



Framework on Use of Generative AI (GenAI) Tools in Higher Education Institutes (HEIs)

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1. Introduction

Generative Artificial Intelligence (GenAI) Tools refer to a class of artificial intelligence systems designed to generate new content, often in the form of text, images, or other multimedia, that is contextually relevant and coherent. Unlike traditional AI models that operate based on predefined rules or static data, Generative AI leverages advanced machine learning algorithms, such as deep neural networks, to understand patterns within large datasets and generate novel outputs. This technology has widespread applications in academia, including natural language processing, content creation, and simulation, making it a powerful tool for enhancing research, education, and innovation in various academic domains. Generative AI Tools have the capacity to autonomously produce content that mimics human-like creativity, thereby contributing to the development of innovative solutions and insights in academic research and scholarly endeavors.

In the evolving landscape of higher education, the integration of Generative Artificial Intelligence stands as a transformative force with the potential to revolutionize teaching, learning, research and administrative processes. The ethical use of Generative AI Tools in Higher Education Institutes (HEIs) is a paramount concern, necessitating a delicate balance between technological innovation and ethical considerations. Generative AI Tools, exemplified by advanced language models such as GPT-3 (Generative Pre-trained Transformer) and LaMDA/Palm offers unprecedented opportunities for personalized learning experiences, content generation, and assessment methods. However, the ethical dimensions of transparency, informed consent, fairness, data privacy, accessibility, plagiarism and explainability become critical touchpoints. The overview of ethical considerations in HEIs encompasses a commitment to transparency in AI applications, the imperative of securing informed consent from stakeholders, the continuous mitigation of biases, safeguarding data privacy, ensuring accessibility for diverse learners, and prioritizing explainability in AI decision-making processes. This comprehensive framework seeks to guide HEIs in harnessing the benefits of Generative AI Tools while upholding ethical standards that prioritize the well-being and equitable treatment of students, faculty, and the entire academic community.

The Higher Education Commission (HEC) “Commission” plays a pivotal role in shaping and safeguarding the ethical landscape of higher education in Pakistan, especially with regards to the integration of Generative AI technologies. Recognizing the transformative potential and ethical challenges posed by Generative AI Tools, the HEC takes a proactive stance in formulating and enforcing guidelines that govern its use across HEIs in Pakistan and at the same time guiding the academic community at large across the country. By collaborating with academic institutions, industry experts, public sector entities and ethical AI practitioners, the HEC establishes a framework that ensures fair, transparent, and responsible deployment and use of Generative AI Tools. It serves as a framework to informed decision-making, provide clarity on ethical expectations, and ensure that the benefits of Generative AI Tools are harnessed without compromising the rights and well-being of students, faculty, and other stakeholders.

2. The HEC’s Mandate to Prevent Plagiarism

As per the Higher Education Commission (HEC) Ordinance of 2002, “Ordinance”, specifically outlined in section 10(a), the Commission is mandated to formulate guidelines and policies that enhance and advocate for a culture of quality and ethical research. The pertinent section of the Ordinance is cited as follows: Section 10(a): Formulate policies, guiding principles, and priorities for higher education institutions for the promotion of socio-economic development of the country.

In line with this directive, the HEC assigned the Experts Committee on July 06, 2023, with the responsibility of developing a policy/framework on fair and ethical usage of Generative AI tools in HEIs. This framework is designed to reinforce the autonomy and responsibility of Higher Education Institutions (HEIs) in ensuring the authenticity of ethical research and combating the issue of plagiarism with regards to Generative AI Tools. It is essential to note that anti-plagiarism forms only one aspect of a comprehensive policy framework addressing Academic Dishonesty and Research Ethics, encompassing issues such as impersonation, ghostwriting, fabricating results, automating research, citation racketeering, etc. Given the dynamic nature of national and international contexts, it is recommended that the Ethical Use of Generative AI Tools policy framework undergoes regular reviews, preferably every year or as needed earlier, to stay responsive to highly emerging developments. This approach ensures the continual relevance and effectiveness of the policy/framework in the ever-evolving landscape of academia.

