SHORT COMMUNICATION

Volume 17 Issue 4 2025

DOI:10.21315/eimj2025.17.4.14

ARTICLE INFO

Submitted: 12-12-2024
Accepted: 25-06-2025
Online: 31-12-2025

Developing Institutional Guidelines for Artificial Intelligence Use in Health Professions Programmes

Siti Suriani Abd Razak[1], Chitra Ebenezer[1,2], Nilesh Kumar Mitra[3], Pei Se Wong[1,4], Chew Fei Sow[1,3], Heethal Jaiprakash[3], Vishna Devi Nadarajah[5], Hui Meng Er[1,4]

[1]*IMU Centre for Education, IMU University, Kuala Lumpur, MALAYSIA*

[2]*School of Health Science, IMU University, Kuala Lumpur, MALAYSIA*

[3]*School of Medicine, IMU University, Kuala Lumpur, MALAYSIA*

[4]*School of Pharmacy, IMU University, Kuala Lumpur, MALAYSIA*

[5]*Newcastle University Medicine Malaysia, Iskandar Puteri, Johor, MALAYSIA*

To cite this article: Abd Razak SS, Ebenezer C, Mitra NK, Wong PS, Sow CF, Jaiprakash H, Nadarajah VD, Er HM. Developing institutional guidelines for artificial intelligence use in health professions programmes. Education in Medicine Journal. 2025;17(4):227–240. https://doi.org/10.21315/eimj2025.17.4.14

To link to this article: https://doi.org/10.21315/eimj2025.17.4.14

ABSTRACT

Artificial intelligence (AI) is significantly impacting health professions education by enhancing teaching and learning activities, enabling automated grading, supporting predictive analysis of student performance, and more. As AI reshapes professions education, educators must update their practices and strengthen their ethical awareness to ensure responsible AI use. Despite AI's potential benefits, concerns remain regarding assessment integrity, integration strategies, and students' critical thinking abilities. Numerous studies highlight AI's transformative role in education, yet its ethical use and integration require careful consideration. This article outlines the use of the Nominal Group Technique (NGT), which involves structured group discussion and evaluation of key areas related to AI. Input from 59 stakeholders, including faculty, students, and support staff, was collected to address AI's application in teaching, assessment, data management, research, and ethical considerations. A total of 207 constructs were identified, and grouped into 30 categories, which were further consolidated into eight major themes: (a) application of AI in teaching and learning; (b) application of AI in assessment; (c) use of AI for data management and analysis; (d) role of AI in supporting scholarship and research; (e) potential use of AI in institutional collaboration and accreditation; (f) ethical use of AI in education and its effects on professionalism, (g) challenges and issues of AI; and (h) suggestions and recommendation. These results were consolidated into an institutional guideline, and this provided a comprehensive guide for ethical AI use and support for continuous training to stay current with AI advancements. These guidelines can serve as a scalable model for other higher education institutions planning to develop responsible AI policies tailored to their contexts. The themes can also form the basis for AI readiness assessments, helping institutions identify gaps in digital infrastructure and training needs.

Keywords: *Artificial intelligence, Institutional guidelines, Nominal group techniques, Stakeholders*

CORRESPONDING AUTHOR

Siti Suriani Abd Razak, IMU Centre for Education, IMU University, 126 Jalan Jalil Perkasa 19, Bukit Jalil, 57000 Kuala Lumpur, Malaysia

Email: sitisuriani@imu.edu.my

INTRODUCTION

Artificial intelligence (AI) is the use of intelligent computer systems that can simulate human intelligence processes such as perception, learning, reasoning, language processing, etc., to solve problems. The term AI, created by John McCarthy in 1955, is defined as a machine with intelligent behaviour such as perception, reasoning, learning, or communication and the ability to perform human tasks (1). It is a rapidly growing phenomenon poised to instigate large-scale changes in all sectors, including higher education.

AI is playing an increasingly pivotal role in health professions education. For example, it has been shown to support educators in teaching and learning activities, automated grading and feedback, and predictive analysis of students' performance (2–4). As AI is reshaping health professions education, learners and educators need to continuously update their practices and ethical awareness to ensure competent and responsible use of AI technologies.

