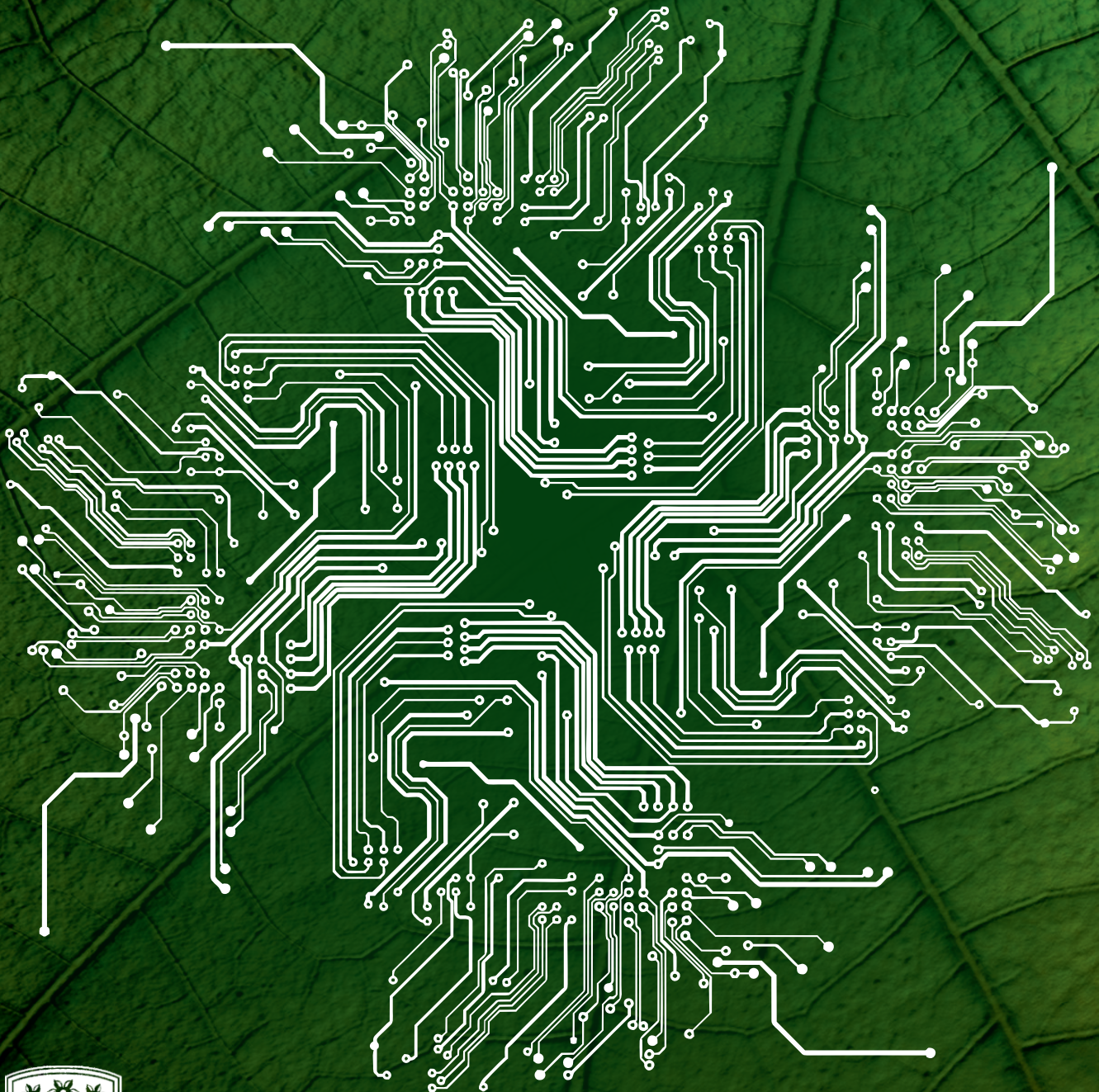


Green Paper on GenAI Use in Education in the UAE

December 2024



UNIVERSITY
OF WOLLONGONG
IN DUBAI

European Network
for Academic Integrity
Outreach Working Group



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Abstract

This Green Paper presents a comprehensive analysis of the factors—both positive and negative—that influence the application of Generative AI (GAI) in the UAE’s education sector across K-12 schooling and higher education. Drawing on the 4M levels as utilized by Eaton (2020), and structured across five chapters, the paper explores macro, meso, and micro-level perspectives to support a balanced and ethical integration of GAI. The UAE, as a global leader in technological adoption, has established frameworks like the UAE Council for AI and Blockchain Technology and appointed a Minister of State for AI, positioning the country at the forefront of AI advancement.

The rapid development of GAI offers significant opportunities to enhance academic practices, research methodologies, and learning environments, yet these benefits require a well-structured framework to address challenges related to equitable access, human-centred learning, intellectual growth, psychological impacts, needs for human verifications of AI output, and bias. Each chapter delves into critical components: national policy, ethics, and data governance (macro); institutional roles, curriculum development, and educator preparedness (meso); and classroom applications, assessment integrity, and student engagement (micro).

This Green Paper provides a foundation for informed policy discussions, outlining actionable strategies to harness GAI’s potential while preserving academic integrity and equity in learning. The final chapters offer practical guidelines and continuous improvement mechanisms, encouraging UAE educational institutions to lead in responsible GAI integration and prepare students for an AI-driven future, where students' learning outcomes and the integrity of degrees are protected.



Chapter 1: Introduction and Theoretical Context

1.1. Background and Objective

This Green Paper aims to explore both the positive and negative factors influencing the use of Generative Artificial Intelligence (GAI) in the UAE's education sector. The UAE has been at the forefront of integrating advanced technologies into various sectors of society, including education. This has included the creation of the UAE Council for AI and Blockchain Technology and the appointment of a Minister of