3. Objectives of the Framework

This Framework seeks to create awareness about the responsible, ethical, and socially acceptable role of use of GenAI tools in academic setup among the stakeholders i.e., students, mentors/supervisors, researchers, faculty members, and staff of Universities or Degree Awarding Institutions (DAIs), constituent colleges, affiliated colleges, and affiliated R&D institutes/organizations. It addresses a central problem regarding the negative impacts of the use of GenAI Tools in the existing academic system and provides guidelines to the stakeholders for fair and ethical usage of this technology.

4. Principles of the Framework

The Framework is based on the following general principles:

- i. Comprehensive awareness about GenAI Tools: Universities, Degree Awarding Institutes (DAIs) and faculty members should arrange regular capacity-building activities, within each calendar year, to create awareness about the development of GenAI Tools and its potential misuses.
- ii. Using GenAI Tools with Informed Consent: HEIs must establish clear processes to obtain informed consent from students and faculty before implementing Generative AI Tools in educational processes.
- iii. Devising Process for Encouraging Creativity: Over reliance on Generative AI Tools can encourage shortcut approach and discourage students and researchers from engaging in

critical thinking, conducting primary research, or developing their own writing and creative skills.

- iv. **Considering Bias in GenAI Tools:** Generative AI Tools are trained on vast datasets, and if these datasets contain perpetuating stereotypes, reinforcing harmful narratives, or creating unequal representation of different groups, it could lead to the propagation of biased or unethical content in educational contexts.
- v. **Following Research Ethics:** Universities, DAIS, faculty, students, and staff should follow research ethics to avoid GenAI Tools induced plagiarism in their academic and research contributions.

5. Common Type of Misuses in Generative AI Tools

Generative AI Tools, such as GPT-3 based ChatGPT, have the potential to revolutionize various industries, including academia. However, like any powerful technology, they can be misused, especially in higher education. Here are some potential academic misuses of GenAI Tools in the context of undergraduate/postgraduate studies and research:

A. Undergraduate Studies

- i. **Shortcut to Learning:** Students may use GenAI Tools as a shortcut to learn, relying solely on generated answers instead of engaging with the subject matter and gaining a deeper understanding.
- ii. **Impersonation:** In an academic setting, GenAI Tools might be misused to impersonate professors, teaching assistants, or students in online communication platforms, leading to confusion and potential misinformation.
- iii. **Automated grading manipulation:** GenAI Tools could be misused to generate answers that can trick automated grading systems. This could result in artificially inflated grades or give an unfair and undue advantage to students who employ such methods.
- iv. **Cheating in Assessments:** Students might misuse GenAI Tools to find answers during exams, quizzes, or other assessments, violating academic integrity policies.
- v. **Creating fake reviews or endorsements:** GenAI Tools-generated content can be used to produce fake reviews, endorsements, or testimonials for products, services, or academic work. This could deceive consumers or potential collaborators, impacting their decision-making processes.
- vi. **Spreading misinformation:** Gen AI Tools-generated content can be used to create seemingly credible but false information, academic papers, or articles that propagate misinformation in various academic fields. This can cause confusion and hinder genuine research efforts.
- vii. **Bias and Ethical Concerns:** GenAI Tools are trained on vast datasets, and if these datasets contain biased information, it could lead to the propagation of biased or unethical content in educational contexts.
- viii. **Exploiting sensitive data:** GenAI Tools can inadvertently memorize and reproduce sensitive or confidential information they were trained on, leading to inadvertent disclosure of private data.

- ix. **Academic fraud:** GenAI Tools can be used to create fake credentials, recommendation letters, or academic records, enabling individuals to gain admission to educational programs or secure scholarships or jobs through fraudulent means.
- x. **Misleading Citations:** Some users may misuse GenAI Tools to create false citations or references, leading to inaccurate academic support for their claims.
- xi. **Bypassing plagiarism detection tools:** GenAI Tools to create content that can evade plagiarism detection tools by rewriting or paraphrasing existing text in a way that makes it less detectable by automated systems.