While several studies have shown how AI has potentially enhanced teaching and learning (2, 5), the implications of AI on health professional education and its ethical use must be carefully considered. This issue is more pressing given the rise of Generative AI (GenAI) such as ChatGPT and Google Gemini (6). Health professions educators have identified concerns about the use of AI, including its impact on assessment integrity, potential decline of students' critical thinking power with the advent of AI (7) and the lack of strategies for integrating AI into the current educational system.

The integration of AI in health professions education poses challenges due to limited digital competencies, curriculum constraints, and ethical concerns. Many healthcare professionals and students lack foundational AI knowledge, which is compounded by the shortage of educators trained to use AI and reliance on informal learning methods (8, 9). Overcrowded curricula and time constraints further hinder the inclusion of AI training (8, 10), while ethical issues such as data privacy, AI bias, and patient trust demand careful consideration (11).

Countries, organisations such as United Nations Educational, Scientific and Cultural Organization (UNESCO), and universities worldwide are developing frameworks and guidelines using various methods to address the challenges and guide the use of AI in their context, especially on the ethical aspects of using AI in education (12–14). However, significant gaps remain, particularly in areas such as ethical considerations, policy comprehensiveness, and practical applications. Many guidelines lack robust measures for data privacy, algorithmic transparency, and ethical use, raising concerns about academic integrity and responsible AI deployment (15, 16). Practical challenges include insufficient guidance on AI tool integration, innovative assessment designs, and the promotion of AI literacy (17). The rapid pace of AI advancements underscores the need for adaptive and inclusive policy frameworks that incorporate community feedback and foster continuous evaluation (18). Existing global efforts to develop AI guidelines often lack stakeholder engagement and practical applicability. Collaborative efforts are essential to develop comprehensive and ethical AI guidelines that enhance learning experiences while ensuring responsible use. This article describes how our institution employed the nominal group technique with diverse stakeholders to develop a comprehensive institutional guideline for the effective and ethical use of AI in health professions education. Compared to existing frameworks, our study uniquely emphasised participatory consensus-building and implementation practicality.

METHODS

The Nominal Group Technique (NGT) is a structured group decision-making method widely used in various fields, including healthcare and education. NGT aims to explore problems, identify solutions and harness a group's collective insight while ensuring equal participation in discussion. We gathered input from all stakeholders within the institution, including the lecturers, students and support staff. The NGT method was used due to its structured process promoting equal participation and consensus. The method encourages consensus-building through open discussion and collective evaluation, leading to more informed and supported decisions (19). All views carry equal weight, and the process provides equal opportunity for everyone to express their ideas, avoiding the problems associated with traditional group meetings.

The NGT process typically involves several key steps as illustrated in Figure 1. Initially, participants independently generate ideas or solutions to a specific problem or topic. Next, ideas are shared sequentially in a round-robin fashion, allowing each participant to contribute without interruption. This is then followed by group discussion and evaluation of the ideas, fostering clarification and consensus-building. Participants often vote or rank the ideas based on predetermined criteria to prioritise and finalise the decisions. Finally, the group discusses the plan of action with the intent of reaching an agreement on how to address the original question.

