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Print ISSN: [3006-2497](#) Online ISSN: [3006-2500](#)Platform & Workflow by: [Open Journal Systems](#)<https://doi.org/10.5281/zenodo.18330029>**Use Of Artificial Intelligence at Higher Education Level: A Descriptive Survey****Farida Batool**

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Tahminailyas56@gmail.com**ABSTRACT**

Artificial Intelligence (AI) is increasingly transforming the concept of higher education through augmentation of pedagogic, epistemic and administrative functions. AI technologies (intelligent tutoring systems, adaptive learning platforms, virtual assistants, and automated assessment tools) in question provide the opportunity of a personalized experience in learning, increased student engagement, and aid in data-driven decision-making. The current research aims at examining the issue of AI application on tertiary level with a specific focus on the applications, benefits, and the challenges associated with it. The wave of a descriptive survey design will be conducted whereby the targeted respondents will be students, faculty, and administrators of chosen universities. The data will be collected through the use of structured questionnaires and semi-structured interviews, and later analyzed with descriptive and inferential statistics to outline trends within the adoption and usage rates and perception of AI efficacy. This study aims to uncover the impact of AI tools on the achievement of academics, the instruction methods, and the efficiency of educational institutions, and the challenges to successful implementation. The emergent results are also likely to inform the current positions of AI adoption in higher education, highlight areas that require improvement, and to provide recommendations that should be made to policy makers, educators, and technology developers to streamline AI-based educational processes. This study will contribute to the improved comprehension of technology enhanced learning by assessing the adoption and the effects of AI and assist in devising innovative learners centered teaching and instruction methods.

Keywords: Artificial Intelligence, higher education, adaptive learning, intelligent tutoring systems, academic performance, technology-enhanced learning.

Introduction

AI is fast becoming a ground-breaking force in the field of higher education by providing new ways of teaching, learning, and running the business. AI refers to the imitation of the human intellect by the machines, which allows the machines to perform the tasks like problem-solving, decision-making, and personal interactions. In the context of higher education, AI-based solutions, such as intelligent tutoring systems, adaptive learning, virtual assistants, and automated assessment tools, contain the opportunity

to improve learning outcomes, facilitate the work of the administrative body, and provide data-driven insights on which institutional decisions may be made. Introduction of AI into the educational environment is changing the customary classroom habits and also encouraging personalized learning environments that suit the needs of various students.

Implementation of AI in universities has been associated with a number of advantages. The tools based on AI should be able to provide real-time feedback, track the progress of the students in learning, and suggest individual study strategy, which will enhance the engagement, motivation and academic results. Furthermore, AI also can be used to process the administrative work efficiently, such as the enrolments, grading, and resource distribution, which allows the universities to pay more attention to the quality of teaching. Nevertheless, despite the hype, we have technological gaps in infrastructure, issues of privacy of data, the biases of AI tools, and faculty that still needs to be trained on such tools.

With the increase in the popularity of AI in the education sector, it is important to critically examine the application of AI to determine what advantages it will have, what issues it will result in in the real classroom and office settings. The awareness of the extent of AI we are weaving into teaching, learning and administration can guide us to find the best ways to extract the maximum out of AI and mitigate the challenges. The question of the research is as follows: how colleges and universities are utilizing AI, what are the advantages and disadvantages, and what can policymakers, teachers, and admins learn in order to improve student and institutional performance?

Rationale of the Study

The fast development of AI has shaken each industry product and higher education is one of the sizable hardest-hit areas. These educational technologies can redesign the outdated instruction systems through providing individualized learning, increasing student interaction, and enhancing grades. Nevertheless, AI implementation in universities is not a sailing cake as many schools continue to determine ways of integrating AI in teaching, learning, and administration processes. This is why the systematized analysis, which sheds light on the extent of AI involvement, the benefits and challenges it presents to the teachers and students, is necessary.