B. Graduate Research

- i. **Plagiarism:** Students or researchers might misuse Generative AI Tools to create academic papers, essays, or assignments by generating content without proper attribution or acknowledgment of the original sources. This can lead to plagiarism, which undermines the integrity of education and research.
- ii. **Ghostwriting:** Generative AI Tools could be exploited to write articles or academic papers for individuals who then present the work as their own, without acknowledging the AI's contribution. Further, these tools can be used to fabricate research papers that appear genuine but lack scientific rigor or original data. Submitting such fake papers to conferences or journals can deceive the academic community and compromise the quality and credibility of research.
- iii. **Fabrication of Results:** Researchers may use Generative AI Tools to generate fake or misleading data or results to support their studies, leading to false or unethical conclusions.
- iv. **Automating Research:** While GenAI Tools can be useful in aiding research and analysis, solely relying on AI-generated content without proper validation or oversight can lead to erroneous conclusions.
- v. **Laziness in research:** Habitual use of GenAI Tools could discourage students and researchers from engaging in critical thinking, conducting primary research, or developing their own writing skills.

6. Applications of Generative AI Tools in Higher Education

Some applications of Generative AI Tools in higher education are:

A. Teaching & Learning

Generative AI Tools can be used to augment the process and experience of learning for students. These can be used as standalone tools or it can be integrated into other platforms used by Universities and DAIs. Although Generative AI tools are evolving and improving at a rapid pace, some possible roles of the tools are described in the table below¹

¹ UNESCO (2023) *ChatGPT and Artificial Intelligence in higher education*

Role	Description	Example of implementation
Possibility engine	AI generates alternative ways of expressing an idea	Students write queries in ChatGPT and use the Regenerate response function to examine alternative responses.
Socratic opponent	AI acts as an opponent to develop and argument	Students enter prompts into ChatGPT following the structure of a conversation or debate. Teachers can ask students to use ChatGPT to prepare for discussions.
Collaboration coach	AI helps groups to research and solve problems together	Working in groups, students use ChatGPT to find out information to complete tasks and assignments.
Guide on the side	AI acts as a guide to navigate physical and conceptual spaces	Teachers use ChatGPT to generate content for classes/courses (e.g., discussion questions) and advice on how to support students in learning specific concepts.
Personal tutor	AI tutors each student and gives immediate feedback on progress	ChatGPT provides personalized feedback to students based on information provided by students or teachers (e.g., test scores).
Co-designer	AI assists throughout the design process	Teachers ask ChatGPT for ideas about designing or updating a curriculum (e.g., rubrics for assessment) and/or focus on specific goals (e.g., how to make the curriculum more accessible).
Exploratorium	AI provides tools to play with, explore and interpret data	Teachers provide basic information to students who write different queries in ChatGPT to find out more. ChatGPT can be used to support language learning.
Study buddy	AI helps the student reflect on learning material	Students explain their current level of understanding to ChatGPT and ask for ways to help them study the material. ChatGPT could also be used to help students prepare for other tasks (e.g., job interviews).
Motivator	AI offers games and challenges to extend learning	Teachers or students ask ChatGPT for ideas about how to extend students' learning after providing a summary of the current level of knowledge (e.g., quizzes, exercises).

B. Research

Generative AI tools can be employed at different stages of the research process or processes relating to research. Some examples are:

- i. Research Design: Generate ideas for research questions or projects.
- ii. Writing Up: Improve writing quality, language translation, reformat references and citations
- iii. Quality Check (language, content, flow of document, etc.)

C. Administration

Employing Generative AI Tools to improve the administrative processes efficiency. Some examples are:

- i. Information translation for regional / international students
- ii. Finding resources and other information

7. Applicability of the Framework

The Framework applies to students, employees of universities/organizations, faculty members, researchers, and staff of all Universities and DAIs of Pakistan, whether operating in the private or

public sector. The Framework applies to all degree programs at undergraduate and graduate levels. In this context,

A “Student” is a person who, on the date of the submission of his/her paper/work, is a registered student at any university, DAI, constituent, or affiliated college, recognized by the Higher Education Commission (HEC).

A “Faculty Member/Researcher” includes a faculty member or equivalent at a University/Organization, constituent or affiliated college, or researcher of an organization or any such other person as may be declared so by regulations. A Faculty Member/Researcher may be working on a regular, contractual, visiting, ad hoc, or adjunct basis, or engaged online.²

All such scholars/supervisors/stakeholders, who are researching in HEIs/DAIs and have placed their CVs or any other publication(s) on the institutional website, and are applying for any benefit, based on their published or presented works, which later prove to be plagiarized, will be held accountable / liable to be penalized, as per the prescribed rules.