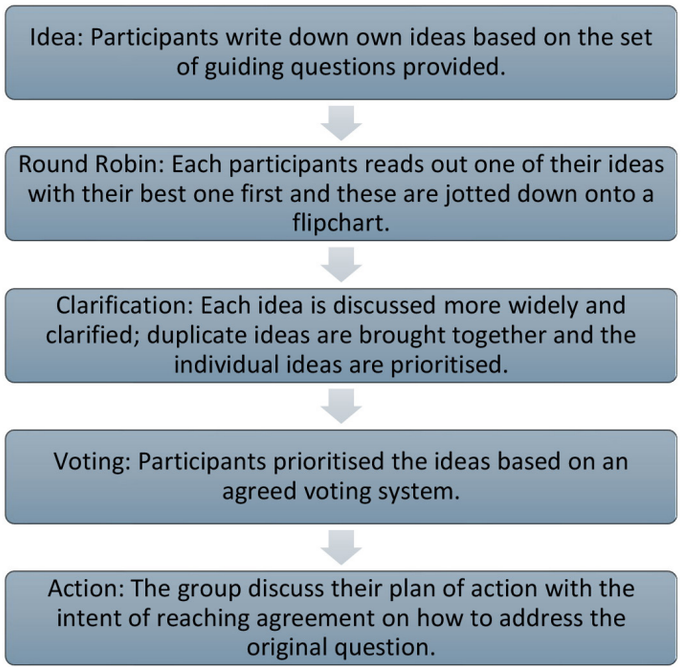

Figure 1: Flowchart to illustrate the NGT used.

A total of 59 participants took part in the discussion and were divided into six groups (Table 1). Each group comprised of faculty members from various schools, student representatives, and support staff from the admission unit, exam unit, e-learning department and information technology services. Faculty members were selected based on their interest in, and relevance to, the topic of AI. The goal of involving diverse stakeholders was to enhance the ownership of the framework development and the likelihood of its subsequent implementation.

Table 1: Participants' demographic information – role, gender, department/school, and number

Demographic information		Number
Role	Faculty members	44
	Academic support staff	9
	Undergraduate student	4
	Postgraduate student	2
Gender	Male	34
	Female	25
Department/ school	Academic Services	3
	Corporate (information technology (IT), admissions, etc.)	5
	Quality improvement unit	1
	School of Medicine (preclinical and clinical)	14
	School of Dentistry	4
	School of Pharmacy	11
	School of Health Sciences	6
	School of Alternative and Complementary Medicine	7
	School of Psychology and Social Sciences	2
	School of Business and Technology	1
	Centre for Bioethics and Humanities	3
	School of Postgraduate Studies	2

Each group was assigned a topic to focus on: (a) student learning; (b) content creation; (c) assessment; (d) professionalism and ethics; (e) scholarship and research; (f) collaboration and accreditation. The discussion in each focus group was facilitated by two moderators and guided by pre-structured questions:

How is AI used in your respective area?

a. What are the challenges and concerns faced with the use of AI?
b. What are the ethical issues and implications for the use of AI?
c. What are your suggestions to overcome the issues and challenges?
d. What are your recommendations for good practices for using AI?

These pre-structured questions were developed based on literature reviews and validated through discussion and review by all moderators.

The key points and action plans from each group were presented to all participants to elicit further input. The preliminary findings were then compiled by the moderators and sent to the participants to confirm their accuracy. Any discrepancies or suggestions identified were incorporated to refine the findings.

RESULTS

The data from the discussion were analysed using thematic analysis to identify the emerging themes by the researchers. The researchers compared their interpretations of the data and worked collaboratively to resolve any discrepancies and to reach consensus. This process minimised individual bias and enhanced the trustworthiness of the themes. During this process, a total of 207 constructs were identified and systematically grouped into 30 distinct categories based on their shared characteristics. These categories were further synthesised into eight major themes by identifying overarching commonalities within the themes, ensuring that each theme represents a broader key idea as described in Table 2. Figure 2 summarises the themes that emerged from the analysis.

Table 2: Themes and the key constructs for the use of AI in teaching and learning for health professions programmes

Themes	Categories
Application of AI in teaching and learning	AI helps and changes the way students learn and enhances students' learning experiences.
	AI can be used to provide personalised learning experiences.
	Educators can utilise AI to create scenarios, patient simulation, virtual reality, and virtual assistants for students' learning.
	Educators need to integrate AI into instructional design to maximise learning.
Application of AI in assessment	AI provides immediate feedback, suitable for self-assessment as the students can identify their strengths and weaknesses.
	AI can be used to assess students' progress, predict students' performance, and diagnose students' weaknesses.
	Educators use AI to support the assessment process such as creating assessment questions, proctoring, and post-exam item analysis.
	AI can be used to assess academic honesty i.e., for plagiarism checking.
Use of AI for data management and analysis	Support students' learning and behavioural analysis to provide a personalised plan for students' learning and academic support.
Role of AI in supporting scholarship and research	AI can provide insights on emerging trends.
	AI can support research activities to improve productivity.
Potential use of AI in institutional collaboration and accreditation	AI can provide tools and systems for matching of interests and collaborators.
	AI can ease the documentation processes.
	AI can be used to track the quality assurance processes and matters.
	AI can be used to analyse the curriculum and identify gaps.
Ethical use of AI in education and its effects on professionalism	AI may lead to academic dishonesty among students.
	AI may impede personal and professional development.
	AI may affect humanistic value among students, educators, and staff.
	Educators and administrators need to be aware of bias in the data provided.

