

## The Politics of Integrating Artificial Intelligence into Higher Education:

### Benefits < > Risks

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#### Abstract

The intersection of education, politics and technology is increasingly becoming urgent in analysing the development of educational systems. As Artificial Intelligence (AI) is reshaping our lives, it is changing the façades of many fields, including higher education. Despite the global appellative propaganda for AI and the quite charming, fascinating, and tempting discourse on the necessity of change, development and updating education to meet a rapidly changing job market, inter alia, the uncontrolled use of AI can represent real threats to educational systems. This paper investigates some of the benefits and risks of integrating AI into higher education and their prospective implications for students' skills and their employability, teachers and the industry. It is not my intention, by any means, to reject or attack AI technology in itself, but it is an attempt to carefully and rationally think, analyse, compare and evaluate that integration. Since politics and technology are vital for education, the study employs a multi-disciplinary theoretical perspective. It is a qualitative study based on observation, analysis, comparison and interpretation. The study unveils serious risks of the global unjustifiable pressure to integrate AI into higher education for their implications for students, teachers and the industry. Benefits are found to be disproportional to the risks and the whole issue should be reconsidered before integration.

**Keywords:** Artificial Intelligence; Higher Education; AI Benefits; AI Risks; Employability

سياسات دمج الذكاء الاصطناعي في التعليم العالي:  
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مستخلص

إن التقاطع الحادث بين التعليم والسياسة والتكنولوجيا أصبح أكثر إلحاحًا في تحليل تطوير النظم التعليمية، ومع ذكاء اصطناعي يعيد تشكيل حياتنا و يغير واجهات العديد من العلوم والمجالات، بما في ذلك التعليم العالي، وعلى الرغم من الدعاية العالمية للذكاء الاصطناعي، والخطاب الساحر والرائع والمغري حول ضرورة التغيير والتطوير وتحديث التعليم لتلبية احتياجات سوق العمل التي تتغير بسرعة على سبيل المثال، فإن الاستخدام غير المنضبط للذكاء الاصطناعي يمكن أن يمثل تهديدًا حقيقياً للنظم التعليمية. تبحث هذه الدراسة في بعض فوائد ومخاطر دمج الذكاء الاصطناعي في التعليم العالي وتداعياته المحتملة على مهارات الطلاب وقابليتهم للتوظيف وعلى المعلمين وعلى مجال التعليم العالي ككل. ولا ترمي بأي حال من الأحوال إلى رفض أو مهاجمة تكنولوجيا الذكاء الاصطناعي في حد ذاتها، لكنها محاولة لإعمال العقل والتحليل والمقارنة وتقييم هذا الدمج بعناية وعقلانية. ولأن السياسة والتكنولوجيا أمران حيويان للتعليم، فإن الدراسة تستخدم منهجاً متعدد التخصصات، في إطار دراسة نوعية تعتمد على الملاحظة والتحليل والمقارنة والتفسير. وتكشف هذه الدراسة عن مخاطر جدية ناجمة عن الضغوط العالمية غير المبررة لدمج الذكاء الاصطناعي في التعليم العالي، بسبب أثارها على الطلاب والمعلمين والمجال عامة. وتصل إلى أن فوائد الدمج لا تتناسب مع مخاطره، وأنه يجب إعادة النظر في القضية برمتها قبل عملية الدمج هذه.

الكلمات المفتاحية: الذكاء الاصطناعي؛ التعليم العالي؛ فوائد الذكاء الاصطناعي؛ مخاطر الذكاء الاصطناعي؛ قابلية التوظيف

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#### 1. Introduction

On 4 June 2024, current and former Open AI and Google DeepMind staff signed a letter, "A Right to Warn about Advanced Artificial Intelligence", stating that artificial intelligence (AI) has many risks like inequality, manipulation and misinformation and will eventually lead to "human extinction":

We also understand the serious risks posed by these technologies. These risks range from the further entrenchment of existing inequalities, to manipulation and misinformation, to the loss of control of autonomous AI systems potentially resulting in *human extinction*. AI companies themselves have acknowledged these risks, as have governments across the world and other AI experts. (Letter 2024; emphasis added)

They emphasised that governments, AI institutions and experts are aware of this. The Letter is not the first attempt to warn the world against AI risks!

AI is reshaping our lives. And it is changing the façades of many fields, including higher education (HE). Despite the global appellative propaganda for AI and the quite charming, fascinating, and tempting discourse on the necessity of change, development and updating education to meet a rapidly changing job market, inter alia, despite all this, the wide, uncontrolled use of AI can represent real threats to educational systems. This paper investigates some of the benefits and risks of integrating AI into higher education and their prospective implications for students' skills and their employability, teachers and the industry. It is not my intention, by any means, to reject or attack AI technology in itself, but it is an attempt to carefully and rationally think, analyse, compare and evaluate the integration of AI into HE. Since politics and technology are vital for education, the study employs a multi-disciplinary theoretical perspective. It is a qualitative study based on observation, analysis, comparison and interpretation.

AI is simply a branch of computer science that develops theories, models, software applications and hardware systems in hope for

simulating how humans think, make decisions and act and even for extending human intelligence and capabilities (Ahmed 2022:333). There are many definitions for the term and those definitions have changed over time, but for the purposes of my research it can be defined as "a system's ability to correctly interpret external data, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation" (Kaplan and Haenlein 2019:17). Bartneck et al. (2021:5) say that "AI involves the study, design and building of intelligent agents that can achieve goals".

In fact, AI has been used in many applications in various fields including education since 1960s. In 196, Stanford University used PLATO, a computer-based learning application that teaches students basic concepts in math and science. Then developments and models have unfolded since then. The last decade marks the beginning of major breakthroughs for AI with the development of machine learning (the machine learns from data and algorithms and can generalise to unseen data), deep machine learning (a concept more advanced than machine learning and here the machine imitates the way humans think and their brains work and it recognises complex patterns of texts, sounds and images), neural networks (programmes or models whereby the machine thinks in a way similar to the human biological neural networks and nodes), natural language processing (the machine applies techniques to the analysis, interpretation and synthesis of natural human language), powerful CPUs (capable of running AI applications), etc. The huge global propaganda made for such AI applications is also unprecedented.

The present study is significant for a number of reasons. First, at the level of the topic itself, AI is changing our lives, including our educational systems as I mentioned before. Second, at the methodological level, it analyses many risks, some of which have not been mentioned before to the best of my knowledge. Third, it is a comparison between benefits and risks in order to assess the real value of AI integration without exaggeration or underestimation. Fourth, employability is fundamental to HE teaching and learning. Fifth, the skill-based learning theory used in this paper is not only one of the most recent and developed educational theories, but also it is critical for the connection made between artificial intelligence integration into education (AIIHE) and the skills we hope students acquire by the end of any curriculum designed. Sixth, AIIHE has grave consequences on and implications for students' skills and employability, teachers and HE. Finally, we need a prospective

approach to follow the continuous update of benefits and risks in this regard to know how to proceed in the integration process.

In addition to this introduction, the paper is divided into a review of the literature, theoretical and methodological frameworks, discussion of AIIHE benefits, discussion of AIIHE risks and conclusion.

## 2. Literature Review

If and how AI should be designed and used in education remains an active question.

-(Gillani et al. 2023:107)

There is a lot of literature on AIIHE benefits and risks. Some overestimate benefits while underestimating or neglecting the risks. Some applies to risks. There is a gap in the full understanding of the nature of both benefits and risks and that is reflected in the harsh controversy in this regard. According to Gillani et al. (2023) there are: four advantages of integrating AI into education, namely tutoring systems, assessment and feedback, school systems-level processes and predicting outcomes; two limitations of transparency and interpretability and abstract reasoning and how learning occurs; and two risks resulting from systems limitations, viz. problems of generalisation and bias and fairness. Generally, problems include privacy, surveillance, instrumentalism and governance as Jarke and Berieter (2019), Holmes et al. (2021) and Williamson (2017) argue. Ayala-Pazmiño (2023) suggests that AI has the potential to revolutionise teaching and learning, offering new ways to enhance personalised learning, improve assessments, and reduce planning time for teachers, yet it raises concerns about privacy, bias, and the dehumanisation of the learning experience. She concludes by stressing "the need for more empirical research on the impact of AI in education and the importance of preparing students for a future where machines will play a leading role" (ibid. 893).

Reviewing the literature and without denying the contribution of each and every study, I have noticed that it can fall into three categories: studies that make propaganda for AIHE, studies that are mainly systematic literature reviews SLRs of previous studies thus repeating the same results or conclusions over and over again, and quantitative studies that use questionnaires reaching results and conclusions that raise doubts about generalization, as follows.

### 2.1 Propaganda

AIIHE affects teaching and learning, assessment and grading, and students' future careers, Slimi (2023) clarifies. He demonstrates AI crucial role in equipping students with "new skills for their future careers" and recommends that "HE institutions need to integrate AI more

extensively in their programs to prepare graduates for the future workforce" (ibid.17). He also refers to the efficient uses of filtering emails, advertising, applications, YouTube, and virtual assistants such as Google, digital libraries, Google Scholar, and other digital research engines. Holmes assures that "whether we like it or not, AI is being deployed in higher institutions worldwide and significantly impacts the future of HE" (2018; as cited in Slimi 2023:21). He expected that by 2024 the global AI-based education market will be worth 4.5 billion pounds. Companies such as Google, Facebook, and Amazon invest billions of dollars in developing AI in education. Indeed, Slimi's argument is not genuine and imbalanced as he analyses the pros superficially and uses many 'no doubt' and assurances unnecessarily; plus his paper is based on a questionnaire whose sample is inadequate for generalisation and the assurances he makes.