The main concept of the study is that AI is a potential game-changer in the educational quality as well as in the performance of the educational institution. Getting deeper into the current applications of AI in higher education, including learning applications, adaptive learning, smart tutoring, and administration tools, will provide effective data. These lessons ought to inform the designs that will assist in adopting AI, simplifying the learning process, and empowering teachers and policymakers with sufficient information so that they can make wise decisions.

Further, because universities need to serve a more diverse and skill-based population, there is an immediate demand to consider how AI can provide more individualized, data-driven and cost-effective learning. Such an investigation, by identifying the opportunities and challenges of utilizing AI, makes a contribution to the literature of the entire field of AI-based learning and provides useful advice to teachers, administrative personnel, and technology designers who wish to adopt AI. Finally, the scope of the investigation is to fill the gap between the hypothetical possibilities of AI technologies and their real application in higher education in order to make sure that the introduction of AI technologies will help to achieve the pedagogical goal and facilitate effective teaching practice.

Statement of the Problem

Although the potential opportunities of Artificial Intelligence (AI) to revolutionize higher education by proposing personalized learning, adaptive assessment, and improved administrative efficiency are big and growing, its integration into the teaching, learning, and administration processes is not yet a uniform process, but rather an under researched one. Most colleges continue using traditional approaches to instruction, often without a systematic approach to the successful implementation of AI. Other barriers include limited technology platforms, insufficient training of faculty, ethical concerns about data privacy and possible algorithm bias make adoption more challenging. Moreover, another gap in knowledge also exists as an empirical study comparing the real use, advantages, and disadvantages of AI in the higher education setting is lacking, which hinders the informed decision-making process and maximization of the AI-driven educational applications. In this regard, this paper

attempts to explore AI implementation in the higher education sector, exploring its applications, the perceived advantages and limitations, and hopes to make evidence-based contributions likely to guide teachers, administrators, and policymakers to effectively use AI to improve teaching, learning, and efficiency in the institution.

Objectives of the study

1. To assess the usage of the Artificial Intelligence in the higher-education level.
2. To determine the perceived utility of Artificial Intelligence to the students, educational practitioners, and institutional effectiveness in higher learning institutions.

Researched Questions

1. What are the current applications of Artificial Intelligence in teaching, learning, and administrative processes in higher education institutions?
2. What are the perceived benefits of Artificial Intelligence for students, educators, and institutional efficiency at the higher education level?

Significance of the Study

The research is quite a decent one as it provides an in-depth overview of the way AI is implemented in institutions of higher education, its applications, advantages, and the entire list of challenges it introduces into the picture. To the teachers it is a useful guide where all the AI tools including intelligent tutoring system, adaptive learning engine and automated grading will be discussed so that they can actually enhance the teaching, make the students engaged and differentiate the ways of learning. In our case, as students, the study can explain how we can employ AI to become the facilitator of our own learning, enhance the retention of knowledge, and increase performance. The evidence-based recommendation on the allocation of resources, technological infrastructure, faculty development, and ethical aspects can be applied by the policy makers and the administration of the campus. Moreover, the research puts the actual information into the discussion of the technological enhancement of learning, demonstrating us how to make the most of AI, optimize the campus processes, and improve the overall experience in the higher education.

Literature Review

Waheed, Muneer, and Baig (2024) discuss the influence of AI in education and note that AI-based technology provides the ability to have customized and adaptive learning. According to them, AI tools, such as intelligent tutoring systems, have the ability to assess the performance of students and provide them with personal feedback to boost learning performances. They point out the administrative privileges like grade automation and attendance automation, which reduce the workload of the faculty. Nevertheless, they warn that ethical and privacy of data as well as unequal access to technology may hinder the mass adoption. They conclude that AI can actually enhance teaching and learning, though it depends on the institutions having good ethical and inclusive policy.