(*Continued on next page*)

Table 2: (*Continued*)

Themes	Categories
Challenges and issues of AI	Accountability and accuracy of the information provided by AI.
	Educators and administrators need to ensure anonymity and security of the data.
	Potential harm of AI to learning and decision-making.
	Reliability and reproducibility of AI.
	Acceptance of students, educators, and staff towards AI.
	Change of educators' role.
Suggestions and recommendation	Educators may leverage AI for the advancement of education.
	Frequent updates and communication-related to AI.
	Training for students, staff, and administrators.
	Clear guidelines for the ethical and accountable use of AI in education.
	Build an AI team or support group within the institution.

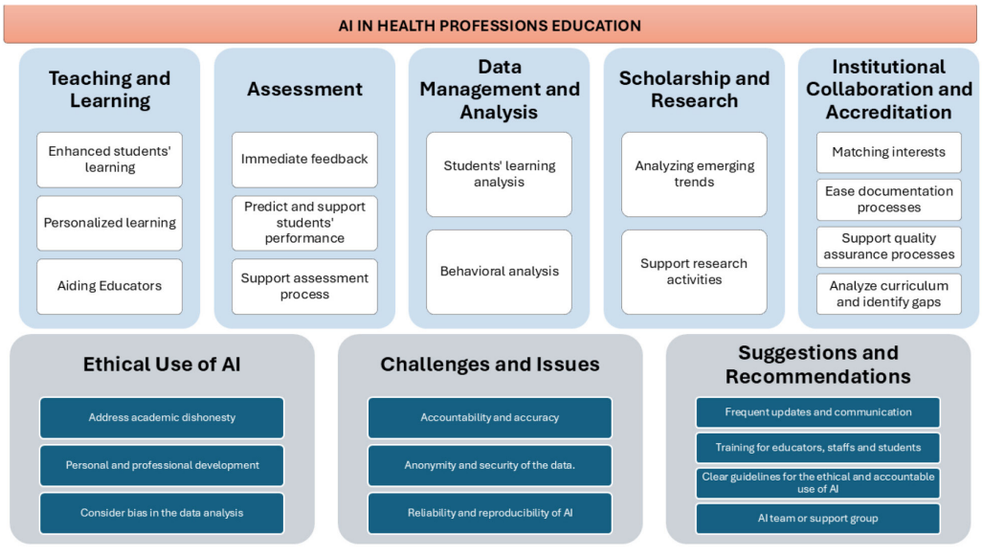

Figure 2: Summary of the themes – AI in health professions education.

These findings have been incorporated into institutional guidelines prioritising the perspective of the use of AI in teaching and learning in the institution. The guidelines comprise the following areas: (a) application of AI in education (teaching and learning, assessment, data management and analysis, scholarship and research, accreditation and institutional collaboration, wellbeing); and (b) limitations and (c) recommendations.

DISCUSSION

Application of AI in Teaching and Learning, Assessment, and Research

AI has widely permeated the education environment and is used by both teachers and students for information as well as assessment. Discussions during the group discussions highlighted the positive perceptions of the faculty and students towards the use of generative

AI in facilitating scenario-based learning (SBL). A study using WCV (write prompt, curate output, verify output) has established that the use of ChatGPT enabled the efficient creation of scenarios for SBL purposes within short time frames and improved student motivation and learning performance (20).