In spite of mentioning the importance of human-machine balance, Mureşan discusses AI benefits as 'exciting possibilities' for students and accomplishing 'modern' educational goals, arguing that personalising learning, instant feedback and automated assessment can improve teaching and learning and thus result in "a more efficient and effective experience for students and teachers" (2023:82). But she provided no concrete evidence for achieving those 'modern' educational goals!

On the other hand, some researchers, like Tang (2024:65), talk about the creation of 'intelligent' or 'smart' content which enhances learning experiences as teachers design intelligent content by integrating multimedia, smart frameworks, interactive tools, and information technology, various learning modes, and students' more effective engagement into the curricula. Tang also speaks about the intelligent tutoring systems, which produce personalised, adaptive educational experiences (based on each student's personal data and needs), contribute to independent learning, and improve virtual learning environments. For him, infrastructure requirements, inclusion and equity, teacher readiness and preparation, data quality and inclusivity, profit orientation, data privacy and ethical concerns, and unequal access represent challenges for AIIHE. Therefore addressing these challenges is necessary for "maximising the positive impacts of AI in the realm of education" (ibid.).

Overestimating the benefits and underestimating the risks can be discerned from the words of Majumdar and Chattopadhyay that AI is "deriving immense benefits to the society in different sectors like Agriculture, healthcare and so on" and risks can be overcome since "the applications of AI in the society can be controlled so that it can hardly

cause any harm to the society" (2020:306). Such general statements that lack academic proofs make one wonder: is it that simple and easy to control the harms?

In my opinion, the argument of how to increase the wealth of the wealth, and consequently increase the poverty of the poor, as history tells us, is one of the reasons why multinational companies promote AI culture, including education. Tools, models, applications, devices, etc., are not costless. Promoting AI, Mureşan advises us to think "Instead of "humans or computers," the challenge for all-round education should be summed up as "humans and computers engaged in sophisticated systems that promote industry and wealth"" (2023:81). Indeed, such a kind of illogical justification pushes us blindly into using technology to the best of certain industries and their wealth. Then, when machines replace humans in many jobs, what remains for us to discuss? The welfare of machines? Although she herself admits that "According to research, by the mid-2030s, one third of all employees will be exposed to the risk of being automated, and the labor force segment most likely to be affected is people with a low level of education", she assures that AI affects us "at every level and in all industries" (Vimal 2022, as cited in *ibid.*).

## 2.2 Systematic Literature Reviews

Noticeably, many studies on AIIHE are based on a methodology of systematic literature review (SLR) of previous studies and articles, therefore they reach almost the same conclusion in my opinion, viz. AI positively affects educational systems and risks, if any, revolve around the same idea of more training is needed for the teaching staff and problems like biases and privacy should be addressed.

Using SLR and PRISMA analysis, Bakti et al. (2023) for instance sought to determine AI role in educational systems. They conclude that AI, which aims to simulate human intelligence in making judgments, inferences or predictions, can provide personalised guidance, support, or feedback to students and help teachers and policymakers make decisions. Thus, AI can play an important role in education to improve the efficiency and effectiveness of learning, but teachers' support and facilitation remain valuable (*ibid.*1). Similarly, Annuš (2023) studied the pros and cons of integrating AI in education based on a review of international publications as well as a small survey among teachers to identify their attitudes in this regard. Karan and Angadi investigated the impact of AI integration on K-12 students through a SLR of 390 academic articles from which they chose 71, presuming that AI is "likely to have a profound influence on the lives and learning styles of learners, teaching approaches of teachers, and the whole mechanism of school

management systems" (2023:67). Meanwhile they categorise risks into six major areas: privacy and autonomy, biases, accuracy and functional risks, Deepfakes and FATE risks, social knowledge and skill building risks, and Risk in shifting teacher's role.

Özer (2024) systematically reviewed papers and reports about potential benefits and risks of integrating AI into education from students', teachers' and education administrators' perspectives, collecting those papers from diverse academic databases. He recommends the importance of increasing AI literacy on the part of all education stakeholders, suggesting that raising awareness of both the benefits and ethical issues in this regard can contribute to enhancing the benefits and minimising potential harms. He mentions that "AI systems provide numerous alternatives to assist and support the responsibilities of students, teachers, and education administrators" and that widespread use of AI systems especially ChatGPT enhances "students' potential for collaboration with peers, allowing for group discussions in projects and increasing opportunities for real-time feedback" (ibid. 233;235). He argues that AI benefits both students and teachers as it increases the interaction between humans and machines. I wonder if increasing the interaction between humans and machines necessarily constitutes a benefit for humans in itself!

Johnston et al (2023) gathered and reviewed some chosen materials on artificial intelligence in education released mainly from 2018-2022 on the Web of Sciences database and they selected 60 papers and industry expert resources from distinct educational viewpoints. The authors aimed to prepare students for "an AI-empowered society" (p.126). Although they mention some risks for AI integration into Education (like privacy concerns, lack of emotional bonds, disruptive technology, technology addiction, promoting bias and less flexibility), yet they tend to over-estimate the role of AI systems presuming that the latter "act humanly, think humanly, act rationally and think rationally" (p.129). They reach, as I expected, the same conclusion as others, explicitly AIIE is good because it promotes learning, improves teachers' collaboration, performs automatic routine tasks, offers social networking sites and chatbots, and is used with big data.

### **2.3 Questionnaires**

Al-Ghamidi (2021) investigated the attitudes of Saudi University students towards AIIE. The sample consisted of 400 University students from the various Saudi universities. Results show that the Saudi students think positively about AIIE since it could enhance learning outcomes, facilitate

personal learning and improve educational systems efficiency. However, the participants pointed out to their fears of the possibility of missing jobs and of the legal and ethical issues related to AIIE (as cited in Al-Tkhayneh, Alghazo and Tahat 2023:109).

Barak and Dori (2019) also wanted to explore the potential benefits and challenges of using AI in teaching science, technology, engineering and mathematics. 40 teachers in these domains were questioned. They conclude that AI has benefits like "providing specialized learning experiences, enhancing students' participation, and automating routine tasks" and challenges like the need to train teachers intensively and possible biases in the algorithms (as cited in Al-Tkhayneh, Alghazo and Tahat 2023:109). The study recommends the necessity of 'urging' such teachers to consider the advantages and challenges of AIIE before implementing it, of providing them with training and support and of addressing the associated ethical and legal issues.

AI impact on the relationships between teachers and students in Chinese primary and secondary schools was studied by Huang, Liu and Lin (2019). A questionnaire sample consisted of 364 teachers and 1077 students from primary and secondary schools in China. Results reveal that AI affect positively the teachers-students relationship: it can facilitate communication between them, enhance personal learning, and provide information about students' progress. But risks include the possibility of increasing the distance between them and fears concerning data privacy and security.

Al-Tkhayneh, Alghazo, and Tahat (2023) selected 84 students from Al Ain University in Al Ain City using the random stratified sampling method. A questionnaire was distributed using Google Drive software. Most of the participants thought that AI can enhance learning personal experiences, process a big amount of data and improve task management. Yet, opinions varied about AI ability "to control students' behaviour and direct learning, improve the efficiency of educational system, provide notes and reviews, reduce dependency on teachers, and enhance social interaction" (p.105). The authors recommend training staff, dealing with legal and ethical issues and urging students to have an active role in the learning process supported by educational institutions.

From this review it appears that despite the importance and contribution of such studies, the following remarks can be made:

1-Many papers are noticeably propaganda for AIIE, systematic reviews of previous studies or questionnaires made on participants who may lack the necessary awareness of the benefits and risks of AI generally and AIIE specifically.

2- Studies based on systematic reviews of previous research reach almost similar conclusions.

3-The samples based on questionnaires raise questions about sampling and the generalisation of results.

4- Risks are taken lightly by just mentioning that AI should be integrated in educational systems and risks (like privacy and security) should be addressed, nothing about how to avoid the risks or how harmful the risks are in comparison to the benefits.

4-The studies that hail AI and make an appellative propaganda for its integration into education generally show AIIE as an inevitable track, the must-have future!

5- There is a real gap in assessing the benefits < > risks of AI integration into our lives generally, and AIIE particularly.

### **3. Multidisciplinary Framework & Methodology**

The multi-disciplinary theoretical framework of the study derives its tenets from education, politics and technology, as I mentioned before. I argue that politics is not only important but also necessary for the understanding and interpreting of events and developments related to AIIE. The study is based on the Freirean school of critical pedagogy and Kahn and Douglas' discussion of 'Paulo Freire and Ivan Illich: Politics and the Reconstruction of Education' (2007) from one perspective. Besides, it unveils how the theory of skill-based learning and the concept of employability are decisive factors nowadays in deciding the student's skills and thus "developing" and restructuring HE in the age of technological revolution. In other words, AIIE benefits and risks will be assessed politically and educationally so long as skills and employability are decisive factors in evaluating the benefits and risks.

