
ROLE OF ARTIFICIAL INTELLIGENCE IN MODERNIZING EDUCATIONAL SYSTEM IN PAKISTAN: CHALLENGES AND THE WAY FORWARD

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ABSTRACT

Artificial intelligence (AI) is one of the most demanded technologies in various fields of human lives including education. Many countries have already amalgamated AI in their education system such as Japan, China, South Korea, Malaysia, and Singapore. The education system of Pakistan, which is already in a terrible state, requires revamping. Therefore, AI can remold the educational system and further enhance the access of students to education in Pakistan. AI can improve the learning pace of students by dealing with the attitude of students. However, AI faces severe challenges due to the absence of an adequate infrastructure of system, potential strategy and policy. This research paper emphasizes on the requirement of modernizing the educational system of Pakistan. It points out the challenges that are encountered by the initiatives of such a modernizing process of the educational system. This research paper also composes suggestions for future implementations of AI in education in Pakistan. This research paper employs the theory of modernization to respond to the following questions: why is AI necessitated in the academia in Pakistan? This research paper also maneuvers to answer the questions like is there enthusiasm in the public sector to approve the entrance of AI in the educational system of Pakistan and what are the hurdles in the process.

KEYWORDS

Artificial intelligence, Modern education, Web-based Technology

INTRODUCTION

Education is one of the indispensable elements of each society in this modern era. Education is connected with the other spectrums of life and it leaves significant impact on those scales of life. Education is mandatory for all the circles of society. As according to the Nelson Mandela, the first president of South Africa considers education as the most powerful weapon that can transform the world (Ullah, 2019). However, during the outbreak of the pandemic COVID 19, the challenges faced by education became vividly transparent. These challenges countered by education are not limited just to the outbreak of pandemics. For instance, financial problems, unavailability of highly qualified teachers, easy approach to education and increased dropout rate are some general problems faced by the educational system of Pakistan (Ahmad, Rahmat, Mubarik, Alam, & Hyder, 2021).

The quality of education at primary and secondary level has been waning profusely, in Pakistan. It is cognizant that the education of science is specifically in terribly alarming condition, hence, immensely requires better initiatives and improvements to achieve perfection. Since the time of independence Pakistan has faced scarcity of teachers, the condition of laboratories were also condemnable because of being poorly equipped and most importantly the curriculum hardly meets with the up-to-date and modern demands of education, these problems remain continuous in various educational institutions of Pakistan. Furthermore, these issues rank Pakistan as a country with one of the lowest rate of literacy in the world.

There have been endeavors to revise the curriculum according to the ideological, ethical and cultural standards and principles of Pakistan along with the requirement of national necessities in various fields of science and technology such as medicine, engineering and agriculture etc. the increase in the allotment of the infrastructure of education or the elimination of the hindrances in the allotments could contribute significantly in elevating the literacy rate in the population, in Pakistan. The distribution of budget of social sector for the purpose of progress has been nadir which is also oblivious from the allotment of the lowest budget for education (Memon, 2007). However, with the eruption of the COVID 19 globally coerced on the closing of educational institutions along with other organizations and offices to manage and halt the spread of deadly pandemic, as it ceased the entire world. This circumstance has confronted the educational system in the whole world and compelled academicians to consider creative ways as substitute of traditional teaching method in a classroom in the lockdown situation (Shahzadi & Alam, 2021). Gradually this situation resulted in a rapid adoption of Ai based tools instead of traditional classrooms, transforming the educational system in the entire world, including Pakistan.

Commonly, AI is perceived as the capability of machines or computers to behave and

portray as humans such as to think and to act like humans by the public. It manifests the endeavors inclined to the system that is digitalized or computerized to impersonate the mind and actions of individuals. Therefore, the principle definition of AI can be described as ingenious simulation of the conduct or intellect of human by tools or programs. Timms (2016) delineated that it might be a delusion of the existing arrangement that compels to view AI could only exist and utilized as in the form of computer at home. Meanwhile, it does have the ability to reach into various aspects of our lives with different functionally and different format (Göçen & Aydemir, 2020). It also helps in monitoring the behavior of students and their performance more efficiently. Chronologically, it has been very tricky to observe the activities and performance of students in the classroom, in universities, colleges and schools. It was not very simple to convey a lecture or a lesson to the students in the calm and quiet environment because of non serious attitude of students.