State for AI in 2017. The advent of GAI technologies offers transformative potential for academic practices, research methodologies, and the learning environment. However, this rapidly evolving landscape necessitates a comprehensive framework to guide its ethical, responsible, and effective use to overcome concerns like access and equity, human connections in learning, human intellectual development, psychological impact and hidden bias and discrimination to ensure the landscape has a more human centred approach (UNESCO, 2021).

Given the transformative potential of GAI in academic practices, research methodologies, and the learning environment, there is an increasing need for a comprehensive framework to guide GAI's ethical, responsible, and effective use in UAE education.

The UAE's vision emphasizes technology for societal advancement, yet the use of AI must be safeguarded against risks such as access disparity, biases, psychological impacts, data privacy, and threats to academic integrity. Using a multi-level perspective—macro (national policies), meso (institutional roles), and micro (classroom and individual applications)—this Green Paper offers a foundation for policy discussions. It aligns with UNESCO's AI Competency Frameworks for Teachers and Students 2024, released during Paris Digital Week Conference, as well as UNESCO's 2021 Recommendations on the ethics of Artificial Intelligence and the 2019 Beijing consensus on Artificial Intelligence and education, advocating for a human-centred approach to GAI integration.

1.2. GAI in Education

In the educational sector, GAI technologies promise to revolutionise teaching methods, personalise learning experiences, enhance research capabilities, and facilitate administrative tasks. For instance, AI can provide tailored learning experiences to students, assist students with different learning styles, automate grading, and offer new research methodologies (Khan, 2023b). Nonetheless, the use of GAI in academic settings raises questions about academic integrity, data privacy, intellectual property rights, and the potential for perpetuating biases or inaccuracies (Khan, 2023b). Although it is recommended that Generative Pre-trained Transformer (GPT) models be reclassified as "foundation models" (Bommasani et al., 2021); in the education sector, researchers are refining these foundation models to create specialized versions, such as "EdGPT," which are trained on data tailored for educational purposes—for example, MathGPT for mathematics instruction (FIA, 2024).