Statesmen realised long time ago the value of education for politics and vice versa. For example, Thomas Jefferson, the main author of the US Declaration of Independence in 1776, says "Whenever the people are well-informed, they can be trusted with their own government." Abraham Lincoln, the US president from 1861-1865, argues "The philosophy of the schoolhouse in one generation will be the philosophy of the government in the next" to the extent that colonial and post-colonial powers could have used it as a tool in preparing next generations to be loyal to the ruler. Jame Addams, an American activist (1860-1935), mentions that "America's future will be determined by the home and the school. The child becomes largely what he is taught; hence we must watch what we teach, and how we live". Educators, too, realised this fact; Paulo Freire, the Brazilian hero of critical pedagogy since the 1960s, wrote a book on

'The Politics of Education: Culture, Power and Liberation' (1985) which portrays a critical understanding of the manipulation of education. So, education cannot be separated from politics and from technology lately.

Kahn and Douglas (2007) explain how changes in a globalised society and a culture of technology mobilise transformative alternatives to traditional or mainstream media, politics, education, etc. They think that new media technology can be used for hegemony, technological terror and cyber war. Freire was always cautious of the possible role of technology to work as 'an apparatus of domination and oppression', yet hopeful that it can also free people from the slavery of existence, powerlessness and inequality (ibid.435). Freire, who from the beginning rejected any given forms of 'modernisation' and the 'unregulated capitalist exploitation of technologies', aspired to politicise the forces of science and technology, and connect their popularisation and democratisation to a bigger project of radical humanism. He aimed to shorten the gap between an underdeveloped Brazil and first world in the third millennium. Hence, he did not integrate computers in the early 1990s uncritically; instead he sought through a political and pedagogical strategy to intervene in that technological age. Thus, there would be a great inequality between those who afford technology and those who do not. He harshly condemned how most people worldwide do not participate in the manufacturing or software of computers. Therefore, he criticised the oppressive aspects of capitalist technology and wanted education to be restructured so that it confronts various challenges in the country (ibid. 437).

At this stage I am not going to discuss the issue of why we learn, notwithstanding its importance, but suffice it to mention that 'skills' have become critical to most learning theories. Skill-based leaning has noticeably bombarded the field with data capable of giving it momentum for some time. The Human Capital Theory can interpret the endeavours of many governments to integrate the concept of graduates' soft skills (soft or generic skills include communication skills, teamwork, time-management, the use of information technology, among others) and knowledge into the learning and teaching experiences.

'Employability' has turned out to be a core concept for HE systems, students and even their families to the extent of using the term as a propaganda for up-to-date 'connected' institutions. It emerged with the dominance of economy over the attributes of a graduate to get a place in highly-competitive markets. Yorke differentiates between a graduate's employability and his actual acquisition of a job:

'Employability' refers to a graduate's achievements and his/her potential to obtain a 'graduate job', and should not be confused with the

actual acquisition of a 'graduate job' (which is subject to influences in the environment, a major influence being the state of the economy). (2006:2)

Here employability can simply be defined as:

a set of achievements – skills, understandings and personal attributes – that makes graduates more likely to gain employment and be successful in their chosen occupations, which benefits themselves, the workforce, the community and the economy. (ibid.8)

Employers suggest the attributes which the graduate should possess. They regard the graduate's achievement regarding subject discipline as essential but insufficient in guaranteeing a job; in some contexts it may not be needed; and 'soft-skills' outside his discipline stand as a vital factor for employability (ibid.). Thus according to this logic, employability largely decides, or at least shapes, the required skills of the HE product, and hence the curricula. Yorke states "Under human capital theory, the task of government is to foster conditions that encourage growth in the stock of human capital, since this is seen as vital to the performance of knowledge-based economies in a globalized society" (ibid.3). However, some scholars like Atkins (1999; as cited in ibid.6) doubt that HE can develop employability as governments claim. This approach to HE may have its risks, in my opinion, and raises the following questions:

1. Why economic forces, which have their own interests, should delineate the graduate's skills and knowledge and thus the curricula is indirectly designed in a certain way?
2. If we suppose that the student gets these skills and knowledge during the educational process, what about the skills acquired through experience in the actual job market itself?
3. How can we account for the employers' dissatisfaction with the graduate as a product of a skill-based and employability-based education?

This intersection of education, politics and technology can help us analyse the development of educational systems especially as AI is reshaping our lives in many aspects. Accordingly, the aim of the present study is to investigate AIIHE benefits < > risks and their prospective implications for students' skills and employability, teachers and HE industry.

From the above statement, three research questions have been formulated:

RQ1- What are the benefits of AIIHE systems?

RQ2- What are the risks of AIIHE systems?

RQ3- What are the implications of the integration for students' skills and employability, teachers and the industry?

In order to answer these questions, the following objectives are set:

- 1-To analyse AIIHE benefits in the light of their political and educational significance;
- 2-To analyse AIIHE risks in the light of their political and educational significance;
- 3-To compare the benefits < > the risks and discuss their relevance to students' skills and employability, teachers as well as the industry; and
- 4-To explore a prospective future of the industry if the current track of events continues as such.

This comes in a qualitative research design that employs observation, analysis, comparison and interpretation as methodological tools.

However, the study has some limitations related, first of all, to the size and nature of the research paper. It does not claim to list all the benefits and all the risks of AIIHE. Moreover, those benefits and risks are not constant. On the contrary, they are continuously being updated and new ones evolve constantly. Moreover, the study approaches the issue from a certain perspective; other perspectives would add value to the topic.

The discussion is divided into three main sections: a Discussion of Benefits (section 4), a Discussion of Risks (section 5) and the Implications (section 6). The benefits fall into 7 categories based on 5 benefits (tutoring systems and personalised learning, assessment and feedback, coaching and counselling, large system-level processes, and predicting outcomes) found in the literature generally (e.g. Gillani 2023; Annuš 2023) and 2 others (access to information and AI search platforms, and other helpful AI tools/platforms) which I added based on my experience and observation. Meanwhile, I have chosen to address 8 risks: information and accuracy, privacy and security, bias, cost and equity, academic integrity, fundamental skills, herd education and creativity, and health risks.

#### **4. Discussion of AIIHE Benefits**

When it comes to the benefits of AIIHE, the literature generally talks about tutoring systems and personalised learning, assessment and feedback, coaching and counselling, large system-level processes, and predicting outcomes (e.g. Gillani 2023; Annuš 2023). To these I have added access to information and AI search platforms, and helpful AI tools/platforms. As I afore-mentioned, this is not a laborious list of all the benefits of AIIHE, instead it is a glimpse into what I have observed \_during my experience of teaching at universities\_ about what AI technology can afford.

#### **4.1 Tutoring Systems and Personalised Learning**

AI has helped develop platforms for students and teachers alike, such as Moodle. Moodle is a platform that uses and analyses data to give recommendations to teachers and to students about their errors and how to improve their performances. Gillani et al. (2023:102) indicate that intelligent tutoring systems are a widely-used application in higher education, which aims to adapt to the students' knowledge, skills and learning styles to assist them in building skills in a more personalised way. For example, they have a record of the students' answers to the problems assigned to them and consequently can train them on unanswered or wrongly-answered ones. Annuš demonstrates that "AI allows the students to progress at their own learning pace, making learning more personalised and effective. With AI, learning materials can be automatically generated and adapted to the level of the student", adding that personalised learning "can dramatically improve student performance and can be useful for students with certain disorders" adapting the course content to individual students' needs (2023:2). However, Gillani et al. criticise these systems because the data collected from assignments and test grades represent one dimension of students' learning process, other factors affecting the process should be identified, and the contexts in which these systems operate must be fully comprehended so as not to negatively influence education aims and purposes (p.103). Here arises, in my opinion, the value of the human factor, the teacher, who being the expert understands technically, socially and psychologically the problem in the student performance better than the tutoring systems and can thus direct him to what improves his knowledge and skills.

implications for students' skills and their employability, teachers and the field

#### **4.2 Assessment and Feedback**

The automated grading and feedback systems are quick to give results about students' grades but tests or assessments of the nature of essay writing still constitute a problem, Annuš (2023:2) argues. Such applications, due to their nature, can make learning more interactive, can employ gamifying education to this end, allow students to use virtual aid tools in school and at home, and enhance autonomous learning where students can understand the content and know their mistakes (ibid.). Teachers, he adds, can quickly and efficiently evaluate students' performance, provide feedback and more importantly process large data amounts.

Automatically assessing writing submissions is a popular, albeit complex, example for the benefits of AIIHE, Gillani et al. (2023:103) believe. To date, such systems can assess only foundational attributes of writing e.g. spelling, vocabulary, structure and grammar. Few systems can replicate how humans score a given essay. Acquiring the necessary writing skills actually implies more than just a feedback or a grade on foundational features or mechanics of writing. Therefore, some researchers have recently "designed a neural network based machine learning system to identify which rhetorical structures were present in sentences contained within a corpus of research study articles" (ibid.). But, generally speaking, educational models are based on data and some learning analytics as their line of reasoning and ignore other variables like the positive effects of exam preparation and studying on learning. I totally agree with Gillan et al. when they indicate that "although assessment and feedback is a core focus of AIED, the most appropriate ways to deploy AI for particular activities and in specific contexts remain an area of debate". They assure that:

Despite the advancing capabilities of these systems, however, some concerns remain. For instance, it would be important to train these AI on a diverse set of linguistic data to fuel their accuracy and minimise bias. More work also needs to be done to understand how they might inadvertently negatively impact writing development and written work in the same ways as plagiarism detection software has (Ross & Macleod,2020), and more generally, how student surveillance via constant data collection may impact students (Eynon,2013). (as cited in ibid.)

