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Policies for Artificial Intelligence in Higher Education: A Call for Action

Politiques sur l'intelligence artificielle en enseignement supérieur : un appel à l'action

***Mohamed Ally**, Athabasca University, Canada*

***Sanjaya Mishra**, Commonwealth of Learning, Canada*

Abstract

This paper highlights the importance of artificial intelligence (AI) policies in higher education institutions and presents a step-by-step process for adopting institutional policies. Emphasizing the inevitable implications on AI in teaching and learning, this paper also discusses key policy areas for consideration by the stakeholders and lists the competencies that will influence appropriate policy development.

Keywords: artificial intelligence, GenAI, higher education, policies, postsecondary education

Résumé

Cet article souligne l'importance des politiques sur l'intelligence artificielle (IA) dans les établissements d'enseignement supérieur et présente un processus étape par étape pour l'adoption de politiques institutionnelles. Soulignant les implications inévitables de l'IA dans l'enseignement et l'apprentissage, ce document aborde également les aspects clés des politiques à prendre en considération par les parties prenantes et énumère les compétences qui influenceront l'élaboration d'une politique appropriée.

Mots-clés : enseignement postsecondaire, enseignement supérieur, IAg, intelligence artificielle, politiques

Introduction

There is a sense of urgency to develop guidelines, standards, and policies for AI use in higher education as the world approaches the "singularity" era, a blurring between humans and machines. The International Organization for Standardization (in ISO/IEC 22989:2022) defined AI as "a technical and

scientific field devoted to the engineered system that generates outputs such as content, forecasts, recommendations or decisions for a given set of human-defined objectives" (International Organization for Standardization, 2022). The Organisation for Economic Co-operation and Development (OECD) defined AI as "a machine-based system that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments" (Russell et al., 2023). As technologies continue to emerge in the fourth industrial revolution, the use of artificial intelligence has expanded to reach all sectors of society, including education (Ally & Perris, 2022) and there is a need for all citizens to be AI literate to benefit from AI (World Economic Forum, 2024).

Both students and teachers in higher education institutions use GenAI (Shaw et al., 2023). Consequently, there are several concerns about the use of AI in teaching, learning, and research. These issues primarily relate to academic integrity (Yusuf et al., 2024) and the originality of student's work for assessment and grading (Lou, 2024). Therefore, it is essential to develop policies related to AI in higher education. This paper discusses in brief the need for such policies, policy areas to consider, and steps to be taken to develop ethical guidelines and policies in higher education.

Benefits of AI

If designed and implemented properly, AI holds immense potential to revolutionise teaching methodologies, personalise learning experiences, and streamline administrative processes. According to UNESCO (2021), AI also has the potential to address some of the biggest challenges in education today and help achieve SDG 4, to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all." However, innovations bring risks and challenges that must be addressed. AI can be used in a variety of areas in education, including teaching, learning, and assessment. AI can benefit higher education by enabling personalised student support; providing teaching, research, or administrative assistance; conducting learning analytics; and supporting digital literacy training (Jenay, 2024).

There are many benefits to instructors using AI in education. Instructors can use an AI system to adapt learning for individual students, based on each student's preferences and current level of understanding. A knowledge graph can be used to map a student's progress in a course. The Alan Turing Institute suggests that a knowledge graph should "organise data from multiple sources, capture information about entities of interest in a given domain or task (like people, places or events), and forge connections between them" (Alan Turing Institute, n.d., para. 1). The AI system will track the student's progress and create a knowledge graph to show where the student is in the course (Cui & Yu, 2019). As the student interacts with the system, it will learn about the student and update the knowledge graph. For example, in a course, the knowledge graph will show the topics completed, those still to be completed, and the topics in which the student is having problems achieving the learning outcomes and needs help. The intelligence system will prescribe resources and activities for the student to be successful or recommend human intervention to help the student.

The use of AI by students can provide learning flexibility, since students can prompt the GenAI system for resources as they complete their learning. The system can facilitate one-to-one learning by customising the learning experience for individual students. Students who live in remote locations with the required technology can access learning materials and interact with other students and their educational institutions without leaving their community. To receive support while they are learning, the students can access the institution's chatbot, available anytime. This will help reduce the inequalities in education by providing education for all (MacDowell et al., 2024).

AI Policies in Higher Education

Artificial intelligence systems must be developed for humans, since humans will be interacting with the systems. The systems should benefit humans rather than harm or otherwise negatively affect them. The AI systems should be user-centred and not discriminate between individuals based on individual differences. Each system should be transparent so that users—especially non-technical ones—are aware of its capabilities. The data generated by AI systems should be auditable to ensure the data are accurate and non-discriminatory. Individuals should be trained on how to use each AI system, and technical support should be provided for users as they interact with the system. Users provided with technical support and with the correct skills will be able to use the system in the future, ensuring its sustainability. Also, users should be informed about how AI can benefit humanity, so they are motivated to use AI systems (United Nations, 2024). At the same time, users should be informed of the challenges of using AI and the policies they should follow when using these systems.