LITERATURE REVIEW

The educational system of Pakistan immensely requires modernization, because it lags behind the educational system of several countries of the world. The literacy rate in Pakistan is one of lowest in the world, and the quality of education in governmental institution is very bad. However, the Artificial Intelligence can play a significant role in the improvement of educational system and can also make the education easily accessible to everyone.

This research paper is based on a New Modernization theory that analyses the procedure of social development and the progress of societies (Goorha, 2017), which refers to an American sociological theory which delineates that there will be an unavoidable transformation of society for the progress and development of the way of their existence. This theory emphasize on the requirement of the accomplishments of people through formal schooling while utilizing modern technologies. The New modernization theory points towards the development of trained workers with the customary norms, but with the skills of modern science and technology. Modernization of the education does not mean simple acceptance of the up to date trends. It also covers an essential alteration of educational structures.

The term educational modernization is polysemous that engulfs a broad collection of reforms and development in educational sector. It could be perceived as the improvement in educational system while intended to become accustomed with the requisites of present day society and technology, at the most fundamental level. It is not only related to the embracement of new technologies but also incorporates the revamping of the curriculum, creative teaching techniques, and modification to the policies of education. The objective of educational modernization typically integrates the quality of education to improve it, encouraging the inclusive development of

students and educating graduates as per the requisites of 21st century expertise. The objective of revolutionizing and transforming of the educational system also includes the organizing of the youth for the life with modern gadgets in a digitalized society. The secularized and scientific education performs as a key indicator of modernization. While, the AI facilitates in the amalgamation of modern standards of equality and liberty, and the modern schools ingrain the accomplishment of incentive. These principles can establish the foundation and augmentation of distinct rationality and reasoning (Bhuyan, 2020).

It was beginning of the 20th century that witnessed the modernization of the educational sector and new perceptions and practices of education appeared. John Dewey, an educational reformer, asserted on the approach to education that is near to student centric, stressing on the significance of practice and experience. Similarly, the incorporation of AI in the educational system plays its role in accordance to requirements of students. In this period the importance and support for personalized education also augmented through the rise of psychological and educational psychology. During the midst of the 20th century the educational modernization was influenced and revolutionized by the adoption of technology in educational sectors. The advent of modern technologies such as television, computers and the internet has altered the traditional approach of education in the world. The commencement of education from remote areas, learning online and the availability of textbooks online, transformed the process of education more accessible in the developed countries. In the educational sector, the present day inventive technologies are the most significant resources in the devising of a modernized expert. Modern day technologies are essential for the progress of the society, to impact the lives of people, enhance the quality of education in the world apart from the arrangement, metropolis and distance. Therefore, in the process of modernizing education, technology lies at the center of it in the contemporary era which has a potential to stimulate to revamp and revolutionaries the educational system (Abitoye, et al., 2023).

The cognizance of the requirement of the modernization of education is reliant on a sequence of certain essentials. For the modernization of education and incorporating AI in the educational system technology and digital education are mandatory. Technology is altering the procedure of education through online courses and educational applications. In the process of modernizing educational institutions globalization and multicultural also play important roles. In Pakistan several online courses are developing essential skills in students, such as DigiSkills, Coursera and Khan academy. In a modern society students are considered to have a point of view based on across the culture and international standpoint, hence leading to the enhanced comprehension of global citizenship and various cultures and their sensitivity. The modernization of education ultimately directs towards the improvement of quality of

education and its effectiveness, hence resulting in the assurance of the accomplishment of improved results in information and expertise (Sizhuo, n.d.).

