AI Operational Policy Integration at Top Higher Education Institutions

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This study will provide insight into the distinguishing features of AI implementation at higher education institutions. It focuses on operational dimensions of infrastructure, training, monitoring, evaluation, and supporting AI literacy. While existing literature offers insights into AI's integration in educational settings, specific strategies employed by institutions are underexplored. Through analyzing AI policies in top universities, it will provide an overview of the operational opportunities of AI in higher education institutions that become a part of the ecosystem of modern higher education. By analyzing AI policies and practices in top universities, we can gain insights into how higher education implements AI that shapes the future of teaching and learning in the digital world.

Introduction

The integration of Artificial Intelligence (AI) into higher education has become a significant trend, shaping the future of teaching, learning, and educational management. As AI tools become more accessible, universities face challenges in adopting these technologies responsibly and effectively, particularly regarding the monitoring, evaluation, and training

necessary for successful implementation (Chan, 2023). Effective AI adoption requires institutions to prioritize AI literacy for educators, ensuring they are equipped with the knowledge and skills to navigate the rapidly evolving landscape of educational technology (Ng et al., 2021). United Nations Educational Scientific and Cultural Organization guidelines emphasize a human-centered approach to AI integration, promoting ethical, safe, and equitable usage (UNESCO, 2023). Despite growing interest in AI's potential, research on the specific strategies employed by top universities to incorporate AI into teaching and learning remains limited (Rahman & Watanabe, 2023; Melik & Schmidt-Crawford, 2024). This study aims to explore the current strategies and approaches of top universities in integrating AI into teaching and learning practices, with a focus on their AI policies and the operational challenges they face in fostering AI literacy and effective implementation.The study will examine this question:

What are top universities' current strategies and approaches to integrate AI into teaching and learning practices?

Monitoring and evaluation of AI

Monitoring and evaluation in education refer to systematic processes of assessing and analyzing various aspects of educational practices, programs, and outcomes to ensure effectiveness and accountability (Stecher et al.; J. H., 2008). Chan (2023) demonstrated that effective monitoring and evaluation mechanisms are essential to gauge the impact and efficacy of AI implementation in educational settings. It also emphasizes the importance of continuous assessment to identify areas for improvement and ensure that AI technologies are employed in a manner that aligns with pedagogical goals and ethical standards.

AI Literacy for Teachers

AI literacy is a fairly recent phenomenon, especially as it relates to education. According to Ng et al., 2021, AI literacy can be defined as knowing the essential functions of AI, applying this knowledge in various scenarios, evaluating/creating with AI applications, and considering human-centered ethical considerations such as fairness, accountability, transparency, and safety. AI literacy is crucial for teachers as it empowers them to navigate the rapidly evolving landscape of educational technology. The operational dimensions of institutions ensure that teachers are active participants in developing and implementing AI technology. By developing AI policies, institutions can ensure that teachers effectively integrate AI tools and resources into their instructional practices, identify opportunities for innovation, and address ethical considerations and biases inherent in AI technologies (Yang et al., 2021).

AI Implementation

While existing research provides insights into the broader dimensions of AI integration and implementation in education (Kaplan-Rakowiski et al., 2023; McKnight & Hicks, 2023; Cardona et al., 2023), there is limited understanding of the specific strategies and approaches employed by universities to integrate AI into teaching and learning practices (Rahman & Watanabe, 2023; Melik & Schmidt-Crawford, 2024). Federspiel et al. (2023) illustrated that the improper use of AI could lead to inequity and ethical issues in the educational setting. Therefore, this research aims to understand how the top 50 universities integrate AI into teaching and learning practices by analyzing their AI policies. The research seeks to provide insight that can inform future AI implementation efforts in educational settings and contribute to the advancement of AI literacy among educators.

UNESCO policy

United Nations Educational Scientific and Cultural Organization (UNESCO) is a professional international organization with extensive expertise in education. Their guideline for AI and education provides a flexible and adaptable framework focusing on integrating AI emphasizing different aspects.To ensure its ethical, safe, egalitarian, and meaningful usage, the UNESCO guideline for regulating the use of generative AI in education focuses on a variety of actions and regulatory initiatives based on a human-centered perspective. UNESCO recommend that institutions should adopt, revise and fund whole-of-government

strategies on AI (UNESCO., 2023; Chan., 2023). Institutions also can start regulating the use of AI by implementing specific AI ethical regulations. Moreover, they can modify the existing laws that are applicable for regulating AI-generated content. To do this successfully, institutions can provide detailed regulatory guidelines for generative AI using the existing frameworks and guidelines.

Challenges in operationalizing AI at universities

Operationalizing artificial intelligence (AI) in higher education, as defined by the UNESCO framework, involves integrating AI technologies into teaching and learning practices with a strong emphasis on two key areas: monitoring and evaluation of AI implementation, and providing training and support for teachers, staff, and students in AI literacy. The monitoring and evaluation of AI implementation in higher education face several significant challenges. To begin with, the complexity of AI systems makes accurate monitoring difficult, as understanding how different algorithms function and their effects on learning outcomes necessitates specialized knowledge and resources that many institutions may lack. Furthermore, the dynamic nature of AI technologies presents an ongoing challenge, as tools and methodologies are continually evolving, requiring institutions to frequently update their curriculum and assessment. Additionally, contextual variability adds complexity to the evaluation process, as the effectiveness of AI tools can differ significantly across various educational contexts, including institutional missions, student demographics, and available resources.