In a global survey of 450 schools and universities, UNESCO found that fewer than 10% have developed institutional policies and/or formal guidance concerning the use of generative AI applications (UNESCO, 2023). Shaw et al. (2023) in a survey of higher education faculty and students found that 22% of faculty are using GenAI while 49% of students are using GenAI. They also reported that the use of GenAI by faculty and students is increasing. This increasing trend in the use of GenAI in higher education places a sense of urgency for higher education institutions to develop AI policies. A recent report by Ally and Mishra (2024) suggests a procedure for higher education institutions to develop AI policies. In the past AI policies were developed for instructors and students only; however, AI policies also need to provide guidance to other stakeholders such as administrators, learning designers, librarians, researchers, information technology and support staff, and registrar. The report by Ally and Mishra reviewed several institutional AI policies and identified 14 policy areas that stakeholders in higher education should consider while developing institutional policies (Table 1).

In addition to developing AI policies for individual higher education institutions, AI standards should be established that could be applied globally. Marwala (2024) suggested that AI standards should create uniform guidelines for AI design, development, and deployment, focusing on technical quality, ethical considerations, and compatibility. The standard should cover data privacy, algorithmic transparency, security, and bias prevention. The AI standards should be developed by multidisciplinary teams consisting of industry, academia, and regulators, and these guidelines should be regularly updated to ensure global safety, effectiveness, and ethical compliance with AI technologies (Marwala, 2024).

The development of standards for AI use is increasing and educators should be aware of these new standards. In the first half of 2024, 117 AI international standards were developed compared to 3 standards developed in 2018 (United Nations, 2024).

Table 1

Policy Areas for AI in Education

Policy areas		Consideration
1.	Technology access	Provisions for access to AI for all stakeholders; digital divide issues
2.	Data privacy	Concerns related to data privacy discussed
3.	Data security	Issues related to security of data covered
4.	AI ethics	Including diversity, equity, and inclusion
5.	Bias/Stereotypes	Bias and stereotypes related to gender, race, etc. discussed
6.	Teaching and learning	Guidelines for dos and don'ts in teaching and learning
7.	Academic integrity	Concerns related to cheating in assignments, term papers, etc., and guidelines discussed
8.	Transparency	Issues related to lack of transparency of large language models discussed
9.	Training and development	Provision of training for the faculty and staff to use AI tools effectively
10.	Gender	Issues related to gender in the context of AI tools covered
11.	Persons with disabilities	Provisions for persons with disabilities are addressed in the policy for AI in teaching and learning
12.	Copyright and intellectual property	Copyright and intellectual property rights issues related to AI tools are discussed
13.	Environmental concerns	Are there concerns or understanding about the impact of AI tools on the environment?
14.	Cost and sustainability	Can AI be used cost-effectively? Where will the funds come from?

Source. Ally & Mishra (2024). ©Commonwealth of Learning. Available under CCBY-SA.

Stakeholders in higher education institutions have to implement and follow the AI policies. Institutions must implement education and training programs to develop AI skills across the organization, from basic digital literacy to advanced technical expertise, to prepare educators for an AI

future (United Nations, 2024). This includes training on AI policies, how to implement the policies, and how to deal with violations of AI policies. As technology emerges and AI policies become outdated, new policies must be developed or existing policies revised. Ally and Mishra (2024) proposed a competency profile (Table 2) that can be used to train or orient stakeholders in higher education on the implementation of AI policies.

Table 2

Competencies for AI Policies

Policy areas		Competencies	
0.	General	0.1	Define policy
		0.2	Describe why it is important to develop AI policies
		0.3	Describe why it is important to follow AI policies
		0.4	Possess basic knowledge of AI
		0.5	Describe how AI is used in your role
		0.6	Determine whether the system you are using has AI capabilities
		0.7	Describe the human role in developing AI systems
1.	Technology access	1.1	Determine what technology you need to use the AI system
		1.2	Determine who to contact if there is a technology issue
		1.3	Use the technology to complete your tasks
2.	Data privacy	2.1	Define data privacy
		2.2	Describe how to keep data private
		2.3	Describe how to tell whether data has been breached
		2.4	Describe the steps to take if data is breached
3.	Data security	3.1	Define data security
		3.2	Describe how to keep data secured
		3.3	Describe how to tell whether data has been accessed illegally
		3.4	Describe the steps to take to keep data secured
4.	AI ethics	4.1	Define AI ethics
		4.2	Describe the AI ethics policies you have to follow in your role
		4.3	Describe why it is important to follow AI ethics policies
		4.4	Describe the consequences of not following AI ethics
		4.5	Describe how you will know whether the AI system you are using is fair and trustworthy