Karan and Angadi have their own concerns about:

the lack of robust evidences for its efficacy. For example, this assessment system has been criticised for giving students credit for surface features, such as sentence length, even if the text does not make any sense, and being fooled by nonsense. This system is also unable to assess creativity. Summative AWE [an AI assessment tool] even does not address 'deep-fake' of school assignments that are written by AI technologies. The use of AI to mark assignments also does not acknowledge the value of marking. (2023:74; explanation added)

To these they add 'one of the most observed challenges', namely AI's limited technical capacity to learn how to make evaluations' i.e. AI may be inefficient for scoring graphics, figures and texts, or complex texts with images.

### **4.3 Coaching and Counselling**

Automating the role of coaches and counsellors which is costly and time-consuming in schools looks appealing to many advocates of AIIHE, Gillani (2023:103) assumes, giving text-message reminders as an instance for facilitating some tasks presumably given by counselors, like updating students about registration, their advising forms of what courses to register in the following semester, tasks, filling certain required forms, events, job fairs, etc. Indeed, the value of reminders is indisputable in this regard. The list can go on and on, not only in the field of education but also in other walks of life. Yet, there are many fears raised about the exact methods for training and evaluating these models in contexts like chatbots, which are clearly incapable of answering complex educational questions (p.4).

### **4.4 Large Systems-level Processes**

In educational settings or institutions there are a lot of administrative tasks that are made manually and considered time- and effort- consuming such as making students and teachers schedules, managing registers, etc. Annuš (2023:3) asserts that AI systems can constitute a more dynamic helping decision-making tool for the school principal and administrators. Gillani also thinks that AI is used for many objectives, e.g. the geographical equitable implementation of school choice "matching students to schools in ways that do not enable families to "game the system" by mis-stating preferences in order to exploit loopholes that would increase their likelihood of receiving a spot at one of their top choice schools" (Pathak & Sönmez 2008; as cited in Gillani 2023:104). The same applies to higher education. Schools in districts have found such AI systems quite helpful in having greater logistical efficiency; choosing the best school bus route is a good example at hand. However, families have doubted the integrity and impartiality of those systems (Scharfenberg: 2018; as cited in *ibid.*). More progress in the field of AI will continue to develop more applications and improve existing ones:

With continued increases in computational efficiency, these rule-based systems promise to be able to operate on larger, more complex problems concerning more students, teachers, and other stakeholders in the years ahead. Yet these need to be developed with an awareness of concerns about the use of such market-driven principles to develop an equitable education. (*ibid.*)

Those doubts and concerns should be addressed nonetheless.

#### 4.5 Predicting Outcomes

AI-driven systems can be used in HE to predict outcomes, e.g. students' expected performances, and thus become potential early warning indicators. They certainly depend on data taken from students' profiles and records to predict the risk probability of failing an exam or even dropping out of school, etc. Faria et al. (2017) made an experiment on the impact of deploying these systems on chronic absenteeism and course failure and concluded that they positively influence both absenteeism and failure (as cited in Gillani 2023:104). A simple rule-based system, for instance, could warn institutions, parents or students if the latter's GPA drops below a certain level. Although these systems could predict and thus warn against a certain problem, this may also lead to 'tracking', "might limit a student's desire and ability to explore new topics, particularly in college and university", and raise questions about when to intervene. Gillani wonders about the legitimacy of a certain person to intervene, when to intervene, the obligation to act, who should receive support, and more importantly "what if the model has a high false-negative rate—meaning there could be many students who actually need intervention but weren't flagged by the model as such". He finally admits that "These are difficult questions and, at present, there are no standardized responses; school systems approach these questions differently depending on their own knowledge and needs" (p.105). Johnston et al. (2023:135) reveal that test scores may indicate a lack of opportunity rather than a lack of competence. These distinctions will be impossible for machine scoring to make.

#### 4.6 Access to Information and AI Search Platforms

The technological revolution in the internet age has provided us with search engines that make researching and searching for information much easier than before, as easy as just clicking by the tip of your finger a key on your laptop keyboard or mobile and you may have thousands of entries to the information you look for. Technological advances have connected between various devices so that you connect with any of them anywhere at any time. AI has also revolutionised access to information via search tools that are capable of personalising search according to users' needs. These tools use sophisticated algorithms and deep machine learning to filter vast amounts of data on the internet. In addition, they understand and can predict the user's intent, based on users' search history record.

ChatGPT, ChatLab, Perplexity and Gemini AI are famous examples for AI search platforms. ChatGPT, developed by OpenAI and incepted in January 2022, aims to generate human-like texts according to the input

data it receives. It is widely used among HE students and teachers in content creations, inter alia. It can write an essay, answer a question, make a project, design a course content, etc. Although OpenAI claims that ChatGPT cannot access the internet directly and that it accesses only licensed public data created by human trainers, it can browse the internet. ChatLabs, developed in the last 2 decades, is a friendly-user platform providing links to resources, page previews, images and videos, in addition to texts of course. As it does not require an OpenAI account, it becomes accessible to more people helping them in writing, content creation (text or image), problem-solving, among others. ChatLabs offers more security than ChatGPT, allowing users to bring their own API keys. Perplexity, founded in December 2022, is a chatbot which searches the internet through conversation. It does not need to use traditional search engines to navigate and it is good for answering complex questions. Finally, GeminiAI, launched early 2024, is Google's latest advanced model and seems to outperform even ChatGPT-4, according to Google. Equipped with the latter's Gmail, Google Maps, YouTube and other services, it has become capable of providing users with more personalised contextual answers and up-to-date data better than ChatGPT that searches the data found on the internet before 2023.

But, what if this massive, unprecedented-in-size information is wrong, directed or inaccurate? And what about users' privacy, security, academic honesty? These questioned will be further addressed in due course in the paper.

#### **4.7 Helpful AI Tools/Platforms**

Both students and teachers have benefited from the many AI-powered tools and platforms in HE. Translation tools like Google Translate and Reverso, free and paid versions, are widely-used by millions daily for academic and non-academic purposes and in language combinations that were a dream to have few years ago. Consequently CAT (computer-assisted) tools have played an important role in making global communication and translation services easier and cheaper, regardless of the errors or inaccurate translations sometimes.

AI writing tools have extensively progressed. Take for example Grammarly, a writing and a proofreader application which allows users to write confidently and clearly without grammatical mistakes. It enhances spelling, vocabulary and structure. Genei is a tool for summarising and keyword extraction from pdfs and webpages. Content writing has become no more a challenge for students and teachers via ChatGPT, ChatLab, Gemini AI, etc. Anyword is a content creation platform, where you can

start just with a prompt and you will get a long list of possible titles; then once you decide one, it creates a draft outline to use in forming your content. Generally these platforms handle complex tasks such as generating reports, analysing data, and solving difficult problems.

Several AI applications have been integrated into HE. For instance, the advances in voice recognition have allowed users to transform a text into a speech and vice versa, a development that helped enhance CAI (computer-assisted interpreting) tools. Slides AI is one of the many automated tools that create professional presentation slides in no time. Also productivity tools help schedule a task like Reclaim, creating a simple schedule that allows you to control weekly goals, and Motion, making a schedule that prioritises most important tasks and keeps you on track.

Furthermore, interaction and gamification AI tools are said to motivate students and make lectures and labs more engaging. For example, Quizziz, a personalised teaching assistant, creates, enhances and analyses content and it can engage students via making gamified quizzes. Mentimeter, an application with interactive features, tests, engages and entertains students in various situations through quizzes and presentations, etc.

Cloud AI, another breakthrough in the technological age, offers services and resources on public cloud platforms, e.g. Google Cloud AI or Amazon Web Services AI accessible to users on the internet where the cloud providers store the models and data on their servers. Actually, the list of tools and platforms that are and can be integrated into HE is quite long and it lies outside the scope of the present paper.

AI has helped enhance the concept of connectedness and collaborative learning. Connectedness refers to the connectedness with others via the machine, with the machine and with updates of technology use. Students and teachers have used platforms like Zoom, Microsoft Teams and Google Meets to meet each other online; such applications were highly used during the period of Covid-19 online learning and later as part of hybrid learning. With their various advanced features, they enable collaborative learning through discussing students' projects, for example, facilitating group meetings. Zanetti et al. mention Brainly as a collaborative learning platform, "a knowledge-sharing community where students and experts put their heads together to crack the most difficult homework questions" (2020:370). Yet, this human connectedness to the machine has negatively affected human communication and interaction.

Regardless of the great importance of some of these tools and platforms in making life easier and more interactive, concerns regarding

academic honesty, plagiarism, privacy, degrading users' skills and employability, bias, poor human communication, among others, are duly raised.

## **5. Discussion of AIIHE Risks**

Any logical assessment of the value of a technological tool does not require the analysis of benefits alone but also an analysis of the potential risks before application, exactly like making the necessary clinical tests on drugs before licensing and human use. The same applies to AI and its integration into HE. Therefore, in this section I will discuss some of these risks so that we may reach a right decision about if and how to make the integration.