Altundal (2024) delivers an in-depth analysis of AI application in education especially in regards to intelligent tutoring systems, predictive analysis, and chatbots that can be run by AI. The case study demonstrates that the AI is capable of improving the quality of learning by providing students with immediate feedback and tailoring them to individual needs. Admin tasks, such as scheduling courses and advising students, are also done with the help of AI. Although the opportunities appear to be wonderful, Altundal clarifies that such benefits are to be accompanied by appropriate educator training and codes of ethics to prevent abuse and academic honesty. The article notes that the application of the AI in the classroom has the potential to change the traditional way of teaching and make students more attentive in case of the responsible usage.

Zawacki-Richter et al. (2019) present a review of the use of AI in higher education and find four primary areas, which are student profiling and prediction, adaptive learning, intelligent tutoring system, and automated assessment. The paper has identified that AI offers predictive insights regarding student performance, learners who are at-risk, and personalized care. It also observes that despite the AI researches, educators do not simply focus on the AI development, which, consequently, may result in poor alignment with pedagogical objectives. The review concludes that AI has huge educational

potential, such as efficiency, and personalization, but requires the involvement of teachers and ethical aspects in the implementation of AI.

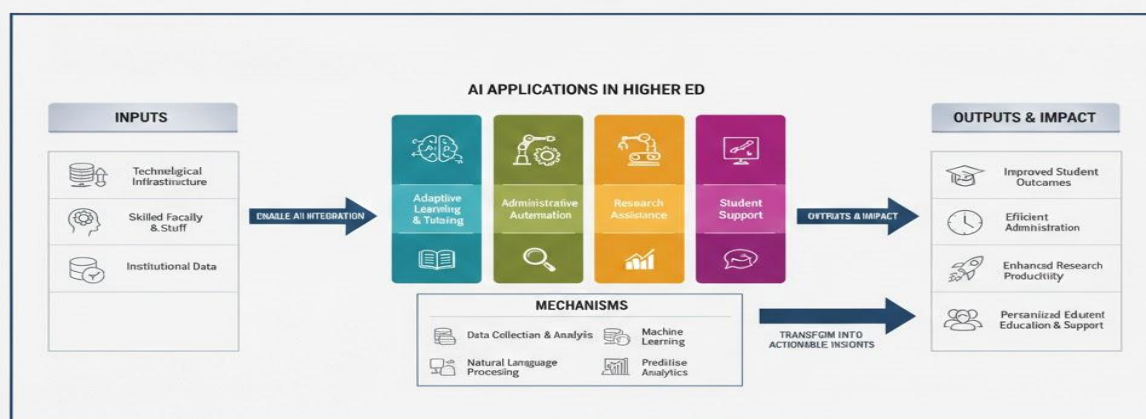
Preprints.org (2025) examined how AI might encourage Sustainable Development Goal (SDG) 4 (quality education) in its contribution, specifically through predictive analytics to identify struggling students brutally at an early stage and further treatment of them through carefully designed and motivated interventions leading to high performance and retention. It is said that artificial intelligence-based solutions would be capable of providing personalized learning paths, refiners our personal way of receiving content, and the provision of feedback in real time. However, the authors signal some practical issues, namely, ethical issues, unbalanced data, and unequal access to technology. Altogether, this review indicates that AI would increase equity and quality in education as long as we support it with strong policy frameworks and institutional.

The MDPI (2025) research paper reviewed 155 empirical research on AI in education and found out the important data trends, advantages, and issues. It cites that AI enhances the learning outcomes and motivation and personalized instruction and also simplifies the administrative functions like grading and attendance. Other ethical issues that are brought up in the review are privacy of data, bias of algorithms, and equity concerns. According to the authors, extensive training of teachers and well-defined ethical guidelines should be the key to getting the most out of AI. The paper concludes that AI has the potential to revolutionize the education system only if implemented in a responsible way and with pedagogic goals in mind.