1.3. Theoretical Foundations

Integrating learning theories and technology adoption frameworks enables a more grounded approach to GAI policy. Key theories guiding this paper include:

1. **Technology Acceptance Model (TAM):** Emphasizes ease of use and perceived usefulness as factors for adoption. Educator and student acceptance of GAI tools is essential, supported by TAM-based training and feedback mechanisms (Davis, 1989).
2. **Rogers' Diffusion of Innovations:** Examines how new technology is adopted. This can guide the UAE's phased rollout of GAI, using early adopter schools and institutions as models (Roger, 1983).
3. **Constructivist Learning Theory:** Suggests that GAI can facilitate active, personalized learning, where students engage with content through AI-supported exercises and simulations (Piaget, 1964).
4. **Social Learning Theory:** Supports collaborative, feedback-driven educational experiences, which can be enhanced through AI-driven peer learning and project-based work (Bandura, 1971).
5. **Human-Machine Interaction (HMI) Quadrant Typology:** Categorizes interactions based on control (human or machine-led). This model helps in defining boundaries for GAI in various educational tasks (Khan, 2023b).

Chapter 2: Macro-Level Analysis - Policy, Ethics, and Regulatory Framework

2.1. UAE's Strategic Vision for GAI in Education

The UAE's strategic vision under Vision 2021 (Ministry of Cabinet Affairs, 2021) and Centennial 2071 (U.A.E., 2023) outlines a future driven by technological excellence. GAI has been positioned to support this by enhancing education at all levels, including policy-backed AI literacy and ethics education (Vidal et al., 2023). The UAE Ministry of Education has been actively embracing the potential of generative AI (GAI) to transform the educational landscape, for example:

- *Launch of a Comprehensive GAI Guide:* The UAE government launched a guide on the utilisation of GAI applications, including those in education. This guide is aimed at facilitating the adoption of AI technology across various sectors, with a strong emphasis on enhancing educational practices through AI (WAM, 2023).
- *Training for Teachers on AI:* Efforts are underway to equip teachers with the skills and knowledge needed to leverage AI in tutoring and teaching. This initiative reflects a commitment to integrating AI technologies into classrooms to enrich learning experiences and outcomes (Rizvi, 2024).
- *Introduction of AI Tutors:* The Ministry of Education announced the development and launch of AI tutors to enhance learning and education. This move is part of a broader strategy to incorporate advanced technological tools into the education system, aiming to provide personalised learning experiences and support for students (Badam, 2023).
- *Strategic Partnership for AI Tutor Development:* In collaboration with ASI (formerly Digest AI), the Ministry announced a strategic partnership to develop an AI-powered tutor (AI Tutor) tailored to the UAE national curriculum. This initiative is part of the ministry's efforts to leverage AI for educational excellence and innovation (WAM, 2023).

2.2. Ethical Considerations and Governance

There is a pressing need for a comprehensive policy framework that addresses the ethical, legal, and practical challenges of incorporating GAI in academic settings. Such a framework should aim to harness the benefits of GAI while mitigating risks, ensuring academic integrity, and promoting equitable access to technology. It should also consider the implications of GAI on the future of work and the skills students will need in an AI-augmented job market, both in the form of productivity and ethical engagement. For instance, a proper ethically engaged AI workflow leading to enhanced productivity and trustworthiness. The UNESCO 2024 AI Competency Framework focuses on equipping students and teachers with essential AI skills across four core areas: foundational knowledge, understanding AI ethics, practical skills, and lifelong learning adaptability (UNESCO, 2024). This framework aims to promote ethical and responsible AI usage in educational environments. By fostering critical AI competencies, UNESCO supports learners and educators in navigating and contributing to an increasingly AI-driven world. UNESCO's 2021 Recommendation (UNESCO, 2021) on the Ethics of Artificial Intelligence offers a foundational normative framework for addressing the myriad controversies surrounding generative AI, particularly within education and research domains. Grounded in a human-centred ethos, it advocates for AI utilisation to advance human capabilities towards inclusive, just, and sustainable futures, prioritising human rights principles and the preservation of human dignity and cultural diversity. Effective governance under this approach necessitates robust regulation to uphold human agency, ensure transparency, and foster public accountability.