The conception of the assistance of AI in the field of education is not completely new since certain educational institutions decided on to select the tool of AI for educational functional, during the Covid-19 pandemic lockdown. During the pandemic there was rapid acceleration in the reshaping of education in to digitalized education in Pakistan. It prepared for the incorporation of AI in the educational system as an important instrument to revolutionize education of science and technology. The period of Covid-19 witnessed the increase in the employment of AI related gadgets in the fields of science and technology and in the entire system of education. The pandemic served as a channel and reckoning for the AI to promulgate and it manifested the requirement of the transformation of education to improve its quality, therefore, AI is at the front position in the tendency of modernizing education (“ShieldSquare Captcha,” n.d.).

The AI has played a considerable role in the continuation of education in Pakistan during the pandemic. One example of educational institution of Pakistan is “The City School Group” of Pakistan which joined the “Century” on the basis of partnership to facilitate students to maintain their studies while eliminating the disturbance and interruption caused due to the lockdown with the help of AI. Similarly, several other schools benefited from this scheme. As per the school administration this initiative was beneficial for both students and also teachers. Such as, on the one hand, students were able to access the desired information devoid of anytime limitations, with the help of AI. On the other hand, it bestowed teachers with the capability to prepare more proficiently for their lectures and elucidated their topics and conceptions more efficiently with evidences. Gradually, the quality of education and learning enhanced incalculably and the academics of students witnessed amelioration in the results (“AI And Education in Pakistan: Challenges and Way Forward,” 2023).

Several notable universities of Pakistan are encouraging the introduction of AI oriented courses to furnish students with the expertise and proficiencies compatible with the need of modern and digitalized world. These universities are offering such courses and programs that associated with the field AI. For example, the University of Engineering and Technology, Lahore (UET) has offered a program at master’s level in the domain of Artificial Intelligence, meanwhile National University of Sciences & Technology (NUST) introduced programs of Machine Learning and Natural Language Processing at undergraduate and graduate levels. Likewise, more universities for instance Lahore University of Management Sciences (LUMS) and Commission on Science and Technology for Sustainable Development in the South (COMSATS) have also initiated programs and courses linked with the domain of AI.

Various other collaborations with international organization by the top-notch universities of Pakistan have also been made. Pakistan based researchers worked together with the international organizations to build up revolutionary elucidation while availing the AI technologies. For example, the partnership of a team of NUST with Google widens AI generated system to forecast floods. In the same way, another team from UET Lahore teamed up with IBM to evolve a system based on AI to investigate cyber threats. These are just few examples of AI based projects initiated by Pakistani researchers with the cooperation of international organizations (2023).

Challenges

Pakistan is distressed with the complications in the upgrading of its educational system to continue with the up gradation of the world (Riasat, 2023). Meanwhile, the AI faces severe challenges not only in Pakistan but on an international level as well; however, the challenges posed by the Pakistani society in opposition to AI are given below: The challenges countered by the AI in the sector of public are comprehensive and it is confirmed by research. These challenges include problems related to ethics and politics, cultural and social and the capability to use technology. The most important disturbing and critical part is the cyber security and the privacy of data, because the whole system of AI could be shutdown even with a single negligence (Nazir, 2023).

One of the challenge to the AI is that it encounters a question that does the AI has the capability to tackle with the issues of the lowest rate of literacy in a third world countries especially in Pakistan, where the rate of literacy is below 50% and a bulk of children belonging to the rural areas could only desire for getting education in college and then to continue with their higher education. Of course, there is a need of loads of improvements in educational sector of Pakistan, however, it is important to examine the inclination of the elite class of Pakistan towards digitalization and the usefulness of AI in other sectors of life such as agriculture to increase and improve the rate of productivity (“AI And Education in Pakistan: Challenges and Way Forward,” 2023). Another argument is that the rampant influence of AI in the lives of individuals increases the risks of erosion or deficiency of decision making capacity of human beings and increasing the laziness due to the atomization of different exertions. Furthermore, it also augments the risks related to privacy and security of teachers as well as students, these concerns exists not only in Pakistan but also globally.

The AI faces resistance in Pakistan as well as in the rest of the countries due to the perception that by the time the reliance on AI has been increased, which would ultimately restrict the thinking capability of the brain of individuals. The dependence on AI resulted not only in impatient but also strained the proficient skillfulness of human beings and engendered anxiety during the requirements of physical or critical thinking activities. This side of the AI is extremely damaging for the building up of

critical thinking of students.

