

ROLE OF ARTIFICIAL INTELLIGENCE AS GAME CHANGER FOR HIGHER EDUCATION: PERSPECTIVES OF UNIVERSITY FACULTIES AND STUDENTS

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Abstract

Artificial intelligence – the concept which erupted and manifested in current age, has also influenced education in various aspects. The current study was made to describe how the utilization of Artificial intelligence technologies in an educational setting has transformed traditional education system in the perspectives of university teachers, and students. The study was designed as qualitative research. Narrative data collection was made from semi-structured interviews. The findings of the study described the role of artificial intelligence as game-changer technology from traditional to digital era. It was recommended that universities should incorporate artificial intelligence to their curricula, but with necessary precautions, from its drawbacks.

Keywords: Artificial Intelligence; Transformations; Innovative Solutions; Technology Acceptability Factors; Technology Acceptance; Utaut2.

INTRODUCTION

Artificial intelligence has been increasingly identified as a game-changer in higher education due to various functions i.e., its ability to enhance personalised teaching methods, provide efficient feedback on different activities, automative administrative tasks, and assisting in grading and assessments (Crompton & Burke, 2023). Thus, by

assisting a way towards quality education, artificial intelligence explosion is equal fame among educators, students and researchers with different angles and trends (Sharawy, 2023), across the globe with trends shifting from developed countries i.e. US, China and then towards developing countries i.e., Pakistan, and India, etc. (Njogu, 2022).

The most common uses of artificial intelligence education, at higher education today are – assessment, educational assistance, intelligent tutoring systems, and managing students learning (Aldosari, 2020). Therefore, European Commission Communication defines artificial intelligence as the systems that display intelligent behaviours by analysing the contexts, with degree of some autonomy to achieve specific goals.

So many miracles of artificial intelligence applications, actually shifting the educational paradigm from traditional to digitalisation. The concepts and terminologies are either modified to new paradigms or new concepts are being introduced. Even it is being artificial intelligenced that those who do not know artificial intelligence, will be replaced by experts in coming future (World Economic Forum, 2020).

Problem statement

The research is therefore attempted to explore potential role of artificial intelligence in higher education transformation as a complete game changer technology to observe its impact in all walks of education from teaching-learning to assessment; tutoring to personalised learning systems; and real-time feedback and support mechanisms.

Research Objectives

The study was made to explore the role of Artificial intelligence in all sort of transformation in educational system at university level.

Research Question

What is the role of Artificial intelligence in all sort of transformation in educational system at university level?

Research Significance

The study holds following significant features:

- ∞ For policy makers, and university administration, identifying the revolutionization of the learning landscape, artificial intelligence research may be helpful to identify its strengths and weaknesses for further effective implementation in education systems.
- ∞ For the students artificial intelligence transformation may help to adopt more effective personalized and self-paced learning. This level of customization can boost student engagement and motivation, making learning more enjoyable and effective.
- ∞ For parents, identifying their offsprings' progress, strengths, and risky areas where they need more help.

Implication

The research findings shows that it will be important for educators and policymakers to explore the intersection of education and artificial intelligence. The application of machines in learning environments is only one variable in a multifaceted equation. We have to consider barriers that prevent an even distribution in technological resources and how to overcome them. We must also ensure that teachers are prepared and empowered to leverage artificial intelligence. Assuming these elements are addressed, the possibilities of AI-powered learning are infinite. (Maskey, 2020)

Overall, artificial intelligence has the potential to revolutionize education by making it more adaptive, efficient, and inclusive, ultimately benefiting both students and educators. However, it's important to consider ethical and privacy concerns and ensure that artificial intelligence is used responsibly and transparently in educational settings.

LITERATURE REVIEW

Artificial intelligence has been denoted as stimulation of human intelligence process by machines. This made by computational techniques which work on following/ exploiting the patterns with which human nervous systems works to feel, learn and act (Slepankova, 2023).