The 2019 Beijing Consensus on Artificial Intelligence and Education underscores a human-centred approach to AI implementation in education, aiming to boost human capabilities for sustainable development and foster effective human-machine collaboration (UNESCO, 2019). Emphasising equitable access, it advocates for addressing inequalities and supporting marginalised communities while promoting linguistic and cultural diversities. The Consensus recommends comprehensive, collaborative approaches involving multiple stakeholders in policymaking for AI integration in education.



The World Economic Forum's report, *Shaping the Future of Learning: The Role of AI in Education 4.0*, highlights AI's transformative potential in personalizing learning, fostering skill development, and addressing global educational gaps (WEF, 2024). It emphasizes ethical AI integration to support inclusive, lifelong learning pathways. By leveraging AI, the report envisions an education system that adapts to diverse learner needs and equips them for future workforce demands. From multinational companies such as Tesla, Microsoft, and Google to national and governmental agencies in the UAE such as DEWA are moving forwards with an AI-driven workforce using simple search algorithms and recommendation engines to train models to address ethical challenges around AI-driven safety. In fact, the 2023 Global AI Adoption Index by Morning Consult, featuring perspectives from businesses across the UAE showed how “42% of companies have[e] already actively deployed it in their business operations” (IBM, 2024, p. 1). This demonstrates that diverse skills are essential in an AI-centric workforce, ranging from technical proficiency and critical thinking to ethical understanding and adaptability. This underscores the importance of an education system that adapts to diverse learner needs and equips students with both the technical and soft skills required to thrive in such dynamic, AI-driven environments. Therefore, education that includes AI applications, safety considerations, and technical skills would help future workers contribute effectively in such high-stakes environments.

Ethical use and data governance are critical to ensuring GAI benefits students equitably and without bias:

- **Bias Prevention:** UAE's policy should implement checks to counteract bias in AI models, promoting inclusivity and cultural sensitivity.
- **Data Privacy:** Strong data privacy protocols are essential, especially when GAI applications involve student information.
- **Transparency and Accountability:** Students and educators need clear, accessible guidelines on AI use in education, ensuring that users understand AI's capabilities and limitations.

A comprehensive policy framework is essential to address the ethical, legal, and practical challenges of GAI in education. This framework should prioritise academic integrity, equitable access, and readiness for an AI-driven job market. UNESCO's AI Competency Framework and its 2021 Recommendations emphasise human-centred, ethical AI practices that respect human rights and foster inclusive, sustainable futures. Additionally, the World Economic Forum highlights AI's transformative role in personalized learning, while UAE initiatives stress skills in AI safety, ethical awareness, and technical proficiency. Policies in bias prevention, data privacy, and transparency will be key to responsible GAI integration in education.

2.2. 1. Applications

- **Case Study:** The Ministry of Education's AI Tutor initiative, focusing on privacy protections and culturally appropriate adaptations.
- **Ethical AI Toolkit:** A resource providing guidance on ethical AI practices for teachers, aligned with UAE-specific educational values.

2.3. Defining Equity in AI in Education

Equity in AI is a crucial concept that demands clarity at both a technological and rights-based level. When discussing equity in AI, it is essential to define the term's implications: Does it mean everyone should have access to AI-powered educational tools? Or does it imply equal treatment across diverse educational fields such as math, history, and arts? Moreover, achieving equity in AI also requires a shared understanding of key terms like 'access' and 'equal treatment' to ensure consistent interpretation and application across educational fields. How can we develop common ground in defining these terms to effectively address the nuanced demands of equity in AI? These questions highlight the complexity of equity, particularly in a diverse society where the definition of "equal access" can vary greatly.

2.3.1 Technological Maturity and Equity:

The current state of AI in education is comparable to the early stages of mobile phone technology—functionally valuable but far from transformative. Like early, oversized mobile phones, AI is not yet integrated to the extent that it has reshaped the educational landscape and expecting it to deliver universal access is premature. This brings up two distinct issues:

- **Equity of Access:** To what extent should AI in education be accessible to all, and does access mean the same technology level (e.g., an “iPhone” versus a “basic phone”)?
- **Field-Specific Equity:** AI’s application in education should avoid biases in subjects like math or science. However, in fields like history, AI might struggle to present unbiased information due to inherent societal and cultural biases.