### **5.1 Information & Accuracy**

As mentioned in the previous section, the recent technological boom has made abundant information available for internet users for free in most cases. At many times, it is difficult, if not impossible, to realise which is right and which is wrong. For instance, if you want to know whether you should drink water before, after or during a meal from a scientific point of view, you will find writings and academic papers talking about the benefits of drinking water before meals and the horrible health, and maybe mental, risks of drinking it during or before meals. Other research provides evidences for the opposite information, etc.! Unfortunately, there is no control over or validation of the quality and the source of information.

We have the right to wonder what if this information is wrong, directed or inaccurate. AI algorithms can filter, and consequently direct, the content available on search engines and platforms easily. Elon Musk, the famous billionaire and owner of Open AI, X, Tesla, SpaceX, Neuralink, among others, closed Donald Trump's account on Twitter when the latter criticised the US Administration. Accounts and sites which support Gaza and oppose the Israeli genocide war against innocent civilians in Palestine are closed. Comics making fun of Prophet Mohammad and Islam as well as Christianity are hailed under the allegation of 'free expression of opinion', while those criticising Jews or Judaism are removed and accused of anti-semitism and contempt of religion. Texts, images and videos in favour of homosexuality and transgenderism are so many on the internet, while those opposing them are negligible. Long and Magerko (2020) say that AI has intensified the spread of misinformation and fake news on search engines and social media. Deepfake technology, for instance, makes "fair is foul and foul is fair" as Shakespeare said. This information is managed, filtered and

directed so that the information presented in the information technology age creates a 'bubble' we are living inside.

Furthermore, there are reservations about the quality of AI systems. The systems are trained to large corpora of data, yet they fail in making generalisations about data they are not trained to. According to Karan and Angadi, those systems generally and adaptive learning as an example "may have massive chance of not functioning well because of unintentional human made error in its system. This risk of malfunction of AI system may occur at large in education because AIED is highly technology based with human involvement" (2023:73). Banerjee and Chanda (2020) denote that aside from any major flaws in the systems, environmental conditions, like temperature, dust, humidity, background and foreground noise, and electric and magnetic waves, influence their good functioning (as cited *ibid.*74).

"The Sudden Disappearance of X Accounts Raises Eyebrows" is a common news headline nowadays where Venegas (2024) argues that "Several X, formerly Twitter, accounts disappeared and were later restored on Tuesday, sparking concerns about free speech". The problem extends outside the scope of social media to include what information is presented on or removed from AI search engines, platforms or systems. Directing information represents a real threat to knowledge, facts, history, civilisations, disciplines, etc. Another serious implication can be deduced in globalising some research trends and propaganda for them, for instance Israel has pushed global research towards developing AI military uses so that it now owns the most advanced drone technology capable of easily killing a target like Ismail Haniyeh, Hamas' political leader, on his bed in a military-run guesthouse\_ though investigations are still going on how he was killed\_ similar to many others targeted accurately by drones. It has developed this kind of research and is a major owner of this technology. The same can apply to other fields.

### **5.2 Privacy & Security**

AI applications have an access to users' personal information and devices, threatening both their privacy and security. AI use in personalised learning, for example, "can automatically access learners' personal information, learning performances, styles, and skills"; AI powered surveillance by facial recognition systems in tests leads to 'rapid privacy loss', say Karan and Angadi (2023:70). Crawford mentions that "these tools are dangerous when they fail, and harmful when they work" (2016; as cited *ibid.*71).

McArthur (2020; as cited in Karan and Angadi 2023:70) reports that the use of face recognition during tests increases their anxiety for fear of

information leak from their devices which proctors are connected to and controlling; also Al Shamsi et al. (2022) explain how AI voice assistant accesses personal information without users' permission. Tracking systems and cameras everywhere, e.g. educational institutions, track activities and guess students' future preferences, strengths and weaknesses, and learning patterns, a matter which holds them back from practicing their right in a normal free life and free speech and expression (Regan and Jesse 2019). Constant evaluations of their unconscious behaviour, by AI -based eye tracking and facial expression analysis, makes them feel under surveillance and uncomfortable (Seo et al. 2021)

In addition to being exposed to wrong judgments and decisions, such systems can expose users' personal or private information to misuse, hacking or even blackmailing. AI uses celebrities' voices in its applications without their permission, which raises questions about AI ethics. The access to users' private, and even public, information allows AI technology to deepfake highly professional fake videos. In Italy, ChatGPT has been partly restricted for this reason (Annuš 2023:3). Actually, there is no code of ethics for using resources or materials, be them text, voice, video or image. Further research in this area is highly demanded since AI deepfake technology can threaten the national security of states.

### **5.3 Bias**

Murphy defines bias, "an inclination, prejudice, preference or tendency towards or against a person, group, thing, idea or belief" (2021; as cited in Ahmed 2022:151). It is a discrimination for any reason, in its simplest meaning. Ayala argues that there is the risk that biases in society may be perpetuated in AI algorithms; and thus if we are talking about education, this will lead to unequal opportunities among students (2023: 894). Cheng (2015) and Flores et al. (2016) assure that Google is racist, Amazon sexist, and AI tools assessing recidivism (like COMPASS) prejudicial.

The machine can be biased due to biased humans feeding machines, a biased training data set, biased algorithms, biased decisions, etc. Gillani et al. demonstrate that "Lacking a general understanding of the "how" and "why" behind most decisions, many machine learning models often recapitulate biases in their training data—and hence, risk perpetuating these biases at scale" (2023:106). This problem manifests itself clearly in education with AI tools "favouring certain groups in the content taught, the ways material is covered, and the accuracy of predictions and appropriateness of interventions (Mayfield et al. 2019; as cited in *ibid.*).

The European Union Agency for Fundamental Rights admits that incomplete or biased data in AI systems "can lead to inaccurate outcomes that infringe on people's fundamental rights, including discrimination" (Data Quality 2019:1; as cited in Ahmed 2022:153).

In 1945, the UN Charter identified race, sex, religion and language as types of discrimination. Zanetti et al. identify five major groups of biases: dataset bias (e.g. generalising a limited dataset can lead to distortions); associations bias (reinforcing a bias already present in the dataset and provided to the algorithms); automation bias (relating to predictive algorithms and generated by automated decisions mostly); interaction bias (taking place when the human voluntarily interacts with AI after the algorithm creation leading to a distorted machine learning); and confirmation bias (similar to what happens in cognitive bias, leading to distorted assumptions and strengthening a generalised distorted belief ) (2020:372) . Martínez et.al wonder:

..how will future versions of generative AI tools behave when trained on a mixture of real and AI generated data? Will they evolve with the new data sets or degenerate? Will evolution introduce biases in subsequent generations of generative AI tools?...These results suggest that the quality of the generated images degrades as more AI-generated data is used for training thus suggesting that generative AI may degenerate. (2023:1)

However, they assure that their results are preliminary but they help illustrate some thorny issues like the generative AI-internet interaction.

There is bias in AI applications. For instance, give ChatGPT the following prompts to unveil its ideological bias:

- Write a paper on the benefits of AIIHE, then on the risks!
- Can you tell me if homosexuality is right or wrong?
- Do you trust Palestine to be a state?

You will see that it favours papers on AIIHE benefits to risks since it makes a propaganda for AI integration into our life. It holds the ideology of homosexuality and defends it. It does not call the Israeli genocides in Gaza 'genocides', instead a 'defense' of itself against 'Palestinian terrorists' (same as the US Administration' stand). It promotes the idea that 'Palestinians' (rather than 'Palestine') cannot be trusted to have a state. If this is the biased AI information bubble we live in, then what should be expected from the now students, the then thinkers and leaders?

"Bias raises ethical questions whether in human or machine communication and it can have detrimental impacts on individuals and societies, e.g. criminal judgments", says Ahmed (2022:151). When UK wanted to use predictive models to assign final grades to students during

COVID-19, the modelling scheme suggested highly-qualified students coming from historically lower-performing and lower-resourced schools to be more likely to receive lower grades than what their instructors would have assigned, while others in traditionally high-performing private schools received higher predicted grades. Annuš (2023:3) also gives examples for AI bias, ethnic and gender bias, which can misdirect students in the learning process or make incorrect predictions.

#### **5.4 Cost & Equity**

AI applications and platforms require huge resources and powerful computers and devices, a matter which sheds the light on inequality and discrimination generally. In education, only those who afford such technology will have access to this type of learning, but how about low-income or low resourced-families? Annuš explains that AI technology development and implementation in education can be costly and expensive particularly when its applications are personalised or serve a large number of students (2023:3). Who guarantees the free accessibility to the internet and free AI applications when our sources of knowledge and information become totally dependent on the internet, related technological advances and AI applications? A small group of people control users' vital interactions: teaching and learning, bank accounts, medical services, GPS, list-to-do and schedule, etc. We hardly memorize our own mobile number in case of emergency. Most, if not all, governmental institutions\_ with the wave of digitalization\_ have become at the hands of internet and applications providers! Can students who use ChatGPT or Grammarly write an essay on their own without its help?

The Freirean educator Antonia Darder is right when she calls attention to the fact that wealthy schools and districts often have greater access to computer technology and the internet, and that the minority cultures that tend to comprise poorer schools and districts are placed in a role of having always to compete on an unequal playing field (Darder 2002:78; as cited in Kahn and Douglas 2007:433).