8. Responsibilities of HEI’s and Organizations

Promoting responsible GenAI Tools use in HEIs involves a combination of proactive measures, policy implementation, and educational initiatives.

- i. **Ethical Guidelines:** Instructors/Supervisors should develop clear and comprehensive guidelines specifically addressing the use of GenAI Tools within the academic setting – how and when can these tools be used and when it cannot. These guidelines should outline acceptable use, potential risks, and consequences of misuse and must be referred/mentioned clearly in the course outlines and project proposal documents.
- ii. **Continuous Ethical Review:** Create a standing committee or ethical review board to periodically assess GenAI Tools use and address emerging ethical concerns related to AI technologies. Continuously assess the research manuscripts by field specialists for unethical use of GenAI Tools in the light of relevant policies at the national level
- iii. **Connecting GenAI Tools Use to Learning Outcomes:** At the outset of course, teachers / supervisors should connect the use of AI Generative Tools to Outcome-Based Education (OBE) mapping it with learning outcomes (Program Learning Outcomes – PLOs & Course Learning Outcomes - CLOs). This helps students to understand how these tools can support their learning and what the guidelines/expectations are for them.
- iv. **Transparent Attribution:** Encourage students and researchers to transparently attribute the use of AI-generated content in their work, ensuring proper acknowledgment and citation.
- v. **Faculty and Staff Capacity Building:** Arrange awareness seminars and workshops to faculty, staff, and administrators on the responsible and ethical use of GenAI Tools. Educators should understand the capabilities and limitations of GenAI Tools and be equipped to guide students appropriately. Emphasize the importance of academic honesty and integrity through these orientation programs, research seminars, and ongoing awareness campaigns.

² Policy Reference: ANTI-PLAGIARISM POLICY by HEC

- vi. **Incorporate AI Ethics into Curriculum:** Integrate discussions on AI ethics, bias, and responsible AI use into relevant courses across various disciplines, including computer science, engineering, management and social sciences.
- vii. **Critical Thinking and Information Literacy:** Promote critical thinking skills among students and researchers to help them critically evaluate AI-generated content and distinguish it from credible, validated sources.
- viii. **Originality and Creativity:** Encourage and celebrate originality and creativity in student work, discouraging the overreliance on AI-generated content for assignments and research.
- ix. **Collaboration with AI Developers:** Establish collaborations with AI developers and researchers to explore the ethical implications of AI and work together on responsible AI initiatives.
- x. **Support Research on AI Ethics:** Support and conduct research on AI ethics and bias, aiming to develop best practices and guidelines for responsible AI use in academia.
- xi. **Peer Support & Collaborative Efforts:** Faculty and staff share their experiences and best practices for teaching & ways to use Generative AI Tools in learning, research & administration to increase skill level and bring efficiency in the institution. Foster Collaboration with other educational institutions, industry partners, public sector entities, and AI ethics organizations to share knowledge and best practices in promoting responsible and ethical use of AI as well as in line with other applicable policies.
- xii. **Adapting Innovative Assessment Methods and Learning Tools:** The faculty/advisors are encouraged to adapt global best practices for micro-management of the content at course/research level. Instructors should provide guidelines regarding acceptable use of Generative AI Tools referred/mentioned clearly in the course outlines and project proposal documents, ensuring transparency & ethical considerations. Moreover, declaration if asked by the instructor can also be added. Innovative assessment methods will be developed and put into practice to complement the integration of Generative AI Tools into course learning and evaluation.

In addition to the above HEI's may ensure compliance with the following agenda through developing Departmental Standing Committees (DSC) to practice ethical use of GenAI.

A. Transparency

Transparency in the context of Generative AI Tools refers to the open communication and disclosure of the use of AI technologies within educational institutes. Educational institutes must provide detailed information about the types of generative AI systems in use, their applications, and the data sources utilized. This information should be easily accessible to students, faculty, and other relevant stakeholders.