The intelligent tutoring systems (ITS) tailor the support and learning materials, customising them to the ability and needs of the students. Many faculty members discussed the AI-enabled ITS as it plays a critical role in developing personalised teaching assistance to learners and educating them in solving problems by providing step-by-step feedback and guidance (21). The faculty discussion found that the use of ITS has focused on the domain-specific knowledge of a few basic subjects. There is a gap in the current ITS knowledge base on reinforcement learning, the development of suitable artificial neural networks (ANN), and the development of fuzzy logic approaches using ITS on a diverse pool of subjects (21).

For teachers, AI is a powerful tool to enrich their teaching, but again, the risk of inaccuracy, bias and misleading information can be of concern. Therefore, faculty must be educated in using AI to its full potential correctly and ethically (7, 22). AI offers immense benefits to students in transforming their learning process, leading to personalised learning. AI has helped break language barriers with translation and interpretation services. It has helped students enhance their writing skills by providing language editing and grammar-checking applications. Students have positive attitudes towards AI and use it quite frequently (23). Advanced AI tools are being released with greater analytical ability to create written and audiovisual content. Despite the immense applications in supporting student learning, a major concern of educators is that AI might hinder the development of critical thinking skills in students. AI can also lead to academic dishonesty and plagiarism if used indiscriminately by students. Some of the traditional summative assessment tasks, like academic essay writing, can easily be done using generative AI (24). With the expanding use of AI in education, there is an immense need for experts to develop ethical standards to regulate the use of AI (25). Guidelines are being developed by universities to regulate the use of AI by students for academic work (26).

AI is transforming student assessment by offering personalised learning opportunities, efficient grading, and immediate feedback. Studies showed that AI not only allows fast generation of multiple-choice questions, but AI-generated questions can have good psychometric properties and quality, measuring higher-order domains (27, 28). These assessment benefits, however, come with concerns. Over-reliance on AI might compromise students' development in areas such as problem-solving, critical thinking and creativity (29). The ease of access and use of AI-powered essay generators creates opportunities for plagiarism. To mitigate these concerns, our participants supported the introduction of policies and guidelines on the use of AI in assessment, focusing on use (permit to use or not to use), acknowledgement of use, referencing and academic misconduct penalties. While penalties, e.g., failing grades or suspension, can deter academic dishonesty, they are not a complete solution. The onus for fostering academic integrity ultimately falls on students themselves. There is a critical need to cultivate a culture of academic integrity and a strong sense of personal responsibility and ethical behaviour. Educators must also continue to emphasise the value of independent thinking and critical analysis skills in health professions education while designing assessments that go beyond rote memorisation and encourage higher cognitive thinking. Another promising consideration is the adoption of a programmatic assessment strategy. Given that programmatic assessment involves a continuous collection of students' progression data across diverse assessment tools, the risk and impact of academic misconduct, such as improper use of AI or plagiarism, is minimised while assuring learning is optimised (30).

The rapid advancements in AI have also significantly impacted various aspects of research and academic endeavours. The integration of AI technologies has transformed the way researchers collect, analyse, and interpret data. This has led to improved productivity and efficiency in research processes across multiple disciplines (31). AI algorithms are being utilised to automate routine tasks such as data processing, allowing researchers to focus on higher-level analysis and synthesis (32). Additionally, AI-driven tools are contributing to the discovery of new patterns and correlations within large datasets, enabling researchers to gain deeper insights and make more informed decisions (33). As AI continues to evolve, its impact on research support and productivity improvement is expected to become even more profound.

The use of AI in research support and productivity improvement has also extended to areas beyond data analysis. AI-powered literature review and recommendation systems are helping researchers stay updated with the latest developments in their field, saving time and effort in sifting through a vast amount of literature (33, 34). Moreover, AI is increasingly playing a role in predicting research trends, optimising experimental designs, and even automating the writing process for certain types of academic papers (34).

As the adoption of AI in research grows, it is essential to establish clear guidelines and best practices for its ethical and responsible use (7). Researchers must be cognisant of the potential biases and limitations inherent in AI algorithms and ensure that their findings are not skewed or misrepresented (7). Furthermore, the acknowledgement of AI contributions in research publications is crucial to maintain transparency and credit the role of these technologies in advancing knowledge. Simultaneously, it is imperative to continue training and educating students on proper research methodologies, critical thinking, and the responsible use of AI tools (7).