Conceptual Framework

The conceptual framework that outlines the implementation of Artificial Intelligence (AI) in the context of higher education explains how AI technologies can make any material contribution to the process of pedagogical instruction, student learning, administration, academic research, and student support services. This framework is premised on the key fundamental inputs, that is, strong technological infrastructure, competent faculty and staff, and complex institutional data prescribers, which jointly enable the efficient implementation of AI on institutional settings.

Conceptual Framework: Intelligence: AI in Higher Education Level



Research Methodology

Research Design

The current research assumes the descriptive research design in order to study and analyze the various forms of Artificial Intelligence (AI) in use in the field of higher education. Such a design is helpful in conducting a systemic study of AI applications in teaching, learning, administration, research, and student support and provides insights into their efficacy and related difficulties.

Population and Sample

The target population include the institutions of higher education, their faculty member, the administration as well as the students. Purposive sampling will be used to target participants that have had a first-hand experience with AI tools or platforms in either academic and administrative context, which will result in the qualification and breadth of the collected information.

Delimitation

The proposed study is limited by investigation of AI implementation in the chosen institutions of higher learning, mostly in the teaching and learning process, administrative processes, support of research, and student services. It included faculty, administrative employees, and students with first-hand experience of AI tools, purposely avoiding individuals or institutions with no experience with AI technologies. The investigation limited to AI applications that are already in active cycles and do not cover ineffective AI systems that are under development. Further, the study will also focus on the perceptions and experiences of the participants, and it will not be involved in assessing the technical performance or the programming of AI platforms. These limitations make the study manageable, but give relevant and practical information about AI adoption and its effects on higher education.

Research Tool

Questionnaire and semi structured interviews the major research instruments to use in the study in order to collect both the quantitative and qualitative data. The questionnaire will include closed-ended and Likert scale questions that measure how often, what types, and how effective AI applications have been in relation to teaching, learning, administration, research, and student support. At the same time, the semi-structured interview guide designed with open-ended questions that will seek to touch upon the experiences, challenges, and attitudes of the participants regarding the adoption of AI in the higher education of higher education. To be sure of clarity, reliability and validity, these two instruments will be pre-tested by pilot-testing to make the needed changes, then the data collection of the main study take place.

Data Collection

The data to be used in this study will be collected by means of questionnaires distribution and semi-structured interviews with faculty, administrative employees and the students in the chosen higher education facilities. The questionnaires will be distributed online or directly to each participant of the study to gather the quantitative data on the types, the frequency, and perception of the usefulness of AI application. The semi-structured interviews will be conducted with the participants, who will be chosen purposely, to provide more profound qualitative data on their experiences, challenges, and attitudes toward integrating AI. The two instruments will be pre-tested through a pilot study before the actual collection of data to ensure that there is clarity and reliability, and all the ethical considerations such as informed consent and confidentiality will be strictly adhered to during a pilot study.

Data Analysis

Data analysis of data based on a mixed-methods analysis included based on the questionnaire and the interview data collected. Descriptive statistics (frequency, percent, mean results, etc.) used to analyze quantitative responses and determine the current trends and patterns in the adoption of AI in the context of higher education.

No.	Question	1 (Strongly Disagree)	2 (Disagree)	3 (Neutral)	4 (Agree)	5 (Strongly Agree)
1	I am familiar with the concept of Artificial Intelligence (AI).	10 (20%)	8 (16%)	12 (24%)	10 (20%)	10 (20%)
2	My institution uses AI tools in	8 (16%)	13 (26%)	14 (28%)	7 (14%)	8 (16%)