B. Informed Consent

Informed consent involves individuals being fully informed about the potential implications of the use of Generative AI Tools and voluntarily agreeing to its application. Educational institutes must

establish clear processes to obtain informed consent from students and faculty before implementing Generative AI Tools in educational processes. This includes explaining the purposes, potential impacts, and any risks associated with AI applications in the context of higher education.

C. Fairness and Bias Mitigation

Fairness and bias mitigation entail the active identification and mitigation of biases in Generative AI Tools to ensure equitable outcomes. Regular audits of generative AI Tools should be conducted to identify and rectify biases. Educational institutes must actively engage in research and development to minimize bias in areas such as grading, student assessment, and content generation.

D. Data Privacy

Data privacy involves safeguarding the personal information of students and faculty from unauthorized access, use, and disclosure. Educational institutes must adhere to the applicable data protection regulations and establish robust security measures to protect student and faculty data. Any data used in Generative AI Tools/applications should be anonymized and treated with the utmost confidentiality.

E. Accessibility

Accessibility refers to the design and implementation of Generative AI Tools to ensure usability by individuals with diverse abilities and needs. Generative AI systems should be designed with accessibility features, considering the needs of individuals with disabilities, language differences, and other learning requirements. Educational institutes should actively seek feedback from diverse user groups to enhance accessibility.

F. Explainability

Explainability involves the capacity of Generative AI Tools/systems to provide understandable explanations for their decisions and actions. Educational institutes should prioritize the use of generative AI systems that offer transparent decision-making processes. This includes providing explanations for AI-generated content and decisions, especially when they have a significant impact on educational experiences.

G. Role of Department Standing Committee

The Departmental Standing Committee plays a crucial role in combating academic misuse of Generative AI Tools by acting as a vigilant and proactive body within educational institutions. Its responsibilities extend to oversight, policy formulation, and the implementation of preventive measures to ensure the ethical use of Generative AI technologies.

H. Review and Develop Guidelines

The committee should contribute to the development of clear and comprehensive policies regarding the use of Generative AI Tools in academic settings. These policies should explicitly

outline ethical guidelines, standards for content creation, and measures to prevent misuse of GenAI Tools in higher education.

I. Educational Initiatives

Implement educational programs to raise awareness among faculty, staff, and students about the capabilities and limitations of Generative AI Tools. This includes workshops, seminars, and training sessions on ethical considerations in AI-assisted research and content creation.

J. Review and Approval

Establish a review process for projects or assignments that involve the use of Generative AI Tools. The committee should scrutinize proposals to ensure they align with ethical guidelines, promoting transparency, and preventing potential misuse.

K. Monitoring and Audits

Regularly monitor the use of Generative AI Tools and conduct audits to ensure compliance with ethical standards. This involves reviewing projects, assignments, and assessments to identify any instances of academic misuse or unethical practices.

L. Collaboration with other departments and Ethics Committees

Work in collaboration with other departments e.g. Computer Science and ethics committees to assess the technical aspects of Generative AI Tools and ensure that they adhere to data privacy and security standards.

M. Reporting Mechanisms

Establish mechanisms for reporting any suspected academic misuse of Generative AI Tools. Faculty, staff, or students should feel comfortable reporting concerns, and the committee should promptly investigate and address reported issues.

N. Continuous Policy Review

Recognizing the dynamic nature of GenAI technology, the committee should engage in regular reviews of existing policies related to Generative AI tools. This ensures that policies remain up-to-date and relevant in response to emerging developments and potential ethical challenges of GenAI tools in higher education.

O. Ethics Training

Provide ongoing ethics training and seminars for faculty and students involved in projects that utilize Generative AI tools. This training should emphasize responsible use, academic integrity, and the consequences of misuse.

P. Coordination with Higher Authorities

Collaborate with higher education authorities, such as the Higher Education Commission, to align departmental policies with national standards and ensure a cohesive approach to combating academic misuse of Generative AI tools.

R. Promoting Ethical Research Practices

Advocate for and actively support ethical research practices within the department. This includes fostering a culture of academic integrity and responsible innovation among both faculty and students.

In summary, the Departmental Standing Committee serves as a vital safeguard against academic misuse of Generative AI tools by establishing and enforcing policies, fostering awareness, and actively monitoring the implementation of Generative AI technologies within the academic domain.