In the process of higher education most important step which has been focus of concern since long, is – quality education (Brady & Bates, 2016). This is term which covers all aspects of education such as role of teachers, students, school cultures, and overall educational environment (Aminbeidokhti et al., 2016). Literature indicates that the artificial intelligence is transforming each and every aspect of this education system mentioned before (Hutson et al., 2022; Irshad Hussain et al., 2022). A probe into the fascinating world of artificial intelligence in higher education highlights following key-points.

Optimized Teaching and Administrative Processes

The role of teacher was to create learning atmosphere and to manipulate that according to his own created situations and sensations (Crompton & Burke, 2023). The teacher's autonomy and heroic role has always been infested in the educational process whether there is use of traditional teacher-centred techniques, or modern student-centred techniques (Seldon, 2020). The surge of artificial intelligence technology is observed to transform his role as only to provide collaborative learning environment and his heroic role is seemed to be lessened by overuse of artificial intelligence consultancy by the class students (Atlas, 2023). Similarly, the artificial intelligence feedbacks for learning process is also influencing the assessment (feedback) systems of educational process from only-human interactions to the integration of computer-human interactions (Olga Pilli, 2014).

Personalized Learning

Customisation features of artificial intelligence technologies (e.g., chatbots, and virtual assistants) towards learning enhance cognitive preferences of individual learning. Their guidance regarding artificial intelligence is available to the students round the clock. It is

playing a significant role in engaging students towards academic accomplishments, and retentions (Baha MICHAEL, 2022; National Artificial intelligence Policy, 2022).

Further, data analysis software such as Statistical Package for Social Sciences (SPSS version 29 and onwards), and Minitab etc. has also adopted artificial intelligence to enhance their capabilities, pattern recognition, and automated working (Ferman et al., 2020).

Thus, artificial intelligence here too playing its role in immediate and personalised learning assistant to students (Magier et al., 2023), and widening their communication circle beyond the faculty and peers (Grassini, 2023).

Interactive learning environments

Gamification techniques, and computerised simulations are although not new concepts in the world of technology. Still addition of artificial intelligence to these softwares, has transformed learning into an interactive and enjoyable experience (Gray & DiLoreto, 2016; Hwang et al., 2019) leading to enhanced engagement of students towards study, and prolonged retention rates (İçen, 2022; Korinek & Stiglitz, 2021).

Administration assistant

The power tools such as scrutinizing voluminous datasets to find out profound insights into learning behaviours, performance trends and cognitive inclinations – help the educational experts to efficiently design curricula, optimize learning trajectories and to enhance student learning outcomes (Aldosari, 2020; Crompton & Burke, 2023).

Unique Trends and Global Shifts

Systematic reviews of artificial intelligence in higher education since the last decade, indicate that artificial intelligence publications surged significantly during 2021-22 with China surpassing the US in number of studies published (Zhartificial intelligence et al., 2021). Moreover, literature also indicated that artificial intelligence researches have been a hot topic across six continents i.e., this technology is manifesting whole world (Scienze Economiche E Aziendali, n.d.). More interesting fact which was revealed by literature was that – 72% of the studies have primary focus on education (Tuomi, 2018).

It is important to mention that these reviews provide valuable insights into artificial intelligence's transformative role in higher education (Tyson, 2020). Thus, the use of artificial intelligence is seemed to revolutionising and transforming conventional pedagogical approaches, optimize administrative process and overarching educational milieu (Liu et al., 2021; UNESCO, 2019). Therefore, a plethora of scholarly inquiries is being taken to investigate the prospects and predicaments associated with the implementation of AI-powered advancements in higher education.

RESEARCH METHODOLOGY

The concept of artificial intelligence is very new in the world, although it is changing trend of researches towards technology as well (Adair, 2023), however, no proper quantitative

research tool has been adopted to measure AI as construct. Secondly, according to (Cohen et al., 2018), the topic which is less researched or there is no prior data available on the research, qualitative research design is more suitable to get probe into the topic. Therefore, qualitative research design was employed in the study to get in-depth probe into the research objectives. For that purpose, semi-structured interviews were conducted from the teachers and students to explore their perception towards acceptability of artificial intelligence in higher education.