Methodology

A comprehensive review was undertaken, examining the AI policies of the top 25 universities as ranked by US News Top 100 and Times Higher Education. The primary focus of this review will be on how AI is integrated into teaching and learning practices. The study will provide a scrutiny of policies across 25 universities, specifically concentrating on the approaches taken within teaching and learning centers. It will utilize Chan's (2023) Ecological Education Policy. The inclusion criteria for this study was based on policies explicitly addressing AI, with a significant emphasis on operational considerations within teaching and learning centers. These considerations will cover various aspects, including (a) teaching resources, (b) ethics, (c) privacy, (d) student resources, (e) collaboration, (f) monitoring, and (h) the integration of AI systems. By delving into these specific areas, the study aims to provide an understanding of how leading universities navigate the incorporation of AI within their teaching and learning frameworks.

Findings

Institutions are prioritizing the operational dimension. Some universities have created detailed guidelines for generative AI, addressing its educational benefits, limitations, and impact on student learning. Additionally, they have established committees to oversee AI’s educational viability, which provide structured, continuous evaluation to meet institutional standards. These efforts demonstrate a commitment to systematically monitor AI’s role in enhancing teaching and learning, while keeping academic rigor and standards at the forefront.

Medium sized private institutions have more flexibility in setting AI policies. These institutions emphasize faculty autonomy, allowing educators to decide whether to allow or restrict AI use. For instance, several medium-sized institutions permit instructors to modify their AI policies based on course needs and ethical guidelines. On the other hand, Large public institutions provide more structured policies. They encourage centralized approaches to AI use, offering more defined procedures, especially for academic integrity and privacy protection.

There was some evidence of collaboration among key stakeholders in the integration of generative AI in education, but it was challenging to fully assess the depth and effectiveness of these efforts, as our data was mostly derived from what was

publicly available on school websites. In some universities, administrative teams coordinated policy updates to address ethical, technological, and pedagogical developments, and some institutions provided resources for IT departments to manage AI tools'. Additionally, some medium sized universties integrated AI tools, such as Grammarly for use by their students. These collaborative efforts highlight the importance of aligning technological, academic, and administrative priorities to support sustainable AI integration.

All institutions prioritize AI literacy despite differences in the depth and breadth of resources offered. Medium sized institutions focused on providing links for research articles about AI tool usage and ethical guidance, and links for other universities policies and guidance. For instance, these institutions offer AI housekeeping articles, list of professional events, and updates on GAI through podcasts, blogs, and newsletters. Large public institutions tend to provide more AI literacy programs such as research centers resources which enhance the use of AI tools. They also encourage cross-institutional collaborations which help reinforce AI readiness.

Institutions demonstrated structured approaches to monitoring and evaluating generative AI implementation. Some developed guidelines that outline AI's benefits, limitations, and impact on learning outcomes. Others established committees to assess AI’s educational feasibility, ensuring integration aligns with academic and institutional goals. Additionally, policies were reassessed to provide guidance on incorporating AI into assignments and assessments while maintaining academic integrity. These efforts underscore the importance of continuous evaluation in responsibly integrating AI into education.

All institutions had operational policies guiding the ethical use of AI in education. Large and medium-sized universities created policies that allowed educators to define how AI tools should be used, setting clear parameters for academic integrity and ethical AI usage. Some institutions encouraged educators to design assignments that discourage academic dishonesty while integrating AI, fostering responsible engagement with technology. Additionally, large universities recommended against using AI detection software, advocating for a more nuanced approach to AI integration. These highlight that universities' policy implementation and approaches to AI integration vary significantly when it comes to ethics.

Discussion

Divergence in policy approach reflects variations in institutional governance. The AI policy’s flexible implementation allows institutions to prioritize faculty autonomy (Hadley, 2022). It enables instructors to adapt AI based on specific course needs and ethical standards. In addition, it promotes fostering innovation, allowing educators to explore AI applications in diverse pedagogical contexts. In contrast, some institutions adopt more structured and centralized AI policies emphasizing consistency (Cihon et al., 2020). This approach reflects the institutions’ accountability requirements, especially in academic integrity and privacy protection

Institutions’ training is a priority across institutions of all sizes, aligning with the flexibility seen in their policy implementation, supports educators as they navigate the integration of AI into diverse instructional settings. In addition, the comprehensive training that some large institutions provide ensures that staff and students are well-prepared for AI-driven educational environments (Magrill & Magrill, 2024). AI literacy is another shared priority across institutions. It keeps faculty and students informed on the latest developments in AI tools and ethical considerations. Enhancing AI literacy boosts AI culture readiness and knowledge sharing, which in return promotes AI operation strategies in the institution (Korte et al., 2024, Olari et al., 2022). This variation of AI literacy initiatives demonstrates that size, resources, and governance structures greatly influence each institution.

Conclusion

The integration of AI in higher education requires robust operational policies focused on monitoring and evaluation to address the technical, ethical, and pedagogical challenges that institutions face. Key obstacles include inadequate training and support, limited access to technology, infrastructure issues, time constraints, and resistance to change (Youssef Abou Karroum & Elshaiekh, 2023). To address these issues, Chan (2023) proposes an AI Ecological Education Policy Framework with pedagogical, governance, and operational dimensions. This framework aims to improve teaching and learning outcomes while addressing privacy, security, and infrastructure concerns. As AI adoption increases, the roles of teachers and educational leaders are expected to evolve (Begum, 2024). To successfully harness AI's potential, institutions must work collaboratively with stakeholders to facilitate implementation through knowledge, funding, and support structures that promote responsible AI adoption. Institutions should create clear, structured policies outlining AI Policies while enhancing the AI literacy in their classrooms. These AI policies should be created by a group of various members, such as faculty, administrators, IT experts, and student representatives, to be comprehensive.

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