ETHICAL USE OF AI IN EDUCATION

While AI tools hold the potential to revolutionise the way we approach teaching and learning, the ethical implications of their use must be carefully examined. In 2019, UNESCO identified six key challenges to achieving sustainable AI development in education: (a) comprehensive public policy; (b) inclusion and equity in AI use; (c) preparing teachers for AI-powered education; (d) developing AI that understands educational needs; (e) creating quality and inclusive data systems; and (f) ensuring ethics and transparency in data collection, use, and dissemination (13). At the individual level, challenges include: (a) systemic bias; (b) discrimination; (c) inequality for marginalised students; (d) xenophobia; (e) privacy issues; and (d) bias in data collection and processing (35).

One significant concern is the potential for AI to enable academic dishonesty among students (36). AI-powered tools can automate tasks such as essay writing, homework completion, and even exam-taking, raising concerns about the authenticity of student work and the integrity of the educational process (37). Furthermore, the convenience of AI tools can lead to quick self-satisfaction, causing educators and students to rely heavily on automation, which stifles creativity and critical engagement. Although some studies show positive perceptions from students regarding using AI to develop their essential skills (38), careful integration is essential to ensure that AI is supporting and not diminishing the development of essential skills and critical thinking.

Many are concerned about AI impeding the humanistic values among students, educators, and staff by diminishing the human touch and reducing empathy in educational interactions. While AI's lack of emotional understanding can lead to a mechanical learning environment, causing students to feel less supported (39), a hybrid model that combines technological advancements with human-centric approaches is essential to developing a meaningful educational environment. Collaboration between AI and educators can enhance learning by allowing AI to manage administrative tasks while teachers focus on personal interactions (39). Comprehensive training for educators on AI's technical and ethical aspects ensures thoughtful integration, enhancing rather than replacing human interactions (40).

AI-enabled personalised learning approaches are designed to meet the unique requirements of individual students, thereby enhancing their engagement and motivation. However, privacy, data security, algorithm bias, and informed consent related to data management are critical ethical considerations. Information collected about students should be minimised to only what is necessary for the intended purpose and outcome, and by ensuring that students provide informed consent and understand the data's use (7). Additionally, the decisions about patients or students that are often made by algorithms with minimal human involvement have raised high-stakes legal questions about consent and responsibility for outcomes (41). AI systems may reflect algorithmic bias, potentially resulting in discrimination based on personal attributes, breaching student privacy, and exposing sensitive information. To promote fairness and prevent discrimination, it is essential to incorporate diverse data into the models, raise awareness of existing biases, and ensure that AI is leveraged to narrow the digital divide among students from varying socioeconomic backgrounds (7). Educators and administrators must also work diligently to safeguard the anonymity and security of student data, mitigating the potential for misuse or breaches that could have long-term ramifications for learners.

Successful and ethical implementation of AI in education will require collaboration among all stakeholders to address the complex issues surrounding its use. Securing the acceptance of AI by students, educators, and staff is pivotal for its successful integration. Transparent communication, comprehensive training, and collaborative decision-making can foster a more positive attitude towards AI, addressing concerns and ensuring its seamless incorporation into educational institutions and programmes.

Our guidelines addressed real concerns such as academic dishonesty, data privacy, and AI bias. For example, recommendations include mandatory training and the use of AI detection tools in assessments. We discuss barriers such as faculty resistance and propose solutions like targeted training and showcasing success stories. Our participatory process enhances potential adoption and allows for adaptation of the guidelines in other institutions.

LIMITATIONS

Despite its advantages, the NGT method used is not without limitations. There are possible instances where certain participants exert undue influence or dominate the discussion, compromising the democratic principles of the technique. The structured format of NGT, while conducive to systematic decision-making, may inadvertently stifle creativity by imposing constraints on idea generation. Furthermore, the process of voting or ranking ideas can be contentious, especially if there are divergent opinions or ambiguous criteria for evaluation, potentially impeding consensus-building efforts.