	teaching and learning activities.					
3	AI helps to make learning more personalized and efficient.	13 (26%)	8 (16%)	7 (14%)	15 (30%)	7 (14%)
4	I frequently use AI tools (e.g., ChatGPT, Grammarly) in academic work.	10 (20%)	9 (18%)	7 (14%)	16 (32%)	8 (16%)
5	AI improves the quality of higher education.	8 (16%)	10 (20%)	10 (20%)	12 (24%)	10 (20%)
6	AI can replace some teaching tasks (e.g., grading, tutoring).	8 (16%)	12 (24%)	11 (22%)	12 (24%)	7 (14%)
7	The use of AI increases student engagement and motivation.	8 (16%)	12 (24%)	13 (26%)	13 (26%)	4 (8%)
8	I feel confident in using AI tools effectively for my studies.	8 (16%)	13 (26%)	12 (24%)	9 (18%)	8 (16%)
9	AI can help in improving academic research productivity.	8 (16%)	10 (20%)	15 (30%)	10 (20%)	7 (14%)
10	AI tools help reduce administrative workload in higher education.	9 (18%)	10 (20%)	11 (22%)	10 (20%)	10 (20%)
11	There are enough resources and training for AI in my institution.	17 (34%)	10 (20%)	14 (28%)	5 (10%)	4 (8%)
12	The use of AI raises ethical concerns (e.g., plagiarism, privacy).	12 (24%)	13 (26%)	10 (20%)	13 (26%)	2 (4%)
13	AI should be integrated into the higher education curriculum.	12 (24%)	11 (22%)	13 (26%)	12 (24%)	2 (4%)
14	AI may threaten the role of human educators in the future.	10 (20%)	8 (16%)	10 (20%)	20 (40%)	2 (4%)
15	Overall, I have a positive attitude toward the use of AI in higher education.	10 (20%)	9 (18%)	14 (28%)	14 (28%)	3 (6%)

Detailed Statement Analysis

1. Knowledge of AI: The distribution of responses has a rather similar distribution, with the highest percentage of 24 of Neutral. It indicates that some of the students (though most of them are aware of artificial intelligence) have not developed a comprehensive or conclusive concept of the construct.
2. Institutional Use: The least forceful one is the Neutral (28%) or Disagree (26%), which indicates that most students either have little or no knowledge of an institutional implementation of AI tools in teaching.
3. Personalized Learning: (30 97) is the most common form, which means that a majority of the respondents view AI as having the ability to tailor the education experience. Still, a significant minority (26 %) is in vehement opposition, which highlights a bookish divide in its views on its working effect.

4. Frequency of Use: The high involvement of the students in technology is demonstrated by the fact that 32 per cent of the respondents support the regular use of the tools like Chat GPT and Grammarly. As a result, the practice is one of the most widespread habits related to AI among the participants.
5. Quality of Education: The information is not indicative of the positive, and 24% agrees with AI improving educational quality. The rest of the answers are approximately spread equally in the other choice options which indicates a lack of a strong response.
6. Task Replacement: There is an equal split between the two options of Disagree (24%) and Agree (24%) in the potential to replace AI with tasks like grading or tutoring thus illustrating an ambivalence as to whether AI should become more like traditional teaching.
7. Engagement and Motivation The highest rates are connected to Neutral (26 3/4 to 26 3/4) and Agree (26 3/4 to 26 3/4), which means that some students can say that they become more motivated due to the use of AI, but a significant proportion of them do not agree with the impact of AI on engagement.
8. Trust in Usage: The most common attitude score is the respondents showing a lack of perceived mastery, with the largest percentage being Disagree (26%) when it comes to their confidence in using AI tools in an academic setting.
9. Research Productivity: The overall perception is Neutral (30%), which means that students are hesitant to use AI to enhance complex academic works and productivity or have not significantly done so.
10. Administrative Workload: Responses are much more varied; the majority of responses is Neutral (22%) followed by a more positive or a more ambivalent view towards the impact of AI in university administration.
11. Resources and Training: An institutional gap can be observed, and Strongly Disagree (34%) represents the most frequent answer to the question concerning the level of resources and training offered to the respondent to use AI in his/her institution.
12. Ethical Ambivalence: There is a vigorous lack of consistency with regard to risks of AI; the most common values are close to 50/50 in terms of being Disagree (26%) and Agree (26%) with regards to both ethical concerns like plagiarism and privacy that signify split between the fearful and the indifferent.
13. Curriculum Integration: There is a reluctant or nonchalant attitude to formal adoption of AI in the higher education curriculum, indeed the most common response is Neutral (26 3).
14. Threat to Educators: This item indicates the most conclusive course of survey activity, as 40% of participants support the opinion that AI can pose a threat to the job of human teachers in the future, thus becoming a significant source of concern.
15. General Attitude: The overall attitude is directed at being cautious; the most frequent are at Neutral (28%) and Agree (28%), which means that a large percentage of the population is open to it, yet a significant part of the residents stays on the wait and watch side.