Inequality further extends from individuals and institutions to countries, where developing and underdeveloped countries cannot afford AIIHE. So the North vs. South equation will continue to keep the rich updated with the latest technological tools and deprive the poor from an equal standard of education. Thus the gap between them intensifies. Annuš (2023:3) assures that the use of AI technologies in education is noticeably limited in developing countries, which lacks infrastructure and computing capacity necessary for institutions and students. This affects negatively fair competitiveness among students globally. Johnston

expresses his fear that teachers, students, counsellors, and administrative personnel may be concerned that the widespread use of AI tutors, systems, and chatbots may lead to replacing them in institutions which afford it and that "in times of budget constraints, administrators may be tempted to substitute instruction with lucrative automated AI solutions" (2023:135).

### **5.5 Academic Integrity**

Students in higher education should be expected to show academic integrity and honesty. Cambridge Dictionary defines integrity as being honest and having strong moral principles, which one refuses to change. The International Centre for Academic Integrity defines it as a firm commitment to six values, namely honesty, trust, fairness, respect, responsibility and courage (2016)). Academic honesty, thus, is part of integrity.

Academic dishonesty refers to "academic misconduct, cheating, fraud and misrepresentation" (Ismail & Omar 2017:1181). Plagiarism occurs when a person represents someone else's words, ideas, phrases, sentences, or data as one's own work (Higbee & Thomas, 2002). Bachore divides academic dishonesty into exam cheating and plagiarism (2016:15). Nowadays with the development of AI tools, cheating exams can include activities or acts like copying information from AI devices or from others via such devices like a watch, a programmable calculator, a cell phone, an electronic translator, etc. Meanwhile plagiarism includes practices like using the services of a commercial entity, copying a part or all of an author's paper and submitting it as one's own assignment, failing to cite the words or ideas of others properly.

Exactly here lies the danger of using AI applications and violating not only academic honesty but also integrity. ChatGPT, for instance, can write a whole paper, research, or project from A to Z upon few prompts given to it. Özer notices that AI 'democratizes' plagiarism and risks academic integrity:

This has led to ChatGPT being accused of 'democratizing plagiarism' by Welle (2023), and it was highlighted that the data underlying the algorithms are essentially intellectual property. It is also important to note that academic integrity is another risk that is frequently mentioned in this respect. (2024: 235-73)

It copies and pastes from the internet sources available without giving credit to the authors or writers, whereas the dishonest person takes all credit for himself. It makes cheating and plagiarism so easy that it becomes hard for students to maintain their ethical values and sacrifice an opportunity to sit and relax while the AI tool does the hard job. The same

applies to teachers, who can use such tools to design a course, get material, or write a paper and take all credit to themselves. Additionally, the inaccuracy of information presented should not be overlooked.

Applying the values of academic integrity to AI, we will find that they are highly questioned. Who decides the 'honesty' of AI tools if they may be biased? Here the value of 'fairness' is not assured. Then, can AI be 'trusted' or 'respected', regardless of the benefits users may get? I think these are valid questions to ask, particularly as the value of AI 'responsibility' is still an undetermined, unsettled issue. Whose responsibility is it and whom to punish when violating academic integrity? And if there is no responsibility, and consequently no punishment, the value of 'courage' becomes meaningless and can be flouted easily. This raises concerns about many issues, such as publication rights, copyright and intellectual property rights. Publication rights are those given by authors to publishers in order to have their work published; copyright is the former's right to control if, how and when copies are made; while intellectual property rights are given to people for the creation of their minds. If AI content writing tools plagiarises someone else's right, what rights we are talking about? If the machine deeply learns from data and available sources, how can we judge its creation, and, henceforth, rights? Unfortunately most of these questions have not been answered yet.

### **5.6 Fundamental Skills**

Education is supposed to develop students' skills so that they interact positively with their environment. Kahn and Douglas argue that "Learning involves developing abilities to interact intelligently with the environment and other people, and calls for convivial social and conversational environments", but over-involved with technologies can make them "fail to develop even basic social skills and competencies" (2007:441).

I utterly agree with Annuš who explains that using AI allows students to depend on automated systems, which necessitate fewer professional skills (2023:3) and hence lead to losing fundamental skills. Duggan shows that simulating the human ability of delegating both tasks and cognitive functions to machines can intensify their dependence on technology while undermining their ability to perform these tasks and functions; therefore students who rely heavily upon a computer keyboard "may lose their ability to write legibly.. Similarly, performing calculations using a spreadsheet or calculator may decrease their mental arithmetic skill" (2020; as cited *ibid.*). Ikka (2018; as cited in *ibid.*) also

reveals that AI systems support students in adding, multiplying, or higher mathematical problems (hence higher order mathematical abilities, reasoning, and logical skills will be difficult to develop) and it "may reduce the importance of human cognition". AI technologies like ChatGPT, Özer remarks, are capable of passing exams so students can depend on the competence of these technologies to pass successfully, a matter which raises uncertainties about the validity of digital evaluations (2024: 235-73).

The over-reliance on AI technologies affects human interaction between students and teachers on the one hand, and between them and the surrounding world on the other. Annuš thinks that AI hinders students' development and degrades emotional and social skills:

The use of AI by students may also lead to less interaction with teachers and humans, as AI applications automate the learning process. Such gaps can hinder students' personal development, as without human connections, it can be difficult for students to develop emotional and social skills. Consequently, AI can limit sociological development. (2023:3)

Thus, Ayala warns that in integrating AI into education, students interact with machines more than humans, and the learning experience becomes 'dehumanised' and less engaging and fulfilling (2023:894).

Deep involvement in AI applications not only sabotages users' communication and basic skills, it also subverts empathy and emotional intelligence. A positive human relationship is detrimental for a improved learning and teaching experience alike, as Ayala believes that:

a positive student-teacher relationship was associated with better academic performance, fewer behavioral problems, and higher levels of student engagement. This relationship is built on trust, respect and communication, and AI cannot replicate it. (2023:894)

The very valuable skill of critical thinking diminishes with exaggerated indulgence in the machine world, which can make the students' task upon few instructions he gives to the machine. In this age, we surely need to possess the skill of dealing with an updated technology, but not at the expense of losing other critical skills!

### **5.7 Herd Education & Creativity**

The propaganda made for integrating AI into many fields, including HE, aims at globalising education which means a standardisation of education. The reasons why multinational companies promoting for AI may lie outside the scope of this paper, especially since we aim to focus, here, on the results of AIIHE rather than the reasons behind this, be them political, economic, religious, cultural, etc. Therefore, though standardisation gives

the appealing illusion that there is equity and fairness in the standards of education globally, it nevertheless implies the application of AI systems as tools rather than fairness in elevating the standards of education in underdeveloped or developing countries. It will be so naive to imagine that multinationals in the developed countries, who seek their own interests, will help the others build the infrastructure necessary for real development. Look at how the rich countries become richer and the poor poorer. Look at the latter who suffer to get the least basic needs of life: how can they integrate the latest updated AI systems? It seems illogical and even irrational to think so. Simply it is a standardisation of 'some' tools, which may not fit the nature of many countries, provided that these tools can really be useful and develop education.

Indeed, I look at the standardization/ globalisation of education in this regard from a different perspective. I start off from the hypothesis that it is critical for everyone to keep updated not only with technology but also with developments in all fields. Yet, standardisation can represent a risk if it means directing education in any particular way. Let me give some example to elaborate this idea a bit further. If I ask students to research and develop existing AI models which imitate human voices and movements, the result will be developing DeepFake technology that is used in making fake videos, which in turn opens the door for blackmailing and the rest is history. If I direct them to support IoT to replace the existing cars with others with new appellative features connected to the internet directly, we can then imagine what we make\_ 'us'\_ available voluntarily in the hands of the big owners of the internet search engines and satellites. Directing research to help accelerate the replacement of humans by machines serves the interests of multinationals but it has caused many people to lose their jobs and crafts. It raises many doubts about who owns AI industry.

Directing education is apparent too in making certain topics global trends in social media or on search engines. Selecting which material to make available and which to hide or ignore is another source for directing education. Taking a certain stand regarding a certain issue and promoting it while mocking or opposing another implies directing. Actually, both standardisation and directing of education should draw our attention to serious concerns regarding students' creativity because AI provides them with ready-made answers to their tasks and assignments. Your project will be made, exam answered, task made from A to Z upon your request! Where is students' creativity, then?

The quality of education in AI age represents a real challenge and concern not only for educational institutions, educators, or even students themselves, but also for their families. In his study, Annuš (2023) asked generation Z teachers about their experience of distance teaching during Covid-19. They expressed their negative feelings and memories about that experience. Lotta Edholm, Sweden's minister of schools, criticised harshly the all-out embrace of technology in schools after students' basic skills had started to deteriorate due to adopting the national digitalisation strategy in education; so after 11 months in office, she decided to move students off digital devices and on to books and handwriting (The Guardian 2023). "There is a clear evidence that digital tools impair rather than enhance student learning", Karolinska Institute, a high-profile medical school in Sweden, said (ibid.). A lot of studies are direly needed in this fertile area for research.