Sampling

Purposive, snowball sampling was made to get data insight to the topic. The participation criteria was the intensity of use of artificial intelligence in the course of their job. It was found that only few universities were adopting this technology by launching artificial intelligence knowledge centres. This information was found by personal visits to different universities. The sample consisted university teachers and students, 15 each.

Study Findings

The collected data from interviews was coded and transcribed into themes and sub-themes, which are stated as follows.

Theme 1: Chatbot as major tool for Teaching-Learning Process

The study revealed that among all artificial intelligence tools, Chatbots is going as most popular tool for teaching and learning process. Especially ChatGPT, and Grammarly are most commonly used tool for preparation of lectures both by teachers and students i.e., the teachers use them to prepare lectures, presentations and class tests. Further, many teachers use tools like ChatGPT, Google Classroom, and Zoom, while others prefer Animoto, Edmodo, and Web 2.0 tools.

Teachers choose to incorporate artificial intelligence in teaching for various reasons: some for the chance to explore the world, others for its innovative ideas, its ability to provide authentic and concise answers, and to meet modern educational demands.

While, the students use these to get further learn, translate and the find the left-over points of classrooms. Thus, it has become a learning support and virtual assistant for the students round the clock.

Theme 2: Trend of self-study with artificial intelligence and diminishing teacher's encyclopaedic role

Thus, the students find it sufficient guide for their learning process. This has declined the importance of classroom, attendance and even the prestige of teacher before the students. This has appeared as a very negative aspect of the artificial intelligence in the educational process.

Theme 3: Lessening Teacher's workload from manual to digital system

The teachers' traditional workload of teachers i.e., lab work, data analysis, clinical decision makings, and classroom general assessments, are lessened from manual labour

to the digitalised artificial intelligence assistance in the form of rephrasing, paraphrasing tools, Learning Management Systems and biometric identification or QR code scanning.

Theme 4: Inoculation of some negative trends to educational process

Students' perspective indicated that artificial intelligence has been proved as good interactive and real-time tool, which students are using for all purposes such as learning, researching, and even research data analysis. Even academic writing is also made with artificial intelligence Chatbots. The students take artificial intelligence as a blessing for educational purposes. The wrong suppositions of artificial intelligence are described under following sub-themes.

1. **Incorrect Information:** But the teachers' perspective also indicated that artificial intelligence does not give all correct information. Even this point was also asked by a Chinese master trainer named Akira Murata, in an AI workshop. He was also on the point that artificial intelligence does not gives all accurate data. Rather it collects data from the people queries as well and thus data leak, and incorrect information are also observed in the AI questioning.

2. **Lack of creativity:** Moreover, addiction to artificial intelligence is going to minimise their self-creative values according to the teachers' perspectives. In the words of a teacher,

"Looking ahead, many students believe artificial intelligence could render future generations less capable by pre-empting human thought and creativity, while others see it as a disguise for human thinking or a threat to creativity."

Another one said,

"ChatGPT can be a tool that enhances creativity, productivity, and innovation. It offers logic, steps, and strategies that can be helpful in many ways. However, for youngsters who are developing their skills, especially in creative fields, it's important to use ChatGPT mindfully. Over-reliance on it might hinder the development of their own creative abilities. It's beneficial to balance the use of such tools with personal effort to ensure that creativity and independent thinking are not compromised".

3. **Threats to privacy, security issues:** Further concerns about artificial intelligence include threats to privacy, security issues, and easy access to personal data. Others see it as a curse due to potentialt misuse and privacy concerns. Most teachers believe artificial intelligence is capable of providing information services, though a few do not share this view.