Discussion

The adoption of the Artificial Intelligence (AI) in the realm of higher education constitutes a radical change in both pedagogical and operational paradigms in switching the supportive secondary instrument into the strategic component. The narrow gap between the technological inputs and meaningful academic outputs is a non-linear transition without which traditional educational philosophies need to be re-examined as demonstrated in the conceptual framework. Interactive investigation over the period of 2024 and 2025 points to the idea that, although AI is an important way of measuring the delivery of content, as well as improving the ease with which an institution runs its processes, the interaction still unleashes a Personality-Engagement Paradox. In particular, even though Intelligent Tutoring Systems (ITS) and adaptive learning environments offer unprecedented personalized support, that is, students learn at a custom speed, there is a growing threat of digital isolation. According to recent research by Chaudhary et al. (2024) and Makhambetova et al. (2025), an excess in using AI to provide feedback may lead to a decrease in the relational richness of student-teacher

relationship, which is critical in the context of creating a sense of academic belonging and retention intentions.

The clash between operational efficiency and the maintenance of the so-called critical cognitive agency is at the center of the discussion. The results of data analysis show that students use AI extensively to perform summarization and generation of ideas, which is the high rate of cognitive offloading. Although this process liberates mental capacity in the synthesis of higher orders, it provides a vulnerability to superficial analysis without the assistance of conceptualized AI literacy. Stadler et al. (2025) state that the risk is that students will take AI-generated hallucinations or biased information as a factual agreement. Consequently, the phase of our framework, which is called the mechanism, should be supplemented with the so-called Metacognitive Scaffolding, during which the students are taught to think of AI as a partner rather than a substitute of independent investigation. Such a pedagogical change is crucial so as to maintain the raised research productivity in the outputs without having to sacrifice the struggle needed to have a deep conceptual mastery.

Additionally, AI use in the tertiary education level is accompanied by a radical redesign on the assessment approach, in pursuit of academic integrity. Whereas traditional evaluation models generally focus on the production of static text, it is becoming out-of-date, and in an era where Large Language Models are capable of producing near-perfect scholarly prose. There is a shift in the discourse which is being transferred to frameworks of Authentic Assessment which do not appraise a product, but the process. This will involve Hybrid Brainstorming requirements, which will involve the students having to record their original brainstorming by humans and then having AIs refine their work. This organizational innovation makes certain that the so-called data-driven decision-making as we defined it in our framework is not based on pure human competency development. Finally, the successful application of AI in the realm of higher education is based on the humanistic approach, which emphasizes on ethics transparency, digital hygiene, and professional growth and development of the faculty, so that the technology is used as a facilitator to intellectual empowerment, but not as a remedy to intellectual dependency.

Conclusion

To sum up, the introduction of Artificial Intelligence (AI) to the field of higher education is not the technological enhancement of the industry but the overhaul of the pedagogical arena. This paper recognizes that although the use of AI tools, including Intelligent Tutoring systems and automated administrative systems use, provide unmatched opportunities in personalization, efficiency, and data-driven decision-making, their effectiveness depends on a human-centered application. It has been hinted that AI can contribute to the student-as-learner experience by means of providing real-time feedback and customized support, yet it is also likely to lead to a Personalization-Engagement Paradox where digital performance can take the place of important interaction with humans and critical cognitive agency.

