

Bridging The Gap: Investigating Student Engagement and Faculty Satisfaction in Artificial Intelligence-Driven Education

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ABSTRACT

The debate about the feasibility of using artificial intelligence applications is still going on in the academic sector, but this will not stop users from applying AI in various fields and we notice in many colleges and universities around the world, that faculty members are still thinking and discussing on how to use SI in teaching and learning and policymakers are negotiating about setting regulations, and students have overcome this in stages and have begun to use and apply AI tools in many educational aspects, this research aims to investigate the gap between policymakers students practice and faculty satisfaction rate with the integration of Artificial Intelligence (AI) in teaching and learning. The study focuses on understanding the perceptions and challenges associated with the incorporation of AI technologies in educational sectors. To identify common students' practices and variations in faculty member's responses towards using AI tools in education, try to investigate the members 'gaps and analyze the causes of such guidelines. The study will also shed light on the key factors influencing faculty members' satisfaction rate with AI Integration. This study explores the impact of AI in pedagogical approaches and overall teaching effectiveness. Several survey results will be presented and compared to configure that gap and to assess faculty members 'attitudes towards AI integration, to gather comprehensive data from faculty members across diverse academic discipline in several Universities. Findings from this research are expected to contribute to the ongoing discourse on AI-driven education. Also, provide valuable input for colleges and policy makers to enhance and regulate the use of AI in teaching and learning environments. Overall, the study offers recommendations for bridging the gap, addressing the challenges, and fostering an environment conducive to the effective integration of AI teaching and learning.

Keywords: Artificial Intelligence (AI), Integration, Effectiveness, Satisfaction, Pedagogical, Engagement.

INTRODUCTION

Artificial Intelligence (AI) has emerged as transformative technologies with the potential to revolutionize various sectors, including education. As AI continues to gain prominence, there is ongoing debate within the academic community regarding its feasibility and impact on teaching and learning. Despite the discussions and concerns many colleges and universities worldwide have witnessed the growing utilization of AI tools by the students, while faculty members are still exploring ways to effectively incorporate AI into their teaching practice. Simultaneously policymakers are deliberating on regulation to govern the use of AI in education setting. This research aims to bridge the gap between students' engagement with AI application and faculty members satisfaction with its integration in to teaching and learning process. The primary objective of this study is to

investigate the perceptions, challenges, and practices associated with the incorporation of AI technologies in the education sector. By inspecting the common practices among students and analyzing variation in faculty members responses to AI tools, the study gets to identify the primary causes of the gap that exists. Furthermore, the research aims to shed light on the key factors that influencing faculty members satisfaction rate with AI integration. It explores the impact of AI on pedagogical approaches and overall teachings efficiency. The study investigates the impact of artificial intelligence (AI) on pedagogical approaches and overall teaching efficiency. Utilizing survey methodology, it targets faculty members across diverse academic disciplines in multiple universities. By analyzing survey results, the research aims to identify existing gaps and assess faculty attitudes towards AI integration. The findings are expected to contribute to the ongoing discourse on AI-driven education and provide valuable insights for colleges and policymakers to enhance and regulate the use of AI in teaching and learning environments. In summary, this study aims to bridge the gap between students' engagement with AI tools and faculty members' satisfaction with its integration into educational practice. By investigating the perceptions, challenges and practices associated with AI integration environments, the research pursues to provide recommendations for addressing the gaps and fostering an environment conducive to affective integration of AI in teaching and learning. This study also aspires to contribute to the ongoing discourse on AI-driven education and offer valuable insights for colleges and policymakers to enhance the use of AI in educational settings.

LITERATURE REVIEW

AI impact on academic performance of students

AI emerges as a topic of debate as a tool which, in case of shaping positive out-comes, can improve the results among learners. Some of the research shows that introduction of AI into education will ensure that the individual approach is given to everybody since it is ideal for all of them.

For example, two ITSs are – Dream Box and Smart Sparrow which are based on real-time analysis of the learners and the type of learning content in which the tutors change the level of their intervention depending on the analysis of performance and achievement (Holstein et al., 2019). It serves a purpose of delivering information more efficiently than the conventional means of learning that people are acquainted with referred to as tuition in the general sense.

For example, Carneghi Learning and Knewton as examples of intelligent tutoring strategies connected with mathematics and science still point out that achievement grows where result feedback and additional practice questions are delivered if weak results have been achieved (Pane et al., 2014). As stated by Luckin et al. (2016), it is possible to increase the academic performance of students and pupil engagement and critical thinking.

Still, there are some disadvantages listed below, whereby Smart AI affects the student's performance in academics. Drawing on some scholars' data, it is possible to state that the use of AI in education may extend rather than decrease emerging gaps (Zawacki-Richter and Olina, 2019). Moreover, it was established that efficiency of AI tools is another factor that defines the quality of their implementation, and their degree of assimilation in the learning environment (Roll & Wylie, 2016).

