helps lecturers validate students' understanding more authentically and reduces the possibility of dependence on AI.

3. Focus on the Learning Process

Focusing only on final outputs such as essays or presentations is not sufficient to represent the full learning process of students. Assessment must emphasise evidence of the learning journey, such as task planning, initial drafts, revisions, the use of feedback, and reflection on each stage of learning.

Building connections between stages of assessment helps reduce the risk of academic integrity violations and reinforces the understanding that learning is a continuous process. For example, students may be asked to explain how they used feedback from a previous assignment to improve the next one.

This approach increases the personalisation of assessment and strengthens the pedagogical relationship between lecturers and students.

4. Proctoring

Supervision during examinations or online assessments (proctoring) remains one of the strategies for maintaining academic integrity. Proctoring may be conducted directly or through software that monitors students' activities during examinations.

Its purpose is to ensure that students follow academic regulations and do not engage in misconduct during the evaluation process. However, the use of proctoring must also consider issues of privacy, proportionality, and fairness so that it does not create excessive discomfort.

By using these various assessment methods, lecturers can ensure that students not only master learning content, but also develop critical, analytical, reflective, and professional skills that are essential for their future success.

Learning that focuses on process is one of the main solutions for ensuring that students genuinely understand the material and assignments given, whether they use GenAI or not. Thus, the transformation of learning processes becomes an essential step in maintaining the quality of higher education in the era of artificial intelligence.

D. PERIODIC MONITORING AND EVALUATION

The utilisation of GenAI in higher education is a dynamic and continuously evolving process, following technological developments, changing learning needs, and the ethical academic challenges that accompany it. Therefore, guidance and the prevention of AI misuse cannot be carried out as a one-time effort, but require periodic monitoring and evaluation to ensure that implemented policies remain relevant, effective, and responsive to change.

Monitoring is necessary to ensure that the use of AI within UPGRIS is aligned with institutional guidelines, supports learning outcomes, and does not result in violations of academic integrity, unfairness, or misuse of technology. Evaluation is also important for identifying emerging needs, new challenges, and areas that require policy improvement.

Monitoring may be conducted at various levels, ranging from individual courses, study programmes, and faculties to the university level. Lecturers evaluate the use of AI in assignments and learning assessments, study programmes supervise the implementation of academic policies, while the university conducts institutional quality audits and policy evaluations.

Periodic evaluation must also include the effectiveness of AI literacy training, the implementation of disclosure practices, the quality of authentic assessment, compliance with AI usage policies, and the impact of AI utilisation on learning quality and the achievement of Outcome-Based Education (OBE). The results of this evaluation form an important basis for the process of Continuous Quality Improvement (CQI) and the university's internal quality assurance system.

In addition to academic evaluation, monitoring must also consider the social risks of AI use, such as excessive dependence on technology, the decline of critical thinking skills, misuse of digital identity, deepfakes, information manipulation, and other forms of misuse that may harm members of the academic community.

Through continuous monitoring and evaluation, the university can ensure that digital transformation through AI remains within the framework of higher education quality, academic integrity, and the protection of human values.

E. STRENGTHENING THE CULTURE OF ACADEMIC INTEGRITY

The successful and ethical utilisation of GenAI does not depend solely on regulations and formal supervision, but is largely determined by the strength of the culture of academic integrity within higher education institutions. Academic integrity is the fundamental foundation of higher education, encompassing scholarly honesty, intellectual responsibility, openness, fairness, respect for the work of others, and commitment to academic truth.

In the era of artificial intelligence, the culture of academic integrity faces new challenges because technology enables academic processes to be carried out more quickly, while also creating more complex opportunities for misuse. The use of AI for plagiarism, data fabrication, examination misconduct, document manipulation, and digital identity misuse demonstrates that the primary issue lies not in the technology itself, but in the ethics of its users.

Therefore, UPGRIS must place the strengthening of academic integrity culture as a primary strategy in preventing the misuse of AI. Students need to develop an awareness that AI is a tool to support thinking, not a substitute for intellectual responsibility. Lecturers need to instil the values of academic honesty through reflective learning design, authentic assessment, and meaningful pedagogical interaction.