Policy areas		Competencies	
5.	Bias/Stereotypes	5.1	Define bias and stereotypes
		5.2	Describe the AI bias and stereotypes policies to follow in your organisation
		5.3	Describe why it is important to follow policies as you complete your tasks
		5.4	Describe what you would do if you found that the AI system was biased against someone
6.	Teaching and learning	6.1	Determine whether students can use AI software to assist in completing their course work or assignments
		6.2	Describe the policies you have to follow to use AI software for your course
		6.3	Describe how students can use AI to complete course activities
7.	Academic integrity	7.1	Define academic integrity
		7.2	Describe AI academic integrity policies to follow
		7.3	Describe the consequences of not following academic integrity policies
		7.4	Describe actions you will take if academic integrity policies are not followed
8.	Transparency	8.1	Define transparency
		8.2	Describe AI policies related to transparency
		8.3	Describe why it is important to have policies on transparency for AI
9.	Training and development	9.1	Determine how AI is impacting your role
		9.2	Obtain the training you require to use the AI system
		9.3	Determine who to contact if you have questions and need support on the AI system you are using
10.	Gender	10.1	Describe why it is important to have AI policies for gender
		10.2	Describe AI policies for gender
11.	Persons with disabilities	11.1	Describe the different types of disabilities that AI should cater for
		11.2	Describe AI policies to follow for persons with disabilities

Policy areas		Competencies	
12.	Copyright and intellectual property	12.1	Define copyright and intellectual property
		12.2	Describe AI policies for copyright and intellectual property
		12.3	Provide examples of copyright and intellectual property infringement in AI
13.	Environmental concerns	13.1	Describe how AI can contribute to protecting the environment
		13.2	Provide examples of policies that can help to protect the environment
14.	Cost and sustainability	14.1	Describe AI policies related to cost and sustainability
		14.2	Describe whether the AI system you are working with is sustainable
		14.3	Describe why the cost of AI systems should be sustainable

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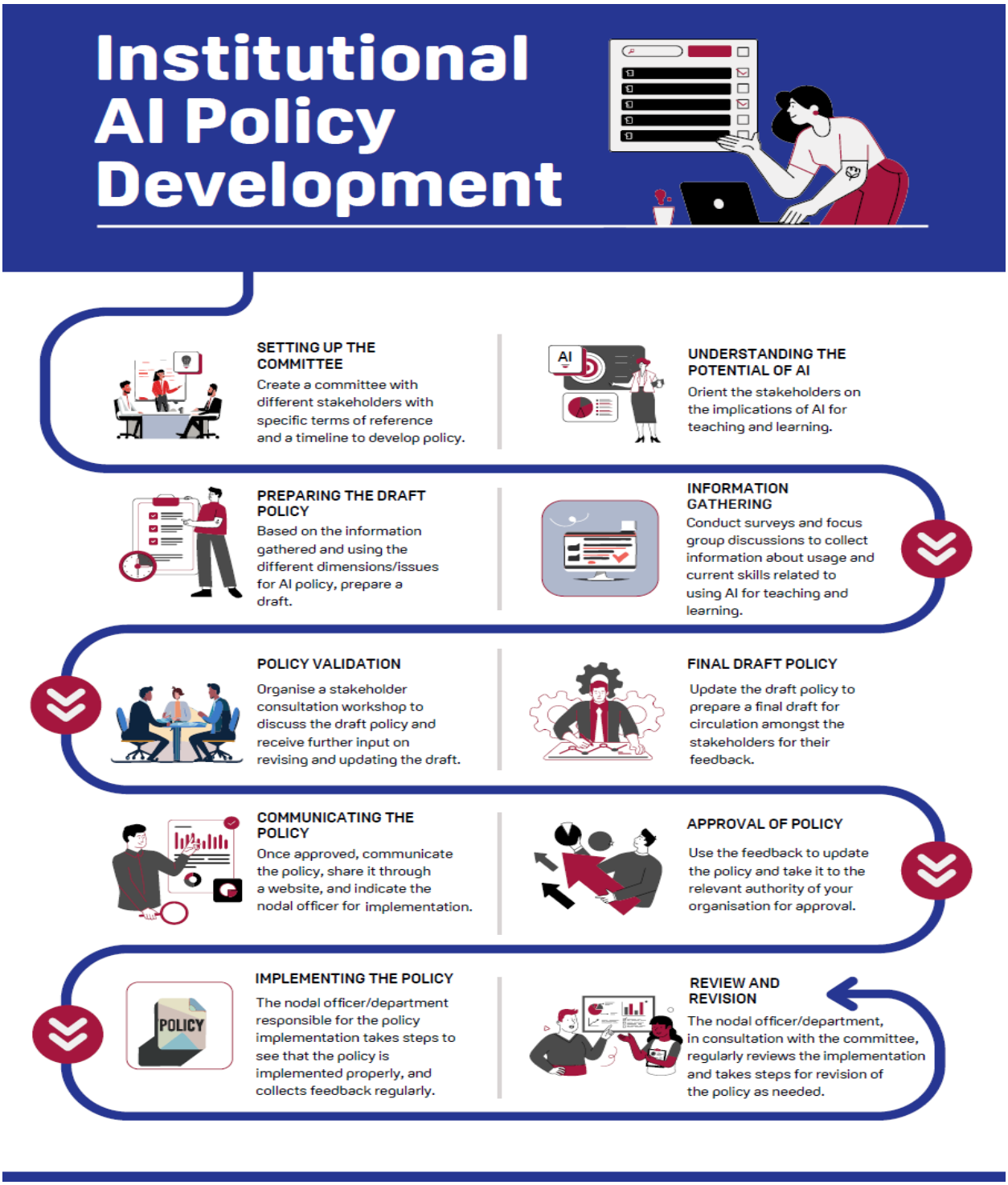
Developing AI Policies in Higher Education