Faculty member perception towards integrating AI in education.

On the views of the faculty regarding the application of Artificial Intelligence in education, there are positive and negative impressions. Although most of the teachers know the benefits of having AI in teaching, such as reduction of time-consuming activities, as well as analysis of the outcomes achieved by students, there are concerns and doubts.

According to the findings, the first group of participants as enthusiasts in the use of technologies in teaching and

learning activities demonstrates a more positive attitude towards the use of Artificial Intelligence in education. They understand how AI can enhance structured, self-paced learning, automate grading procedures, and generate useful insights (Rodríguez-Triana et al., 2020). For instance, technologies can perform mundane tasks, thus leaving the instructors with more time to offer their directions to the learners (Nawaz & Gomes, 2019).

On the other hand, there is noticeable concern and caution among the faculty, especially regarding the accuracy and the morality of AI. Fears of automated systems eradicating jobs, invading privacy, and depriving students of the personal touch are real and have been voiced (Bates, 2019). Moreover, some teachers believe that they are not ready to assist AI tools in teaching, as they do not receive proper training or materials (Jääskelä et al., 2020).

AI added value for faculty in education.

There are additional values that the application of AI can bring to the faculty members when it is implemented in education. The use of AI tools could enhance student learning behaviors and achievement by providing deeper information to the teachers about their students. For example, learning analytics used in learning management systems help to deliver the right support as soon as it is needed by detecting the struggling students (Siemens & Long, 2011).

In addition, the use of AI in grading and providing feedback may also increase efficiency in performing administrative work. Such intelligent essay marking systems such as the one that has been developed by the Educational Testing Service or ETS for short have been evidenced to be as effective as the regular human graders and this will in the long run save faculty a lot of time for other constructive endeavors (Shermis & Hamner, 2012).

AI can also enhance the professional development of teaching faculty by pointing out where the instructors would need additional training or development, highlighted from the performance of the students. This ongoing process can assist educators in making necessary amendments to their course delivery and remain updated on current trends in the field of learning.

Challenges encountered the integration of AI in education.

However, the idea of implementing AI in education has its share of issues and challenges. The first is the question of convenience, particularly with regard to data privacy and protection. Since AI systems rely heavily on data to deliver their optimum performance, it is crucial to safeguard the student's sensitive data. Data privacy issues are in a way that it can erode the public's confidence in AI tools and limit their use (Slade & Prinsloo, 2013).

Another key issue that can be identified is the issue of digital divide. Currently, not all educational institutions can have access to the necessary technological platform for implementing AI solutions. This means that it can deepen the differences in the quality of resources within and between schools, therefore amplifying the inequalities in education (Van Dijk, 2020).

Another problem is related to the explainability and audibility of AI algorithms. For the educators and students, it becomes difficult to explain how a particular AI system works and makes decisions and thus they may develop skepticism or resistance. Making AI systems accountable and their decision-making process interpretable is important to build confidence in all the stakeholders (Burrell, 2016).

Furthermore, a massive professional development with adequate and sufficient support for the faculty is essential to implement AI effectively in education. A major concern that has been noted is that many educators might not possess adequate knowledge and expertise to properly integrate AI tools into learning and teaching processes, hence the need for extensive training as well as relevant professional development resources (Gunn & Steel, 2012).

METHODOLOGY

The study was based on several steps to compare the use of AI by students and by faculty members. The research involves these steps, shown in Figure.1:

1. Literature review: The research starts by conducting a comprehensive literature review from published articles related to the integration of AI in teaching and learning. The research identifies the main findings and pays attention to any gaps found in use of AI in comparison study.
2. Define Objectives: The research defines the objectives clearly. Which aspects of AI in teaching are considered for the purpose of this research? The main objective is to compare the AI usage by students and faculty members. Finding the gaps and suggesting area of improvements and overcome any negative impacts.
3. Determine the research questions: The research questions were determined and guided the research. These two questions were the main questions of this research:
 - a. How do students and faculty members use AI in teaching and learning context?
 - b. How do students and faculty members differ in the use of AI?
4. Data collection: the research question collects data from previous published articles to directly observe how AI is used in teaching and learning context. The re-search chooses publications from several regions and several universities to find how AI is integrated to educational settings.
5. Data analysis: The collected data is then analysis to compare the experiences of students and faculty members and find out similarities and gaps in the use of AI.
6. Interpretation and findings: Write up the research findings of the analysis in relation to research objectives and questions. Identify any significant gaps highlighted in the comparison of AI use between students and faculty members. Consider limitations and suggest areas for further investigation.