KEY QUESTIONS

1. How can we establish a shared understanding of equity in AI to ensure consistent application across diverse educational contexts and disciplines?
2. What does equitable access to AI in education entail? Should AI be a universal right in educational settings, or does it depend on available resources?
3. If AI is used in education, how should it address diverse subjects to ensure equity? Should different fields like history or geography be approached differently to account for cultural biases?
4. As AI technology matures, what frameworks can ensure fair access while considering both technological limits and ethical concerns?
5. How should policy address the readiness of society to relinquish cultural biases in AI-generated content, particularly in history or social studies?

2.4. Stakeholder Roles and Responsibilities

Developing effective and consistent policies requires the involvement of a broad range of stakeholders, including educators, students, technology experts, policymakers, and the private sector. This inclusive approach ensures that policies are well-informed, practical, and aligned with the needs and aspirations of the academic community and society at large.

2.4. 1. Applications

- **Workshops:** Host inter-sector workshops for key stakeholders in both teaching and policy creation for developing GAI guidelines.
- **Industry Partnerships:** Collaborate with technology providers to create GAI tools tailored for UAE's educational context.

KEY QUESTIONS

- 1.What is the purpose of a GAI policy framework?
- 2.What does it need to include to meet the specific needs of UAE?
- 3.What measures can UAE's policy implement to promote ethical GAI use in education?
- 4.What evidence base can technology providers show, to prove efficacy on student learning outcomes, instead of productivity or 'timesaving' outcomes?
- 5.What specific policy measures are required to ensure that GAI technologies do not perpetuate or introduce biases in educational content, pedagogy, and evaluation processes, particularly in terms of gender, culture, and socioeconomic status?
- 6.What are the key guidelines for the ethical use of generative AI in education?
- 7.As a practical matter how can the risk of bias be mitigated through policy?
- 8.How can we minimise the impact of biases from overseas being incorporated into student centric material within the UAE?
- 9.How can data privacy be insured when generative AI is applied in education?
- 10.What mechanisms should be established within the policy to ensure ongoing collaboration and feedback from educators, students, AI experts, and other stakeholders in the evaluation and revision of GAI use policies in education?

Chapter 3: Meso-Level Analysis - Institutional and Provider Perspectives

3.1. Institutional Perspectives on AI's Transformative Potential

At the institutional level, the integration of AI in education raises questions about whether AI's use is truly transformative or merely superficial. Drawing from the evolution of tools like calculators—from initially banned to indispensable—AI's role can similarly progress from cautious adoption to essential integration. This is contingent on how AI is applied, either superficially or transformatively.

3.1.1. Transformative AI Application

For AI to be transformative, it must go beyond merely automating tasks, like grading, to genuinely enhancing educational processes. If AI empowers students and teachers to engage at a higher cognitive level (e.g., analysis rather than memorization of Bloom's Taxonomy), it could redefine “ethical use.” For example, if AI enables students to generate assessments and teachers to mark them in a way that enhances feedback and critical thinking, AI will support a fundamentally new learning paradigm.

3.1.2. Intelligent Tutoring Systems and Teacher Replacement

An alternative application is using AI to replace human teachers entirely through Intelligent Tutoring Systems (ITS). Although currently in early development, ITS could lead to AI-driven learning environments without human instructors. If so, AI must be held to human-like ethical standards, potentially simulating moral expectations. Here, two approaches emerge:

- Human-like AI: Expecting AI to mimic human behaviour, thereby applying human moral standards.
- Ultimate Moral Machine: Designing AI that adheres to a high moral standard, potentially beyond human fallibility.
- Systematic inclusion of ‘Humans in the Loop’ (including educators’ oversight and the student’s own autonomy) ensures lived experience, quality assurance, and human-led development of AI services, and prioritises the learner, rather than the technology itself, in higher education.

