Application of A.I in Higher Education

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Abstract- This research aims to reframe the discussion around AI in higher education, emphasizing its potential to create a more adaptive and student-centred learning environment.

The focus will be on:

- **Personalization through AI: Examining how AI can analyse student data (learning styles, strengths, weaknesses) to personalize educational experiences.**
- **Adaptive Learning Systems: Investigating how AI-powered platforms adjust learning content and difficulty based on student performance.**
- **Optimizing Learning Pathways: Exploring how AI can recommend courses, resources, and support systems tailored to individual student goals.**

The report will address:

- **Benefits: Improved learning outcomes, increased student engagement, and support for diverse learning styles.**
- **Limitations: Potential biases in data analysis, need for human oversight, and ensuring equitable access to AI-powered tools.**

INTRODUCTION

Higher education is fundamentally associated with advances in innovative technologies and high computational capacities of the intelligent machines. Hence, the developments in the field of artificial intelligence provides new opportunities and challenges for teaching and learning in the context of higher education; moreover, artificial intelligence has the potential to make effective changes in the core design of institutions in higher education. Artificial intelligence (AI) applications in education are on the rise and have received a lot of attention in the last couple of years. AI and adaptive learning technologies are prominently featured as important developments in educational technology in the 2018 Horizon report (Educause, 2018), with a time to adoption of 2 or 3 years. According to the report, experts anticipate AI in education to grow by 43% in the period 2018–2022, although the Horizon Report 2019 Higher Education Edition (Educause, 2019) predicts that AI applications related to teaching and learning are projected to grow even more significantly than this.

In 1950s, Alan Turing proposed a solution to the question of when a system designed by a human is 'intelligent.' Turing proposed the imitation game, a test that involves the capacity of a human listener to make the distinction of a conversation with a machine or another human; if this distinction is not detected, we can admit that we have an intelligent system, or artificial intelligence (AI). It is worth remembering that the focus on AI solutions goes back to 1950s; in 1956 John McCarthy offered one of the first and most influential definitions: "The study [of artificial intelligence] is to proceed on the basis of the conjecture that every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it." (Russell and Norvig 2010).

It is claimed that artificial intelligence is playing an increasing role in the research of educational technology, management sciences and operational research areas. Intelligence is commonly considered as the ability to collect knowledge to solve complex problems. In the near future intelligent machines will replace human capabilities in many areas. Artificial intelligence is the study of intelligent machines and software that can reason, learn, gather knowledge, communicate, manipulate and perceive the objects. John McCarthy coined the term in 1956 as branch of computer science concerned with making computers behave like humans. It is the study of the computation that makes it possible to perceive reason and act. Artificial intelligence is different from Psychology because it emphasis on computation and is different from computer science because of its emphasis on perception, reasoning and action. It makes machines smarter and more useful. It works with the help of artificial neurons (artificial neural network) and

scientific theorems (if then statements and logics). AI technologies have matured to the point in offering real practical benefits in many of their applications. Major artificial intelligence areas are Expert systems, Intelligent computer aided instructions, Natural language processing, Speech understanding, Robotics and sensory systems, Computer vision and scene recognition, Neural computing. From these expert system is a rapidly growing technology which is heaving a huge impact on various field of life. The various techniques applied in artificial intelligence are Neural network, Fuzzy logic, Evolutionary computing, Computer aided instructions and Hybrid artificial intelligence.

LITERATURE REVIEW

The birth of AI goes back to the 1950s when John McCarthy organised a two-month workshop at Dartmouth College in the USA. In the workshop proposal, McCarthy used the term artificial intelligence for the first time in 1956 (Russel & Norvig, 2010, p. 17): The study [of artificial intelligence] is to proceed on the basis of the conjecture that every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it. An attempt will be made to find how to make machines use language, form abstractions and concepts, solve kinds of problems now reserved for humans, and improve themselves. Baker and Smith (2019) provide a broad definition of AI: “Computers which perform cognitive tasks, usually associated with human minds, particularly learning and problem-solving” (p. 10). They explain that AI does not describe a single technology. It is an umbrella term to describe a range of technologies and methods, such as machine learning, natural language processing, data mining, neural networks or an algorithm.

Artificial intelligence is currently progressing at an accelerated pace, and this already impacts on the profound nature of services within higher education. For instance, Deakin University in Australia already applied IBM’s supercomputer Watson as an emerging form of artificial intelligence and a solution to provide students with advice (Moles & Wishart, 2016). This innovation significantly made efficient modification on the quality of services and workforce and dynamic time within the university. Hence, it should be pointed out that ‘machine learning’ is a growing research area in the field of artificial intelligence.

Artificial intelligence (AI) is defined as tools or instruments used extensively in different cities or campuses all over the world. They include some technologies like smart phones, internet, search engines, different apps, and household appliances. Artificial intelligence that everyone faces in everyday life, is the complicated set of software in the iPhone’s Siri, Although it can be considered as AI with low complexity, it is labeled as an artificial intelligence project in America since 2001. In 2007, the apple company used this application in iPhone operation system. Nowadays, AI can be used by Google for its search engines. Moreover, AI is used in the engine, breaks, and navigation systems of all new cars.