4. **Deception regarding research data:** Deception regarding research data, was found another drawback of artificial intelligence in research issues. It was also described by teachers that the originality of researches is going to disappear by the students. They take writing assistance from artificial intelligence and present it as empirical research before the teachers.

Artificial intelligence is considered helpful in lab work by most teachers, though some note its limitations. All teachers agree on artificial intelligence's utility in assessment through online tools like test makers. Many teachers find Learning Management Systems (LMS) beneficial for teaching, though some prefer face-to-face interactions due to LMS's limitations.

DISCUSSION

In its unique qualitative design, the research highlighted four important facets regarding the role of artificial intelligence as game changer in higher education. These facets were use of Chatbots as most popular tool for teaching and learning process; starting of the trend of self-study with artificial intelligence among students; decreasing teachers' workload by making students autonomous in study process; and inoculation of the negative trends regarding use of artificial intelligence in educational process. These trends were further explored as provision of incorrect information, lack of creativity, threats to privacy and security issues, and deception regarding research data.

Although the concept of artificial intelligence is not very much old in the scene, still a lot of researches are being made in this scenario. The study results have been supported by many researches such as the popularity of ChatGPT among the students and teachers (Atlas, 2023; Grassini, 2023; Slepankova, 2023). However most opinions led to the generation of theme that the artificial intelligence is decreasing teachers' workload. But the literature, indicated both supporting and contrary opinions regarding this statement i.e., the AI is proved as blessing in decreasing teachers' workload in the study made by Slepankova (2023), and a trouble as asserted by Ferman et al. (2020).

The opposing opinions actually state it as trouble due to the increased trend of AI-plagiarised content in the academic writing. Although this aspect was also highlighted by the present study interviews as well and described in the next theme generated in the study i.e., "inoculation of wrong suppositions in the learning process".

Decline in the users' creative thinking was another aspect or the last theme. It is also supported and opposed by researchers (Qayyum et al., 2024; Silvia, 2015). The opposers of this statement are at point of view that the artificial intelligence is new world-wide trend which cannot be avoided. So, it is mandatory to have expertise over this technology. As regard to creative thinking, it is said, that the creativity should not be taken as single mental construct, rather it should be taken as integrated to digital technology (Kammer & Gomila, n.d.; Tahan, 2019). However, the supporter of this statement were more than the opposers (Ferman et al., 2020; Gado et al., 2022; Graham, 2022; Waghmare et al., 2023; Wilson et al., 2021). According to all of them, it is going to rise computer literacy, rather than to learn or enhance mind-thinking abilities. Therefore, it is going to generate only robots rather than humans (Giambona et al., 2023; İçen, 2022; Khalifa & Albadawy, 2024a, 2024b; Sufyan et al., 2024).

CONCLUSION

Artificial intelligence, is very swiftly playing its role as game changer in higher education according to perception of teachers and students. The educational system is getting revolutionised with artificial intelligence technology as fast as eye blinking. Chatbots and LMS are most popular artificial intelligence tools in Pakistan. It is also removing teachers' burden of workload, by different assisting tools; proving 24/7 guidance and help to the students in learning process. Thus, it is making the teaching-learning process very easy by fulfilment of diverse learning needs, making education more inclusive and effective. However, like most of other innovations, it is also accompanied by various drawbacks and negative trends such as, privacy issues, deception, and lack of creativity among the students.

Study Limitations

Limitations of the study were:

1. The qualitative research design made the study restricted to the sample/ research area to Lahore district only.
2. Short time spent on the research i.e., only 1 month for data collection.

Directions for Future researchers

The study was designed as qualitative research which allows interaction to a small sample. Therefore, based on its research design and findings, following recommendations are made for the future researchers:

1. A quantitative standardized tool for research can be made to cover its rapidly spreading influence.
2. The teachers' perception regarding artificial intelligence was that it is bringing a decline in creativity skills among students – is matter of serious concern which need to be addressed in further researches.
3. There is dire deed for proper and strict implementation of government policies regarding use of Artificial intelligence to avoid security and other issues.

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