KEY QUESTIONS

1. How should institutions define “transformative” versus “superficial” use of AI in education? What criteria would differentiate impactful AI applications?
2. Should AI’s ethical use in educational settings evolve as it becomes more deeply embedded, like the calculator’s journey from banned, to indispensable?
3. If AI replaces teachers through Intelligent Tutoring Systems, how can institutions ensure that AI meets human-like ethical standards?
4. What frameworks would support the creation of either a human-like AI or an “ultimate moral machine” for teaching purposes? How should educational institutions decide which path to follow?

3.2. Institutional Adoption and Integration of GAI

In the context of GAI in education, policy serves as a guiding framework for integrating AI in an ethical, responsible, and effective manner. It establishes standards that ensure AI enhances learning outcomes, maintains academic integrity, and safeguards data privacy. Comprehensive policies enable institutions to navigate AI’s benefits and risks, fostering equitable access and quality assurance throughout educational environments (Chan, 2023). Institutions can utilize the HMI quadrant typology (Khan, 2023b) to guide policy documents for appropriate levels of GAI use in education. For example, institutions may use AI to streamline administrative tasks while maintaining human oversight in critical educational decisions:

- Full Automation (Quadrant 1): AI-led processes, e.g., automated report generation.
- Collaborative Interaction (Quadrant 2): AI encourages peer collaboration, enhancing group projects.
- Full Human Control (Quadrant 3): GAI assists without autonomy, suitable for lesson planning.

Assisted by AI (Quadrant 4): AI supports grading or attendance tracking, improving efficiency.

3.2.1. Applications

- Pilot Programs: Institutions initiate GAI pilots in administrative and classroom settings, including prompting techniques, gradually increasing AI interaction levels.
- Guideline Development: Create policies for each quadrant, ensuring balanced AI integration in school operations.

3.3. Ensuring Quality and Standards in AI Integration

Maintaining high standards of quality and ethics becomes crucial to ensure these tools genuinely support educational objectives. Institutions need frameworks to measure and evaluate the impact of GAI, guiding AI's role in a way that prioritizes student learning and aligns with institutional values.

3.3.1. Applications

- Establishing Quality Benchmarks: Set clear performance standards for AI tools based on student outcomes and curriculum alignment to ensure they enhance educational quality.
- Standards for Ethical and Responsible AI: Define ethical guidelines on transparency, data privacy, and inclusivity, specifying AI's supportive role in learning without overstepping the individual learning hierarchy of students (Bloom's Taxonomy).

- **Evaluation Frameworks and Feedback Mechanisms:** Use audits, feedback, and TAM-based surveys to monitor AI's effectiveness and make targeted improvements over time.
- **Guideline Development:** Create policies for each quadrant, ensuring balanced AI integration in school operations.

3.4. Educator Preparedness and Training

Educator readiness is crucial for GAI success. Professional development programs should be guided by TAM principles, emphasizing ease of use and practical benefits.

3.4.1. Applications

- **Professional Development Programs:** AI workshops covering tools, ethics, and policy updates.
- **Feedback Mechanisms:** TAM-aligned surveys assess teacher confidence in using GAI, refining training programs accordingly.

3.5. Curriculum Development and Skill-Based Learning

Updating curricula is essential to integrate AI literacy and critical thinking, supporting students' long-term competencies.

3.5.1. Applications

- **AI Ethics Modules:** Develop AI ethics and responsible use as standard curriculum elements.
- **Interactive STEM Tools:** Use GAI simulations for science and technology subjects, promoting analytical skills.