OBJECTIVES OF THE STUDY

To find out the nature and scope of AI application in the context of higher education

- To find the role of AI in revolutionizing the entire learning and teaching process.

SCOPE OF STUDY

- Artificial intelligence can automate basic activities in education, like grading
- Educational software can be adapted to student needs.
- It can point out places where courses need to improve.
- Students could get additional support from AI tutors.
- AI-driven programs can give students and educators helpful feedback.
- It is altering how we find and interact with information.
- It could change the role of teachers.
- AI can make trial-and-error learning less intimidating.
- Data powered by AI can change how schools find, teach, and support students
- AI may change where students learn, who teaches them, and how they acquire basic skills.

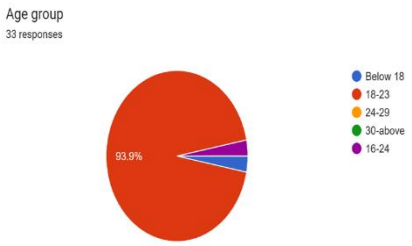
NEED OF STUDY

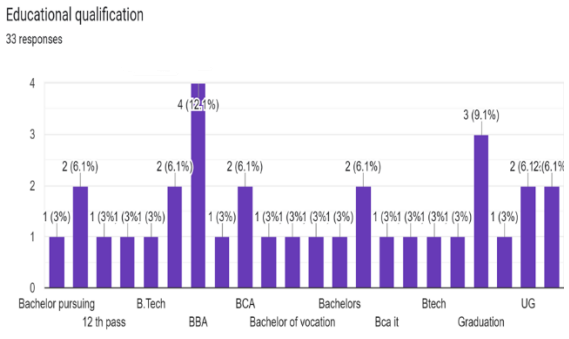
To identify how AI is transforming industries, creating new job opportunity .
To identify how studying ai foster critical thinking analytical skills, and problem -solving abilities.
To identify how AI can be used as a tool for creativity ,and innovation.
Identifying potential gaps for implementing AI in higher education.

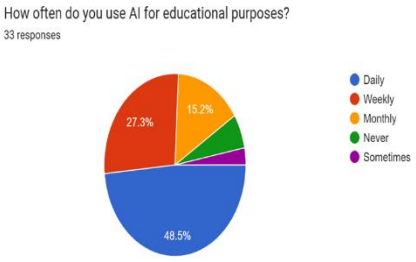
RESEARCH METHODOLOGY

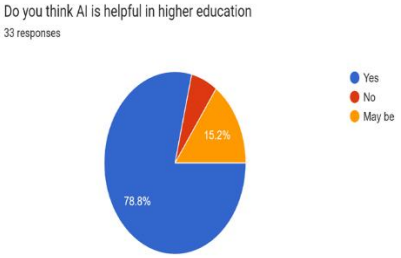
The purpose of a systematic review is to answer specific questions, based on an explicit, systematic and replicable search strategy, with inclusion and exclusion criteria identifying studies to be included or excluded (Gough, Oliver & Thomas, 2017). Data is then coded and extracted from included studies, in order to synthesize findings and to shine light on their application in practice, as well as on gaps or contradictions.
Data will be collected through questionnaire and survey from the population.it will involve the data collection from web and relevant research paper.

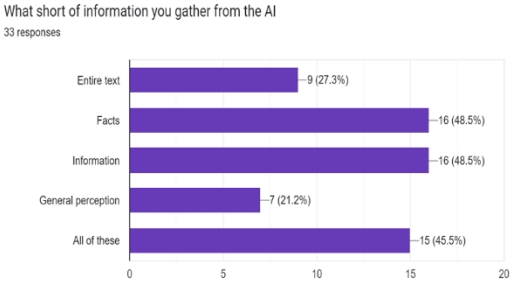
DATA COLLECTION AND INTERPRETATION







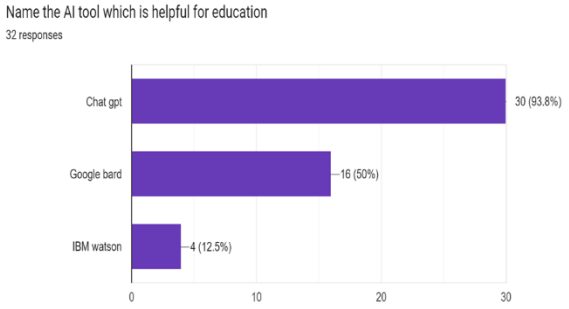


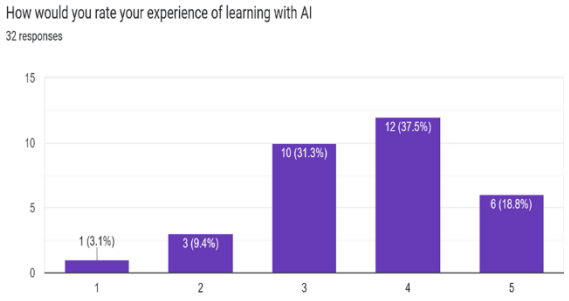


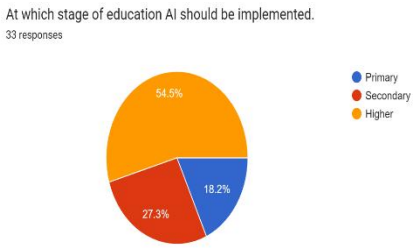
1. The survey question was "What short of information do you gather from the AI?" Here are some of the findings:

- Facts are the most common type of information people gather from AI, with 48.5% of respondents selecting this option. This suggests that people trust AI to provide them with factual information.
- Nearly as many people (45.5%) said they gather all of the above types of information from AI. This suggests that people use AI for a variety of purposes, and that they don't rely solely on AI for one type of information.
- Less than a third of respondents (27.3%) said they gather information from the entire text. This suggests that people may not be reading everything that AI generates, and that they may be skimming to find the facts they need.
- Other options people selected include "general perception" (21.2%) and "information" (48.5%). "Information" is a broad term, so it's not clear what kind of information people were

referring to when they selected this option. "General perception" is also vague, but it could mean that people are using AI to get a general sense of a topic, rather than learning specific facts.







1.Sure, the pie chart you sent shows that most respondents, at 54.5%, believe AI should be implemented at the primary level of education. Following that is secondary education at 27.3%, and then higher education at 18.2%.

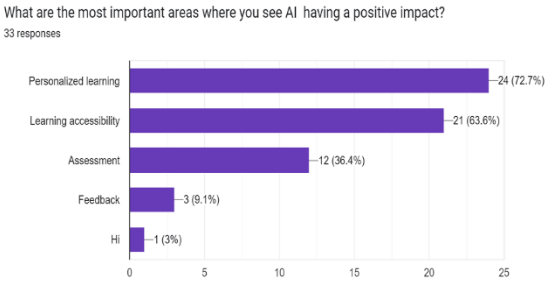
- Overall, the data suggests that a majority of respondents believe AI should be introduced at all levels of education, with the strongest sentiment for primary education
- The survey question was "What are the most important areas where you see AI having a positive impact?"

The most common response was personalized learning, with 72.7% of respondents selecting this option. This suggests that people believe AI can be used to tailor education to the individual needs of each student.

The second most common response was learning accessibility, with 63.6% of respondents selecting this option. This suggests that people believe AI can be used to make education more accessible to students with disabilities or other challenges.

Assessment was selected by 36.4% of respondents, and feedback by 9.1%. This suggests that people believe AI can be used to automate some aspects of assessment and feedback, but that human educators will still be important for these tasks.

Overall, the survey suggests that people believe AI has the potential to have a positive impact on education in a number of ways, particularly by personalizing learning and making it more accessible pen spark



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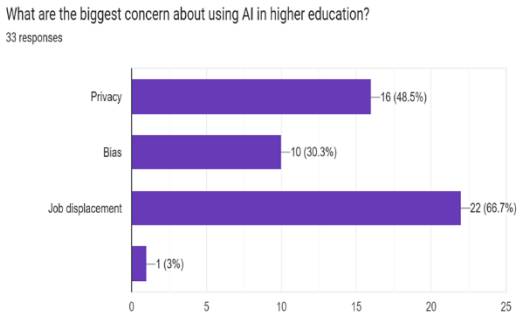
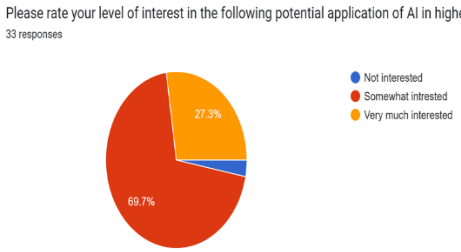


1. The biggest concern is job displacement, with 66.7% of respondents selecting this option. This suggests that people are worried that AI will replace teachers and other staff in higher education.
   The second biggest concern is bias, with 30.3% of respondents selecting this option. This suggests that people are worried that AI systems could be biased against certain groups of students.
   Privacy was a concern for 48.5% of respondents. This suggests that people are worried about how AI systems will collect and use student data.

Overall, the survey suggests that the biggest concerns about using AI in higher education are job displacement, bias, and privacy.



CONCLUSION

In conclusion, the survey reveals deep anxieties surrounding the implementation of AI in higher education. The predominant concern (66.7%) is job displacement, highlighting a fear that AI will automate tasks currently performed by human faculty and staff. This could lead to significant job losses and a restructuring of the higher education workforce.

Furthermore, a substantial portion of respondents (30.3%) expressed concerns about bias in AI systems. This is a valid concern, as AI algorithms can perpetuate existing biases in society if not carefully designed and monitored. Biased AI systems could disadvantage certain student groups in areas like course recommendations, grading, or even student support services.

Privacy is another significant concern (48.5%), reflecting anxieties about how student data will be collected, stored, and used by AI systems. Clear guidelines and regulations are needed to ensure that student data privacy is protected when using AI in educational settings.

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