S. Rules for the Use and Penalties for the Misuse of Generative AI tools

It's crucial for students to understand their institution's policies regarding academic integrity and seek clarification from teachers or academic advisors when in doubt. Generally, using Generative AI Tools, such as ChatGPT, to enhance learning or for non-academic purposes (like brainstorming ideas or understanding concepts) is acceptable, but using it to complete assignments and thesis could lead to serious consequences. The information derived from these tools is based on previously published materials and can return inaccurate and out-of-date facts. Therefore, using these tools without proper citation constitutes plagiarism. Additionally, be aware that the information derived from these tools is often inaccurate or incomplete. It's imperative that all work submitted should be your own. Any assignment or thesis that is found to have been plagiarized or to have used unauthorized GenAI Tools may receive a zero and / or be reported for academic misconduct.

Following rules shall be incorporated at institutional level:

- i. Generative AI Tools is not an author. These tools should only be used to improve language and readability, with caution. If you used Generative AI Tools or AI-assisted technology, include the following declaration statement directly before the references at the end of your manuscript.

Declaration of Generative AI tools and AI-assisted technologies in the writing process:
“During the preparation of this work, the author(s) used [NAME TOOL / SERVICE] in order to [REASON]. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility (legal, moral, etc.) for the content of the publication.”

- ii. Cite AI Contributions: Universities should establish their internal guidelines for citing use of Generative AI Tools in academic papers, acknowledging Generative AI content contributions while giving credit to the original authors.
- iii. Use of Generative AI Tools for Academic purposes, some of which are proposed in Section 6 are acceptable. However, using Generative AI Tools for data/facts gathering should be discouraged in Research as they might report incomplete, inaccurate, false information, inaccurate or fabricated citations and outdated data because of the limitations. For example, ChatGPT data is updated till Sep 2021 as of now. Further, use of Generative AI Tools for

any data/fact generation, fabrication or tweaking is unacceptable and forbidden. In such a scenario the student will be held responsible.

- iv. Reliable plagiarism tools for AI generative text, if available, shall be used allowing <5% of generated text along with the prevalent standing HEC criteria i.e., <=19% Similarity Index using plagiarism check software for whole document and <5% of single source similarity index is acceptable³. Based on the global best practices and feedback from academia, the criteria might be updated by HEC from time to time.
- v. Aligned with the recent plagiarism policy of HEC⁴, the student of UG as well as PG must add the updated plagiarism undertaking statement stating:

“I, [Name of Student] I solemnly declare that research work presented in my UG/MS/PhD project/thesis, as the case maybe, titled “[Project/Thesis Title]” is solely my research work with no significant contribution from any other person or Generative AI Tools. Small contribution / help wherever taken has been duly acknowledged/cited and that complete project/thesis has been written by me in accordance with the latest plagiarism policy declared by HEC and my respective university in-line with the policy for use of Generative AI Tools.

I understand the zero-tolerance policy of the HEC and [Name of University] towards plagiarism. Therefore, I as an Author of the above titled project/thesis declare that no portion of my project/thesis has been plagiarized and any material used as reference is properly referred/cited.

I undertake that if I am found guilty of any plagiarism in the above titled project/thesis even after award of UG/MS/PhD degree, the University reserves the right to withdraw/revoke my degree and that HEC and the University has the right to publish my name on the HEC/University Website on which names of students are placed who submitted plagiarized project/thesis.”

The above undertaking statement might be updated by HEC from time to time.

- vi. Ensure that the use of AI Generative Tools complies with existing copyright and intellectual property laws. Universities should internally develop /implement guidelines that prevent the generation of content that infringes upon copyright, trademarks, or any other legal rights (IPO, Ministry of Commerce, is relevant government body in Pakistan)⁵.