Although AI use in higher education is increasing, a limited number of institutions have policies on the ethical and safe use of AI (Shaw et al., 2023; UNESCO, 2023). Higher education must prioritize AI policy development so that AI is trustworthy and used for good (UNESCO, 2022). Endris et al. (2024) proposed a seven-step process in the context of developing national policies on AI in education. Ally and Mishra (2024) proposed a procedure that can be used to develop AI policies in higher education institutions (Figure 1). The first step is to assemble an institute-wide committee that will develop AI policies for all departments in the institutions. This policy committee must have basic knowledge of AI and must be aware of the need to develop institution-wide AI policies. The committee's first task is to facilitate workshops with all departments to determine how they use AI and what policies should be developed. The committee then use the information from the departments to develop draft policies. The draft policies are then circulated to the different departments to review and provide feedback. The feedback from the different departments is used to finalize the AI policies. This is followed by staff training sessions where staff learn how to implement the AI policies and how to deal with violations of the policies. As AI policies are implemented across the institution, the committee must continue to monitor the implementation to determine if the policies need revision or new policies should be developed as technology emerges.

Figure 1

Institutional AI Policy Development Process



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Conclusion

There will be increasing demands to educate all stakeholders in higher education on how to use emerging technologies efficiently, safely, and ethically (Adel, 2022). Organization leaders will need to be educated to provide leadership on AI development and implementation (Norman et al., 2024). AI is here to stay, and it is developing at a fast pace impacting all sectors of society. The next generation of GenAI will be artificial general intelligence (AGI), which is getting closer to human intelligence and is capable of completing intellectual tasks at a level similar to that of humans (McKinsey & Company, 2024). According to Emmert-Streib (2024), many potential features of AGI will require that new policies be developed, or existing policies be revised to use AGI in higher education. Machine learning will be the main driver of AGI, where the machine will learn from data to develop high-level reasoning to solve problems in complex situations. The AGI system will have features similar to human senses, such as computer vision, speech recognition, natural language processing, and a sense of touch (tactile). With advanced processing, AGI systems can be creative by generating original ideas and applying the ideas in new contexts and situations.

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Authors

Mohamed Ally is a full Professor of Online and Distance Education at Athabasca University in Alberta, Canada. His current areas of research include mobile learning, e-learning, distance education, augmented reality, virtual reality, mixed reality, and the use of emerging fourth industrial revolution technologies (4IR) in education and training. Dr. Ally is one of the Founding Directors of the International Association of Mobile Learning (IamLearn) and the International Association of Blended Learning (IABL). He recently edited 17 books on the use of emerging technologies in education. His book "Mobile Learning: Transforming the Delivery of Education and Training" won the Charles A. Wedemeyer Award in the United States for significant contribution to distance education. Dr. Ally has presented keynote speeches, papers, and workshops in many countries.
Email: mohameda@athabascau.ca

Sanjaya Mishra is Education Specialist: Technology-Enabled Learning at the Commonwealth of Learning in British Columbia, Canada and one of the leading scholars in open, distance, and online learning with extensive experience in teaching, staff development, research, policy development, innovation, and organisational development. With a multi-disciplinary background in education, information science, communication media, and learning and development, Dr. Mishra has been promoting the use of educational multimedia, eLearning, open educational resources (OER), and open access to scientific information to increase access to quality education and lifelong learning for all.
Email: smishra.col@gmail.com *ORCID*: https://orcid.org/0000-0003-3291-2410