The research also highlights that the COVID of academic integrity that Large Language Models (LLM) have presented necessitates a sense of urgent shift to paradigms of Authentic Assessment which assigns greater significance to the process of learning than the end product. Additionally, the so-called readiness gap between faculty and the possible offloading of students that can be occasioned by AI sheds light on the idea that artificial intelligence does not necessarily translate into academic success. AI should be viewed as a form of thinking partner that should aid metacognitive scaffolding (as opposed to being a substitute to intellectual struggle that is part of deep learning).

In the end, the AI-led future, within the context of higher education, will be guaranteed once the technological infrastructure and codes of ethics are synthesized strategically. The institutions should cease the phase of access and progress into the phase of mastery, paying more attention to AI literacy, digital hygiene, and prospective professional growth of the educators. As long as AI integration is based on pedagogical objectives, as opposed to more technical ones, higher education can use these potent tools to guide a new generation of self-reliant, cognitively astute, and technically multilingual students.

Recommendations

Implementation of a Process-Oriented Assessment Paradigm

The solution to the so-called cognitive offloading crisis, in which students unwillingly supply generative models with the necessary critical thinking, requires a change in higher-education institutions in which assessments are based on fixed end-products, and instead a holistic evaluation of learning. This change justifies the implementation of an AI-Usage Paper Trail where the students are required to present an annotated list of their successive prompts, raw AI outputs, and, most critically, their following trendy cogitations and material corrections.

Literacy-based institutionalization of AI within recent academic skills

In other words, essentially the entire concept is to confuse ourselves in terms of rating ourselves in class. It is 20-30% of the final score of Interactive Oral Assessments (IOAs) and not-scripted spoken tests which we are talking about adding. In such a manner, professors can be confident that we are actually learning. Besides, assignments that are created based on local information, or only campus-based materials, provide some sort of a digital moat such that we are not forced to use the same generalized online sources, and that makes the exams of each school unique.

Educational shift between generative chatbots and scaffolding tools

Learning Institutions can shift their technological focus away and at the all-purpose content producers to specialized AI-based-Learning-tools, which can assist in scaffolding the learning process. In this shift, Socratic AI tutors are implemented, which are platforms developed with the purpose of not providing direct answers and instead several investigative questions guided to guide students toward discovering themselves and solving problems independently. Similarly, AI writing assistants should also be prioritized compared to generative substitutes; such apps are sensitive to the refinement of language, the structural soundness, and grammatical correction; thus, they do not replace the study but improve the authentic tone of the student.

Digital remediation of the ethics and socio-economic equity disparity

To avoid the development of a polarized educational system based on access to the technologies, the institutions should take the initiative to deal with the ethical and economic dilemmas of AI. This will require offering university-licensed single-user premium AI tools to ensure that students with reduced income levels are not marginalized to the facts of the kinds of payment gates posed by intelligence, and eliminate the widening digital divide. At the same time, all institutional AI systems, especially enrollment management or predictive analytics systems, should undergo rigorous audits of algorithmic transparency to remove the presence of hidden biases that tend to differentiate vulnerable students' groups and make AI an instrument of inclusion and not an instrument of exclusion.

Rebranding the faculty and the learning architect

The effective incorporation of AI requires the development of a strategic transformation of the faculty role by turning it into a provider of learning content to becoming a learning architect and mentor. It should be facilitated by the mandatory AI sabbaticals and intensive workshops intended to alleviate the so-called techno stresses and afford educators the much-needed room to discover the curriculum redesign. Additionally, the establishment of cross-functional AI councils, including IT experts, faculty, and representatives of students, will keep the policies of the institutions current and receptive to the changes in the sphere of technology that may happen rather quickly. With such empowerment of faculty to take charge of the change, the university will be able to abandon the culture of bans and adopt a collaboration model that ensures human-centered mentorship in an automated world.

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