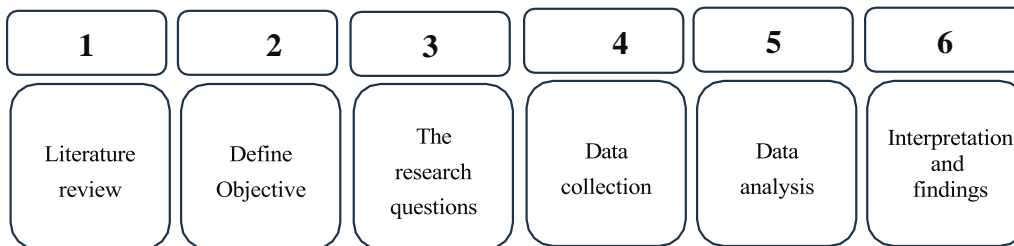


Figure.1 The research six main methodological steps.

DISCUSSION AND ANALYSIS

This study shed light on the key factors influencing faculty members' usage rate of AI in teaching and learning. The study shows the impact of AI in pedagogical approaches and its impact on overall teaching effectiveness. From the several article results presented and compared in the literature review part it was concluded that there is a gap between student usage rate and faculty members usage rate in 75% of the universities included in this study. Many factors are affecting the faculty members' attitudes towards AI integration, including its challenges and limitations. This study gathered comprehensive data from research papers published recently showing faculty members AI usage rate across diverse academic discipline in several Universities. The main Finding from this research is the huge gap in between student usage rate and faculty members usage rate. Based on the previous study shown in the theoretical background summarizing more than twelve different research papers, it is found that only 50% of faculty members are using AI in teaching and learning while 100% of students are

utilizing AI in several teaching and learning tasks.

One of the main findings is also that faculty members are using AI in a very limited caution manner, while students are already utilizing AI in most of their assignments and projects. This gives an indication and urges the need for clear instruction to regulate the use of AI in teaching to eliminate its negative impacts and to ensure that students skills are improved, and courses outcome were achieved. It is expected that these guidelines will help to contribute to the ongoing discourse on AI- driven education. Also, provide valuable input for colleges and policy makers to enhance and regulate the use of AI in teaching and learning environments.

The study shows AI impact on academic performance of students. It was con-firmed that AI serves a purpose of delivering information more efficiently than the traditional means of learning. It was clear that it is possible to increase the academic performance of student's engagement and critical thinking.

The study also investigates faculty members' perceptions of integrating AI in education. There are several different opinions regarding the use of AI in education, some are positive, and some are negative. Although most of the faculty members know the benefits of having AI in teaching such as personalized students centric teaching, automation of faculty members' tasks, analysis and critical thinking skills, improvement of quality, enhancement of advanced skills, time saving and other positive benefits, there are concerns and worries.

According to the findings from ten reviewed papers, the first group of faculty members who effectively use technologies in teaching and learning activities shows a more positive perception towards the use of Artificial Intelligence in education. They have the knowledge needed to know how AI can enhance teaching and learning improve self-paced learning, automate grading, and generate useful tasks.

It is noticed that on the other hand, there is a major concern regarding the ethical considerations of using AI to help students do their tasks, projects, homework, and assignments. few teachers, which is considered less than 20% believe that they are not ready to integrate AI tools in teaching, as they do not have enough knowledge and suitable training. There are added values that the use of artificial intelligence can bring to the faculty members when it is implemented in education. Utilizing AI tools enhanced student learning behaviors and achievement in most of the cases demonstrated in the theoretical study of this research. This was done by providing more information to the faculty members about students, analyzing the learning performance to help deliver the needed support, and detecting the students who need help or academic support. The use of AI can increase efficiency in performing administrative work. This was noticed in most of 90% of the usage of faculty members, helping in administrative tasks for instance, writing emails, writing instant feedback for students, sending notifications, advising, and monitoring students' academic performance, monitoring students' theoretical absent rate and other administrative duties.

Overall, the study offers recommendations for bridging the gap, addressing the challenges, and fostering an environment conducive to the effective integration of AI teaching and learning.

CONCLUSION

The study has shown that there are many benefits of using AI in teaching and it offers effective support and revolutionizes the teaching and learning process including automating most of the faculty members tasks, personalizing the student's needs, providing immediate guidance and responses, improving decision making, enhance critical thinking. At the same time, it poses ethical and economic challenges. Its impact depends on how it is utilized.

There is still a huge gap between students and faculty members' usage. The literature shows that all university students are using AI in several ways, while only 50% of faculty members are utilizing AI in teaching and learning. It is also found that no regulations or guidance instructions yet managing the use of AI in teaching and learning.

It is recommended to formulate a clear regulation explaining the methods of integrating AI in teaching paradigm to enhance its positive impact and avoid any negative potential affect.

Furthermore, it is important to approach this topic with a deep knowledge about the use of AI and how it might affect future generations. Educators and decision makers need to understand the implications of AI in teaching and recognize all its benefits, challenges, and limitations. A thoughtful study and discussion are needed to ensure responsible method of AI integration and to harnessing its benefits.

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