To ensure flexibility in the structured format and to foster creativity, we encouraged diverse group participation and allowed post-discussion presentations and feedback to further enhance the consensus-building, thus ensuring the technique remained effective and democratic.

RECOMMENDATIONS

Potential barriers to implementing the guidelines include resistance to change from educators and staff, lack of digital literacy, limited institutional resources, and concerns about data privacy and ethical issues. To overcome these challenges, institutions can provide targeted training, allocate resources for AI integration, and foster a culture of collaboration and openness to innovation. Regular communication and showcasing the benefits of AI can further promote acceptance and effective implementation.

Understanding the limitations of AI is crucial for educators to effectively integrate these technologies into their teaching practices. To support faculty, guidelines should emphasise multidisciplinary support, curriculum integration, authentic assessment strategies, and targeted training for both students and faculty. Multidisciplinary support provides a holistic understanding of AI's capabilities and limitations, fostering a comprehensive approach to its use in the classroom. Collaborations between departments can lead to robust guidelines and best practices addressing the ethical, technical, and pedagogical aspects of AI integration, ensuring educators are not working in isolation and can draw on diverse expertise (35).

Integrating AI into the curriculum is essential for preparing students for a future where AI technologies are pervasive. Courses should cover the technical aspects of AI as well as its ethical implications, societal impacts, and practical applications, ensuring students develop a critical understanding of AI. To promote higher-order thinking, an authentic assessment strategy is necessary. Assessments should go beyond traditional exams to include project-based learning, case studies, and real-world problem-solving tasks, allowing students to apply AI concepts creatively and ethically. This approach ensures students are active learners capable of critical thinking and innovation.

Developing comprehensive AI modules for students and tailored workshops for faculty are critical steps in AI education. These modules should provide a balanced view of AI, including its potential and limitations through hands-on projects, ethical discussions, and cross-disciplinary activities. This approach helps students understand AI's broader implications and equips them with the necessary skills and knowledge to navigate an AI-driven world responsibly (42).

Simultaneously, faculty workshops should focus on pedagogical strategies, ethical considerations, and creating multidisciplinary lesson plans. These sessions should also keep educators updated on the latest AI advancements and their impact on education. By participating in these workshops, educators can gain the confidence and expertise to effectively integrate AI tools into their teaching, thereby enhancing student learning (43).

CONCLUSION

Training healthcare professionals is comprehensive and rigorous to ensure graduates can provide safe and high-quality patient care. The rapid development of AI post-COVID-19 has disrupted the established training systems, offering promising opportunities to enhance

teaching effectiveness, automate administrative tasks, enable data-driven decision-making, and support personalised learning. However, faculty must be aware of AI's limitations, particularly regarding ethics, data privacy, and biases in algorithms.

As AI reshapes industries and economies, incorporating AI into teaching and learning is essential for graduates to gain competencies in AI applications in healthcare. Institutional guidelines developed through a consensus approach can consolidate diverse faculty perspectives and consider institutional contexts such as demographics, resources, and professional needs. Our guidelines, rooted in stakeholder input, align with global educational goals by promoting ethical and effective AI use in teaching and assessment.

The guidelines can further foster standardised practices for integrating AI and promoting ethical and equitable use of technology. This foundation supports continuous faculty training to stay current with AI advancements and meet the needs of 21st-century learners. These guidelines will encourage faculty to design authentic assessments that evaluate students' higher-order cognitive skills in real-life settings where AI is integral. By aligning AI integration with global educational goals, these guidelines can contribute to improved healthcare outcomes and a more interconnected and responsive global health workforce. Future work should evaluate the impact of the guidelines and their associated outcomes, and explore collaborative implementation strategies across institutions. We propose mechanisms for ongoing monitoring and updates, including feedback loops and AI policy review committees.

SUPPLEMENTARY MATERIAL

Readers may request a copy of the full Institutional Guideline for the Use of AI in Teaching and Learning from IMU University.

ACKNOWLEDGEMENTS

We extend our sincere gratitude to all the moderators and participants who dedicated their time and contributed valuable insights during the study. Their active involvement and thoughtful contributions have been instrumental in shaping the outcomes of this study. This study did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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