KEY QUESTIONS

1. How can institutions structure policies to balance GAI's role across educational tasks?
2. Considering GAI integration, what amendments to the academic curriculum are necessary to equip students with AI literacy and other future-ready skills, and how should these policy directives facilitate the incorporation of these subjects?
3. Where should AI be incorporated into the curriculum?
4. How should the policy delineate the acceptable use of GAI technologies in academic work to preserve integrity and authenticity, specifically regarding assignments, research, and examinations?
5. How can staff members of institutions maintain their AI literacy in a rapidly evolving world?
6. How and when should feedback be incorporated into the institutionally shared policy document?
7. How do you measure the effectiveness and suitability of AI within institutions and classrooms?
8. How can institutions develop quality benchmarks to ensure GAI tools genuinely enhance learning outcomes?
9. What ethical standards should guide GAI's role in supporting rather than replacing human instructors?
10. What frameworks can institutions adopt to consistently evaluate GAI's effectiveness and adapt it based on student and teacher feedback?

Chapter 4: Micro-Level Analysis - Classroom, Assessment, and Student Engagement

4.1. Classroom Applications and Individual Interactions with AI

At the micro level, AI's integration into classrooms and its interaction with individual students raise practical and ethical concerns. As AI technology gradually advances from basic functionalities to more refined, assistive roles, its impact on students' day-to-day learning and interaction becomes more profound. Here, equity must be viewed in terms of accessibility, ethical use, and consistent performance across diverse student backgrounds.

4.1.1. Equity in AI Treatment Across Subjects

Equity in AI also extends to how it treats students across different academic fields. For instance, while AI applications in math may objectively support learning, biases may emerge in subjects like history or literature, where cultural and societal perspectives differ widely. This poses the question: should AI in classrooms maintain neutrality in all fields, and how should it handle subjects heavily influenced by regional or cultural values?

4.1.2. Ensuring Fair AI Assistance and Avoiding Ethical Dilemmas

In day-to-day classroom use, one ethical dilemma arises when students use AI to complete assignments and then submit these for evaluation by an AI-powered grading system. This AI-on-AI assessment loop could reduce critical engagement, with students and teachers relying too heavily on AI outputs. To prevent this, AI should be incorporated to encourage students to engage actively in higher-order tasks, while educators maintain oversight and interpret AI's recommendations critically.

KEY QUESTIONS

1. How can AI ensure equitable treatment across subjects where cultural biases may affect AI's response, such as in history or literature?
2. To what extent should AI be used in grading when students also rely on AI for assignment generation, and how can we prevent an overreliance on AI?
3. How can AI be applied in a way that actively promotes engagement with higher-order thinking skills rather than rote memorization or automation?
4. Should there be a limit to AI's involvement in day-to-day learning tasks, and what guidelines would ensure AI supports rather than replaces critical teacher-student interactions?

4.2. GAI in Classroom Practices

GAI's capabilities allow for adaptive, real-time learning support, aligned with Constructivist Learning Theory. By personalizing instruction, AI can help address diverse learning needs, making education more inclusive and responsive.

4.2.1. Applications

- **Adaptive Learning Platforms:** AI-driven tools support individualized learning, catering to each student's pace.
- **Real-World Problem Solving:** Integrate simulations and AI-based exercises, enhancing students' applied learning skills.

4.3. Academic Integrity and Assessment

To preserve academic integrity, UAE educational institutions need policies defining acceptable GAI use in assignments and exams. Proactive approaches, including transparency and monitoring, help maintain fairness in assessments.

4.3.1. Applications

- **AI Usage Guidelines:** Define boundaries for AI use in student assignments to prevent academic dishonesty. Any suspected misuse of AI may result in additional assessments such as Viva Voce, to ascertain student understanding and authenticity.
- **Authorship Authentication Software:** Employ AI-based tools to determine originality and authenticity in student submissions. Process in tandem with the point above.

4.4. Student-Focused AI Literacy and Skill Development

Embedding AI literacy into student education is crucial. Students need to understand GAI's ethical use, supported by Social Learning Theory (Bandura, 1971), which encourages scaffolding, collaboration and peer feedback.

4.4.1. Applications

- **Collaborative AI Projects:** Design group projects that use AI tools, developing students' teamwork and digital literacy skills.
- **AI Ethics Training:** Regular workshops discussing AI's impact on society, including raising awareness of the environmental burden, encouraging responsible usage.