Project/Thesis shall be checked by the supervisor according to the rules mentioned above. However, in case of any criteria under rules which are not met, the supervisor may ask the student to revise project/thesis report and resubmit it to the supervisor. If the revised project/thesis does

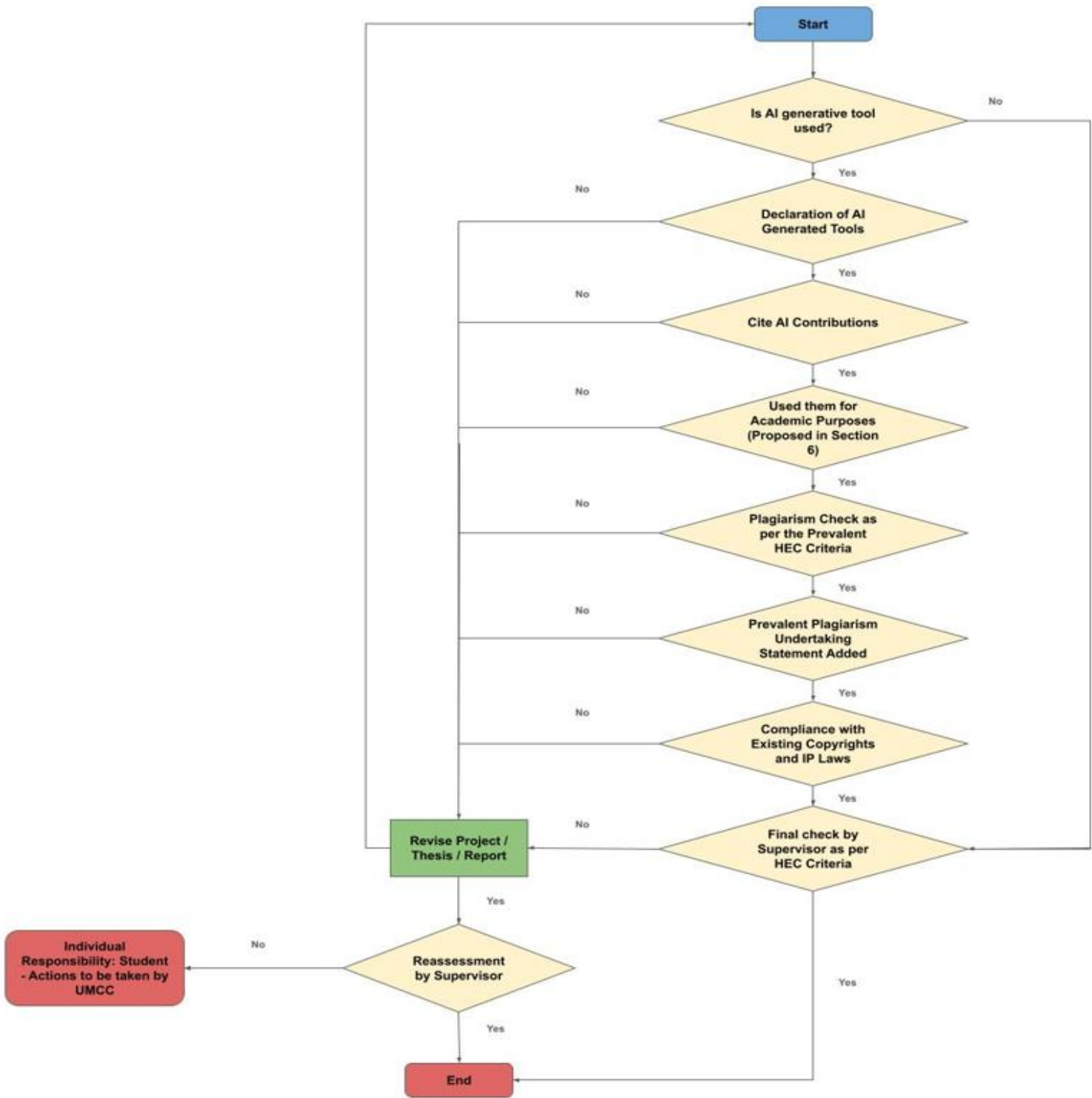
³ Policy Reference: ANTI-PLAGIARISM POLICY by HEC

⁴ Policy Reference: ANTI-PLAGIARISM POLICY by HEC

⁵ <https://ipo.gov.pk>

not meet the criteria set under rules, the student shall be held responsible, and the case shall be referred to the Unfair-Means Control Committee (UMCC)/ Departmental Standing Committee (DSC) or any other relevant committee of the department for awarding penalty depending upon the level of severity. If the departmental committee agrees, the case can be raised to university level and would be dealt with according to the rules and regulations of the University/DAI.

Flowchart



The End