### 5.8 Health Risks

The excessive use of digital technology can lead to many health problems. An interesting study about the pathological health hazards of using technology excessively was carried out by Mansour and Mohammed (2024). The authors investigated secondary school students in Egypt and classified the pathological use of digital technology into three categories (mild, moderate and severe) according to time of digital tools exposure. Mid-self-reported excessive use occurs when the user is exposed to technology for 3-4 hours daily which results in acute health hazards; moderate use for 5- 6 hours daily causes chronic health hazards; while severe use means exposure for more than 6 hours daily leading to serious complications from health hazards (ibid. 253).

Mansour and Mohammed mention five types of problems. First, musculoskeletal problems include bone pain, arthritis, low back pain and muscle pain. Second, they refer to repetitive movements and uncomfortable body mechanics as ergonomic hazards. Third, psychosocial hazards include stress, anxiousness, burnout, depression, isolation, violence and low concentration. Fourth, hearing impairment, vision impairment, eye allergy and eye dryness are among sensory hazards. Finally, there are some miscellaneous problems like headache, obesity, laziness, sleeping disorders, colonic and gastric disorder, absenteeism, cardiovascular problems, and general body weakness (2014:259).

Many other health hazards have not been discovered yet. Hazards on natural brain development, for instance, are detrimental in prolonged use of digital technology. In this context, Zanetti et al. mention that natural brain development needs further research which explores "the dangers of

radicalization, dependence, decreased ability to control impulses, lack of relational skills, and a greater predisposition to various pathologies" (2020:374).

Prolonged use of technology like the internet, gaming, mobiles and social media can cause an addiction as harmful as drug addiction. Addiction is defined as an inability to stop using a certain substance or doing some behaviour notwithstanding its psychological and physical harms (Luigjes et al. 2019:9; as cited in Uslu 2022:300). Amudhan et al. show that technology addiction implies using information and communication technologies excessively and inappropriately (2021:1; as cited in *ibid.*), while Dennis & Scott describe it as chronic disorders (2007:49; as cited in *ibid.*) which seriously interrupts the addict's daily life and social environment. Prominent complications include stress, loneliness, depression, negative mental health, permanent health complications, neglecting social life and family, distancing one's self from sociality, sleep problems, psychiatric problems, inability to focus, conflict, and academic deficiency, Uslu (*ibid.*) explains. On the other hand, such an inappropriate use of technology can waste 'time', the most valuable asset humans have!

## **6. Implications of AIHE**

### **6.1 Implications for Students**

According to the National Authority for Quality Assurance and Accreditation in Egypt, HE courses usually target intended learning outcomes related to the skills students are able to acquire by the end of a course, like knowledge and understanding (of the subject-matter), intellectual skills (e.g. analysis, criticism, resolving issues or problem in the discipline, the incorporation of information, theory and technical know-how into practical experience), professional skills (necessary in the field of study), and general and transferable skills (such as communication skills). Generally one cannot deny the importance of technology in HE, but the question is what happens to these skills at a time when students have become heavily dependent on AI tools to perform tasks, assignments, exams, projects, among others, which students should perform to acquire the intended learning outcomes of a particular course? These skills will, or at least can, be seriously affected. Knowledge and information skills deteriorate when students find a machine or another human who does or is willing to do the job for them; they may focus on social media or games instead, and so do their other skills like oral and written communication skills. On the other side, skills related to the operation of technology have improved, but they are limited

skills and come at the expense of the other skills. Karan and Dagoni say "Several studies reported that over emphasis on AI system in teaching and learning will decrease the power of conceptual skills among students, and increase the domination of narrow set of technology skills" (2023:75).

In this vein, students' learning styles can be negatively affected by AIIHE. The learning styles of our descendants differ from those of generations Z, Millennials, or Z. Generation Z depends heavily on AI systems and technology. Thus, the former teacher-student relationship has changed, and so has the learning style. Students no longer need to sit in a class, listen directly to the teacher and do their assignments after a hard search and research. Now almost everything is available at a click of a key. Tutoring systems and personalised learning allow them to neglect the formal lecture settings and depend instead on material available from e-learning. Digitalised feedback and assessment decreased their communication skills significantly and dehumanised the unique student-teacher relationship. Computerised coaching and counselling systems, aside from the issue of making errors, have had critical implications for human communication. Though predicting outcomes by AI systems can be helpful sometimes, errors may cause serious damages to students' psyche and their developments. The access to filtered information and directed search platforms run the risk of wrong or misleading information and creating a virtual reality that conflicts one's own reality. Though AI tools saved time and effort in a good way in large systems- level processes, the numerous AI tools affect their academic integrity and make them totally dependent on such tools; with time they may not be able to depend on themselves to perform educational tasks, which in turn degrades their creativity. Moreover, excessive reliance (addiction) on technology can undermine educational activities and goals. Issues of privacy and security also represent a sting in the tail.

The concept of employability, as stated previously, has attracted the attention of parties involved in HE process, from skate-holders to students and their families. Many governments aspire to incorporate 'employability' in their discourse on HE. York argues that:

The employability of graduates has become an aim that governments around the world have, to varying extents, imposed on national higher education systems. This interest in employability reflects an acceptance of human capital theory.. Under human capital theory, the task of government is to foster conditions that encourage growth in the stock of human capital, since this is seen as vital to the performance of knowledge- based economies in a globalised society. (nd: 3)

What is worrying here is the quality of the product of HE, i.e. graduates. We should genuinely concentrate on the personality of the graduate and respect his humanity. Frank Newman, an American education reformer, says that "The most important thing an institution does is not to prepare a student for a career but for a life as a citizen".

### **6.2 Implications for Teachers**

What is said about the implications of AIIHE for students can apply to teachers alike. AI-powered systems can influence teaching styles. Ilkka (2018) remarks that too much focus on AI-powered systems in teaching can reduce teachers' both foundational and socio-pedagogical knowledge. The traditional requirements for a teacher job, like assessment, coaching and counselling, feedback, the unique teacher-student relationship where a teacher predicts a student's development, per se, can be delegated to a machine. Karan and Dagani say that the "automation of AI in teaching may divert teachers from the ability of classroom management skills. Substituting many teaching and learning activities by AI technology may shift professional power and prestige of teachers and school administrators to AI programmers and or system designers" (2023:75). Transferring the teacher's role to intelligent machines represents a danger in Humble and Mozelius' opinion (2019; as cited *ibid.*76).

Some studies, Al-Thkayna explains, claim that the transfer of the natural tasks of the teacher to a machine will make the former concentrate more on students:

According to some studies, teachers spend (31%) of their time in preparing lessons, scoring tests and doing the administrative tasks. Therefore, the instruments of automation and artificial intelligence can reduce the burdens of manual processes, such as scoring tests, evaluating tasks and allowing teachers more time to focus on students (Al-Johani, 2020). (2023:106)

This may imply a wrong logic. How can you focus on students while minimising face-to-face interaction and relying on the machine to perform core responsibilities of a teacher? What remains to teachers, then, when a robot can imitate a human? This poses a threat to the profession of teachers in the classical sense of the word, in my point of view.

Teachers may have some issues related to academic integrity, privacy and security. For example they can ask an AI tool to design a course thus plagiarism takes place; they may get material without giving due credit to the author (s). Like any user of AI technology, privacy and security still represent a main concern and remain unresolved.

Again like any AI technology user, excessive and inappropriate use may lead to technology over-dependence or addiction with all its possible complications, from losing some (social, intellectual, pedagogical and professional) skills to suffering from social isolation and permanent health complications. Creativity degrades hitherto.

### 6.3 Implications for the Industry

Economically speaking, the propaganda for integrating AI technology into HE seems to serve the interests of multinational companies that sell AI technologies in the first place. Even when AI platforms are freely accessed, the user may become the product, i.e. they could target the users' data. At a certain point, what is offered freely turns into a standard version with limited features, and another one with new features is released. As for educational institutions, AI tools that perform large administrative tasks can replace humans and thus apparently save money in their opinion; yet what do you risk in return for what you get? If the industry product (students) and employees (teachers) run risks like the ones mentioned in this paper, then the whole industry will be affected. Kahn and Douglas ask important questions about new technologies and whose interests they serve:

Whose interests are emergent technologies and pedagogies serving? Are they helping all social groups and individuals? Who is being excluded and why? We also need to seriously question the extent to which multiplying technologies and literacies serve simply to reproduce existing inequalities in the present.. (2007:441)

In this context, the authors' legitimate questions bring us to the issue of inequality among countries, institutions and individuals. Many developing and underdeveloped countries cannot provide this kind of AI-powered HE to its citizens. Inside the same country, inequality emerges between well-off institutions which can integrate AI in their systems and those which cannot afford it. Similarly, inside the same institutions there is inequality between students who can afford AI devices or applications and those who cannot. Here, the politics of education come to interplay.

In addition to changing the teaching and learning styles, AI can affect the job market and its demands. The machine can replace some occupations, like cashiers, bank tellers, receptionists, bartenders, and workers in a factory. On the other hand, new occupations related to AI developing and implementing are emerging. Mureşan denotes that "Developing and implementing AI systems require subject matter experts, data engineers, programmers, and data analysts. These professionals are essential to the design, implementation and maintenance of AI systems" (2023:84). Directing global education and the global job market to serve

AI technology is absolutely dangerous in shaping the world, the 'New World Order'. Again my argument is not against technology, it is against the rush towards its integrations without resolving the risks associated with it. Mureşan's suggestion that "adapting education to changing occupations is vital to ensure that the future workforce is prepared for the challenges and opportunities brought by technological development and the widespread use of AI" (ibid.) may look valid at first glance, provided that technological development brings benefits rather than risks!