KEY QUESTIONS

1. How can classroom practices ensure academic integrity with GAI-enabled assessments?
2. What are the acceptable uses of generative AI for assessed assignments?
3. What curriculum updates are needed to prepare students for AI-driven careers?
4. How much exposure should students have to future skills during their education in comparison to other subject content.

4.5. Research, Literature Review, and Data Integrity

Generative AI (GAI) introduces both promising tools and significant challenges in supporting research, literature reviews, and data integrity within educational settings. As GAI tools become more accessible, they offer students efficient methods for synthesizing literature, recognizing data patterns, and identifying research trends. However, these tools also bring critical risks to data reliability, research authenticity, and academic rigor. This section seeks to explore essential questions surrounding the responsible use of GAI in research contexts, balancing the technology's capabilities with the integrity and depth required in academic work.

KEY QUESTIONS

1. AI-Assisted Literature Reviews:

- How can we ensure that students maintain critical engagement with primary sources when using GAI for literature reviews?
- What boundaries should be established to differentiate AI-assisted summaries from student-driven analyses?
- Should students be required to verify AI-generated insights with traditional research methods, and if so, to what extent?

2. Data Integrity and Validation:

- In what ways can institutions safeguard against the risk of AI-generated misinformation or bias in student research?
- How should AI-generated data be labelled or validated to ensure that it meets academic standards?
- Should there be a protocol for students to cross-check AI findings, and what role should educators play in this verification process?

3. Research Authenticity and Academic Integrity:

- What guidelines are necessary to prevent students from over-relying on AI, potentially compromising the originality and depth of their work?
- How can policies encourage students to use AI as a tool for enhancement rather than as a substitute for critical thinking?
- How should AI use in research be documented or cited to maintain transparency, and if so, what format or standards would be most appropriate?

4. Addressing Bias and Transparency in AI-Assisted Research:

- Given that AI models can contain inherent biases, how can institutions encourage awareness and caution when using AI-generated content?
- What training or resources should be provided to students to help them identify potential biases in AI-generated research outputs?
- How can we mitigate the risk of historical or cultural biases from non-local AI training data impacting research quality and relevance?

5. Future Skills and Ethical AI Use in Research:

- How can curricula integrate GAI tools to prepare students for an AI-driven research landscape without compromising educational standards?
- What ethical considerations should students be made aware of when using AI in research, especially regarding data privacy and intellectual property?
- To what degree should students be responsible for understanding the limitations of GAI tools, and what support should institutions offer in this regard?

Chapter 5: Implementation Framework and Future Directions

5.1. Developing Policy Guidelines

Building on UNESCO's AI ethics framework, this policy should address key issues like bias, transparency, and equitable access. Using HMI quadrants to guide the role of AI in educational interactions will help balance GAI's utility and oversight.

5.1.1. Applications

- **Ethical Guidelines Document:** Comprehensive rolling policy covering ethical data use, bias prevention, and student data privacy.
- **Quadrant-Based Implementation Strategy:** Apply HMI quadrants across educational tasks to establish clear AI integration policies.

5.2. Continuous Improvement through Stakeholder Feedback

GAI policies must be adaptable, incorporating continuous feedback, either corrective or constructive, from educators, students, and experts. Feedback mechanisms aligned with TAM principles allow for policy responsiveness.

5.2.1. Applications

- **Annual Policy Review:** Scheduled evaluations based on stakeholder input, refining policy and adjusting to technological changes.
- **Regular Surveys:** TAM-based surveys assess user experience, shaping policy updates.

Conclusion and Next Steps

This Green Paper proposes a multi-level approach to GAI policy in UAE education, offering a balanced view of benefits and risks. With structured policies and ongoing stakeholder feedback, UAE educational institutions can set a global standard for ethical, effective GAI use, preparing students for a world shaped by AI.

KEY QUESTIONS

- 1.What mechanisms can ensure policy adaptability considering GAI advancements?
- 2.How can UAE's educational framework lead the global discussion on ethical AI in education?
- 3.How can we ensure that there is a process of continuous improvement integrated policy and practice?



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