The culture of integrity must also be strengthened through new student orientation programmes, lecturer training, academic seminars, scholarly forums, institutional codes of ethics, and the exemplary conduct of leaders and educators. When integrity becomes a shared culture, formal supervision is no longer the only means of control.

In addition, strengthening academic culture also includes protecting members of the academic community from information manipulation, deepfakes, academic impersonation, AI-based misinformation, and other forms of digital misconduct. Awareness of digital security becomes an important part of academic integrity in the AI era.

With a strong culture of academic integrity, the utilisation of GenAI becomes a means of strengthening the quality of higher education rather than a threat to academic standards. An excellent university is not the one that adopts technology the fastest, but the one that is able to preserve academic values amidst rapid technological change.

CHAPTER VI

CONCLUSION AND CLOSING REMARKS

A. CONCLUSION

Generative Artificial Intelligence (GenAI) is a technology that offers a wide range of benefits in learning, research, community service, and higher education governance. GenAI can be used to create content, transform content, understand information, combine multiple sources of knowledge, generate ideas, assist data analysis, and support academic processes in a more effective and efficient manner. In the context of higher education, the utilisation of GenAI has become an inseparable part of educational transformation. With the many conveniences it offers, the use of GenAI in learning is no longer optional, but inevitable.

Within higher education institutions, GenAI has significant potential to improve the quality of learning, strengthen the implementation of Outcome-Based Education (OBE), support Merdeka Belajar Kampus Merdeka (MBKM), enrich authentic assessment, and enhance the efficiency of academic administration and institutional governance. Students may use AI for faster and more personalised knowledge exploration, lecturers may use it to support learning design and assessment, while institutions may integrate AI into quality assurance systems, learning outcome evaluation, and data-driven decision-making.

However, GenAI also brings various risks that must be understood seriously, such as plagiarism, data fabrication, inaccurate information, algorithmic bias, privacy violations, inequality of technological access, and the potential decline of critical thinking skills. Since GenAI operates based on probability rather than absolute truth, its use must always be accompanied by academic verification, AI literacy, and strong scholarly responsibility.

The utilisation of GenAI, while simplifying many academic tasks, must be accompanied by awareness of its potential negative impacts. Therefore, the use of GenAI in learning must become part of institutional academic policy and regulation and must not contradict academic integrity, which remains the fundamental foundation of higher education. Policies and regulations are necessary to protect users and ensure that GenAI is utilised safely, ethically, transparently, and responsibly.

In mitigating the risks of GenAI utilisation, learning processes must also undergo transformation. Lecturers need to prioritise reasoning processes, academic interaction, reflection, and student-centred learning through various learning strategies and more authentic forms of assessment. Assessment should no longer focus solely on final outcomes, but also on thinking processes, argumentation, reflective ability, and students' academic accountability. In this way, the presence of AI can strengthen the quality of learning rather than weaken it.

Ethical and legal issues in the use of GenAI include inaccurate information, bias in training data, privacy and data security concerns, equality of access, transparency, accountability, and environmental impact. Effective mitigation strategies include strengthening AI literacy and reskilling, training in prompt engineering techniques, the use of Retrieval-Augmented Generation (RAG) to improve information accuracy, and reinforcing the culture of academic integrity through clear policies and proportionate monitoring systems.

Moving forward, lecturers, students, administrative staff, and policymakers will continue to work alongside the rapid development of GenAI. Changes in the educational landscape caused by AI will not occur radically at once, but gradually through the transformation of learning systems, curricula, governance, and academic culture. The successful ethical and responsible use of GenAI will become one of the main determinants of higher education quality in the future.

Education that integrates AI will increasingly emphasise collaboration, flexibility,

personalised learning, and connectivity across time and space. Academic regulations must also adapt to the principles of participation, fairness, transparency, responsiveness, accountability, credibility, and integrity. In the long term, well-planned AI utilisation will support the efficiency of higher education delivery, strengthen graduate quality, and create new value propositions for the role of lecturers as educators, intellectual mentors, and facilitators of learning.

For UPGRIS, the utilisation of GenAI must be placed within the framework of human-centred AI, namely the principle that human beings remain the central focus of education, while AI functions as a strategic tool to strengthen human capacity rather than replace it. AI must support the realisation of a university that is excellent, adaptive, innovative, and rooted in identity, in line with the institution's vision in facing the era of artificial intelligence.