A shift in the job market, by ending some jobs and creating new ones, would lead to replacing humans by machines, a matter which will threaten the social fabric and security. Replacement is a reality we are witnessing. It is true that until now it is not a 100% replacement but if we continue addressing the issue naively and blindly, it will, sooner than later. Karan and Angadi argue that some workers in different fields including education have lost their jobs: "Like other sectors, if integration of AI technology in school context begins to automate teaching tasks of teachers, what will happen to teachers' jobs? If all those teachers are replaced with AI robots, there will occur a massive unemployment" and "The over emphasis on AI system in teaching tasks will replace human teachers, decrease the role of teachers, and create bias in all forms" (2023:77). Karan and Angadi even go one step further and state that this dehumanisation reveals "a form of future classrooms where full-fledged robot teachers are highly desired to be in control". In my opinion, replacing a human by a machine does not only threaten social security but it also threatens educational institutions because there is no guarantee that technology will be delivered to them forever and for the same price. A political decision at any time can stop or interrupt technology influx or update, like our mobiles which stop most of their features after a while. What shall we do if an outage, like the global outage of 19th July 2024, occurs? Why would not AI technology companies cut their services, hack software or harm the systems or use their power as a tool of war?

Other critical issues may include the potential of machine learning and development to the point that the machine takes over human decisions at best and defies humans at worst. Though the second scenario looks dreamy or looks like a Hollywood fiction, yet what was science fiction few years ago, is now reality. It is not naive, then, if we wonder about the machine ability to take appropriate decisions.

Unethical science can lead to implanting a brain SIM card in the back of one's head carrying any kind of information you just name it. In January 2024, Elon Musk announced that the first Neuralink brain chip

was implanted in a patient's brain, an AI technology that uses electrical and chemical signals in order to send information around the brain and then to the body. A chip, that carries information incomparably much bigger than the information, knowledge and skills we get from education over nearly two decades, may make us doubt the value of going through the educational system. Students may wonder why pay a lot of money to educational systems in order to get a certificate after almost two decades of learning, examining, going to school in the early morning, etc. while the chip can offers you all this on a silver plate while you are sitting at home? If this revolutionary AI is left uncontrolled, no one can yet to guess the possible consequences.

After changing the teaching and learning style, replacing humans by machines, ending jobs and creating others, and after suffering from AIIHE risks, how can we backtrack if the desired, catchy outcomes of AIIHE are not reached? When USA first invented the DDT to fight worms, it was a global trend and farmers replaced their traditional natural methods by the DDT. The result was disastrous and it then prohibited this substance in agriculture. When we invent something, it is not important how useful it would be, more importantly is what harm it would cause. Same applies to AI, especially when it is applied to education, the cornerstone of the development of nations. This should be done before we change whole educational systems and it becomes too late to step back!

Changing the facade of higher education through AIIHE does not mean necessarily developing the industry. Technology can be as useful as a washing machine or as lethal as a nuclear weapon or a drone. Comparing the risks to the benefits, the former seems to outweigh the latter in such a manner that necessitates us to contemplate thoroughly into the value of the integration. The student, later the graduate, is the industry's product, a goal not an end in itself. A good product enhances a nation's real development, and vice versa. The good benefits should hang on until the critical risks are resolved. Otherwise, what is the value of treating your stomach disease if the treatment leads to kidney failure and then to death? If technology offers some facilities in return for losing fundamental skills or being addicted to it, then why go on? Why not wait to solve the problems first, i.e. avoid the risks, then embark on application and integration? The rush towards AIIHE raises concerns and doubts about the intentions of the appellative global propaganda hailing it. A part of this propaganda is the inevitability-of-change discourse, which increases our surrender to the idea and decreases our ability to think, criticise or resist such a 'stagemanaged' discourse. Again the there is a complex interaction between the politics of education and AIIHE.

### **Conclusion**

From the very beginning, this paper has made its aim clear, to investigate some of the benefits and risks of integrating AI into higher education and their prospective implications for students' skills and their employability, teachers and the field. It has also clarified that it is not my intention to reject or attack AI technology in itself, but to carefully and rationally think, analyse, compare and evaluate the integration of AI into higher education through a benefits< >risks comparison where the interplay between education, politics and technology manifests itself in the issue of AIIHE. It has explained that it does not attempt to laboriously list all the benefits nor the risks and reached the conclusion that:

1-The idea that 'technological development' is necessarily good is invalid and needs further investigation. The idea that globalised trends are taboos and should not be criticised is unacceptable in our age today, when people are pushed to criticise everything including their traditions and morale.

2-The argument of those who harshly attack any attempts to think critically about the risks of technology ends like 'take it or leave it'! This is not how we should approach serious issues as such.

3-The 'inevitability of change' discourse is part of the global propaganda for the integration of technology in every walk of life, including HE. It promotes a culture of despair and submission to change without the least critical thinking or resistance. Meanwhile it raises doubts about whose interests it serves.

4-Without denying their importance, the studies made on AIIHE can be classified into one of three categories: propaganda (overlooking or undermining the risks), systematic reviews of literature (revolving into one bubble and reaching almost same conclusion), and questionnaires (whose results cannot be generalised due to data size and representation). Here comes the necessity of other perspectives.

5-A benefits < > risks comparison shows the latter outweighs the former and that there is no need for the rush towards AIIHE until risks are resolved.

6-The benefits of AI-powered systems include tutoring systems and personalised learning, assessment and feedback, coaching and counselling, large systems- level processes, predicting outcomes, access to information and search engines, and some helpful AI tools/platforms. It is true that administrative work becomes easier and tools facilitate many tasks. Yet AI systems run risks such as: malfunctioning and errors; dehumanising the teacher-student relationship; creating wrong or directed information bubble; violating users' privacy and security and national

security alike; enhancing biases; producing inequality; leading to academic dishonesty; affecting negatively fundamental skills; changing teaching and learning styles; triggering herd education and decreasing creativity; and producing serious health complications.

7-The literature seems to deal naively with risks by making a wishful, aspiring statement in the form of a recommendation at the end of the paper hailing AIIHE, as simple as 'Risks should be addressed'!

8-Inaccurate or misleading information on search engines, for example, harms technology users, be them students or teachers.

9-If students' skills are disrupted by AIIHE, then the skill-based education, which targets employability, can be sabotaged, too.

10-AI can impair the unique teacher-student relationship, degrading the human-human interactions in favour of a human-machine interaction which develops limited skills related to operating technology.

11-AI technology not only dehumanises some tasks the machine can perform or even outperform the human performance, it dehumanizes the HE industry, indeed our life, gradually.

12-Students' dependence on technology to answer exams, solve problems, write essays, make projects, inter alia, can damage their academic integrity; same to teachers'. The whole concept of 'education' or 'higher education' may be challenged by a tiny SIM card carrying all the information you get from education in decades.

13-Users' privacy and security still represents an escalating, unresolved concern.

14-Machine bias exists in the algorithms, the data fed to the machine, and humans themselves. Even if we suppose that the issue of bias is resolved, who guarantees the actions of the machine if it takes decisions on its own without referring to humans?

15-Prolonged use of technology can lead to technology addiction with serious social, mental, intellectual and physical complications.

16-Not much creativity is expected within an AIIHE context.

17-Directing or misleading information, education, job market, etc. exposes the politics of education at play.

18-If the facade of HE industry and the job market changes (ending jobs and creating new ones in the realm of AI technology) due to AI systems integration and human replacement by the machine (threatening social fabric and security), and if risks have proved to harm students, teachers and/or the industry, how to backtrack?

It is really ridiculous how various nations along thousands of years managed to build great civilisations through 'classical' education, as it were, while AI in the last decade or so\_ nothing in the history of nations\_

revolutionises many concepts as if we rediscovering what education is and how to educate people!

I think the problem of educational systems in general is that AIIHE appears to have distracted our attention from 'what' students learn to 'how' they learn, i.e. we concentrate on AI technology, a tool of how to learn, rather than on the content, which is the core of learning. I agree with Illich (1982:5; as cited Kahn and Douglas 2007:438) when he says:

Integrating AI technology has become an end rather than a tool, which turns AIIHE from being reasonably productive to a paradoxically counterproductive tool.

We need to deal with AI technology just as a tool like any other technological tools that should be used to improve skills and environment. In HE, it can be used only when and if it supports teachers in their educational mission and helps produce a qualified student who is capable of competing constructively in a constructive job market which must be keen on achieving the interests of the country rather than being directed, 'stagemanaged' and geared towards globalised interests of a small group, multinationals for instance. It can advance or hinder the HE process. Until risks are resolved, we can postpone the integration and do our homework. There is no reason whatsoever for the rush. This brings us back to square zero of the politics of education: why do we have education?

**Appendix of Abbreviations:**

*AI*: Artificial Intelligence

*AIIIE*: Artificial Intelligence Integration into Education

*AIIHE*: Artificial Intelligence Integration into Higher Education

*HE*: Higher Education

*SLR*: Systematic Literature Review

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## The Politics of Integrating Artificial Intelligence into Higher Education : Benefits < > Risks

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