B. CLOSING REMARKS

With the emergence of Generative Artificial Intelligence in higher education, there is an urgent need to develop guidelines that ensure this technology is used ethically, safely, and responsibly. The presence of AI is not merely a matter of adopting new technology, but also involves changes in ways of thinking, learning processes, and academic governance, all of which require strong institutional readiness.

This guideline has been prepared as a reference and practical framework for UPGRIS in formulating policies, regulations, and learning practices that utilise GenAI appropriately. It is intended not only to regulate the boundaries of AI usage, but also to strengthen AI literacy, safeguard academic integrity, build a healthy academic culture, and ensure that digital transformation progresses in harmony with scholarly and human values.

Through this guideline, it is expected that all members of the UPGRIS academic community, including students, lecturers, administrative staff, university leaders, and all stakeholders, will develop a shared understanding of productive, transparent, accountable, and sustainable GenAI utilisation. Responsible AI usage cannot be built solely through regulations and sanctions, but through collective awareness, a culture of integrity, and a shared commitment to maintaining the quality of higher education.

This guideline must also be understood as a dynamic and adaptive document. The development of GenAI technology is progressing very rapidly; therefore, evaluation, adjustment, and policy refinement must be carried out periodically in accordance with scientific developments, national regulations, and institutional needs. Flexibility in policy renewal is essential so that the university remains responsive to changing times without losing its academic direction.

Ultimately, the utilisation of GenAI within UPGRIS is expected not only to generate efficiency and innovation, but also to strengthen the quality of learning, improve the standards of the tridharma of higher education, produce graduates who are excellent and possess strong character, and preserve the university's identity as a higher education institution rooted in scholarship, humanity, and sustainability.

AI must serve as a strategic partner in realising UPGRIS as a university that is excellent, adaptive, innovative, and firmly grounded in its identity in the era of artificial intelligence.

Appendix 1. Ethical Checklist for the Use of GenAI by Students

Appendix 1.1. Example Guidelines on Things to Consider When Completing Academic Assignments

Question Checklist

Questions	Yes	No
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Am I prepared to answer every question calmly regarding why and how I have used AI, if any questions arise?	☐	☐
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Consider the following:

- How can I prepare myself for the discussion?
- What reasons do I have for using AI? Is it to complete certain sections? Is it used to generate ideas or create an outline, for example?
- Does my use of AI follow the guidance provided for this specific assignment?
- Have I cited correctly in accordance with the lecturer's or institution's guidelines?

Questions	Yes	No
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Am I prepared to discuss my writing process?	☐	☐
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Consider the following:

- Where and when did I complete this assignment?
- Who else has read my work and may have provided feedback?
- What changes did I make and why?
- How did I conduct the necessary research?

Questions	Yes	No
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Can I clearly describe and explain the writing choices I have made?	☐	☐
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Consider the following:

- Which sources did I choose to include or exclude?
- Why did I take this particular position?
- How and why did I choose each example or piece of evidence?
- Are my own ideas or personal experiences clearly visible?

Questions	Yes	No
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Can I provide documents from my writing process?	☐	☐
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Prepare the following as needed:

- Notes, outlines, version history, or drafts written by hand or electronically, for example if you use *Turnitin's Draft Coach* or if your lecturer enables multiple submissions in *Turnitin's Feedback Studio*.
- Feedback from peers or other trusted reviewers.

Appendix 2.2. Things to Consider Before Submitting an Assignment

Questions	Yes	No
Can I provide documents from my writing process such as brainstorming, drafting, revision, and/or reflection?	☐	☐

Success Tip #1: Use *Draft Coach* or ask your lecturer to enable the option for multiple submissions through *Turnitin Feedback Studio*.

Success Tip #2: Keep records of your documents in the form of multiple drafts.

Questions	Yes	No
Have I followed my lecturer's guidance regarding what and how GenAI tools may be used for this assignment?	☐	☐

Success Tip #3: Ask questions for clarification whenever needed.

Questions	Yes	No
Have I made an effort to ensure that my writing style and personal voice are clearly reflected in the final work?	☐	☐

Questions	Yes	No
Have I included clear citations regarding the AI used in completing this assignment?	☐	☐