In the Pakistani society the AI is vastly criticized for taking over the work force due to its automation, which results in the loss of jobs because of deficiency and lack of access to modern education, however, it increases the reluctance of public to adopt AI based equipments in the educational institutions. Moreover, it is vital to keep in mind that the impact of AI on the work force and students in particular, in Pakistan is possibly complex, multidimensional and based on variety of aspects, together with raising concerns in the specific industries, jobs, policies and regulations of the government (2023).

Future

It is unquestionable that the AI has vividly a bright future in the educational institutions across the world and similarly in Pakistan. The implementation of AI and technology oriented initiatives in educational sectors would empower students significantly. The potential of AI or digital technologies was revealed through the surveys based on pedagogical inspection in the sector of information, tools to control and update the already existing information and assuring the transparency in the assessment tests of students (V. Frolova et al., 2020).

The AI is altering the education system of the world by giving personalized lessons and learning experiences that are feasible to adopt. Similarly, in Pakistan personalized lesson would have a better influence on students the weak points of students. The AI has the capability to examine and evaluate the method and rate of learning at individual level, thus it provide customized lessons and real time feedback. This permits students to perceive their topic more effectively at their speed (Riasat, 2023). This feature of AI in the educational system of Pakistan will improve the conception of students and alter the memorizing of topics, a traditional way of learning in Pakistan.

The inventive technologies connected to education are precise and relatively complicated which needs exceptional proficiencies and capability. Therefore, by approving AI in the education sector of Pakistan, the outcome of technologies in the educational system would confirm the quality of education and the results of assessments and tests of the students (Balalaieva, 2023).

RESEARCH OBJECTIVES

1. The examination of the potential of AI in the educational domain in the future of Pakistan
2. The evaluation of the challenges faced by AI in Pakistan
3. The assessment of the need for modernization of the educational system of Pakistan

4. The revamping of the educational system to digitalized education globally and the realization of its impacts on Pakistan.
5. The awareness of the reluctance of the public to adopt AI in the educational sector as well as in the other domains of life.

RESEARCH METHODOLOGY

This research paper applies electronic sources as primary and secondary research methodologies through collecting data from various platforms which included newspapers, articles and research papers. For example, it collected accumulate data from academia, Google Scholar, LinkedIn dawn and nation. These sources utilized key words such as education, AI, modernization, digital technologies etc. During the research several articles appeared concerned with the terrible condition of education and educational system of Pakistan, which is only used in the introduction to analyze the requirement of revamping the educational system of Pakistan with the help of AI.

FINDINGS AND DISCUSSION

Modernization is a procedure of transforming a society into advanced and comes with several distinct advantageous (Magistra, Firdaus, & Raharjo, 2022). In recent decades, the proceeding in technology has been very fast and it escorted considerable transformation in education through permitting new opportunities to instruct and acquire knowledge in anyplace and at any moment, while allocating new instruments and techniques to enhance the result of learning and to encourage progressive teaching methods. In the educational sector these advantageous are in the form of innovative teaching methods, effective learning and so on. Besides these advantages, the commencement of AI has uncovered students and teachers to several challenges, specifically, the hacking of data and systematic and race related prejudices.

The educational system of Pakistan, which faces inadequate monetary contributions, effectiveness of ground level for the accomplishment of programs, and deprived of quality administration, observance, control and lessons, witnessed the advent of AI oriented technologies, recently. In a Pakistani society the insecurities are profound in public regarding the advancement of AI in job sector such as the confined role of a teacher in a modern class increases the hesitance to adopt the modern techniques of education in respective institutions.

The modernization theory compels on acquiring modernized education based on the contemporary technology such as the advanced AI based pedagogical technologies. Hence, Pakistan should amplify the role of AI in educational sectors, for laying the foundations for future development and to keep up the competence with the advancement of education of developed countries.

Even though, it is ostensible that the AI can modify the education in manners that are not envisaged yet such as classrooms based on virtual reality, however, the challenges faced by AI, such as unease due to privacy issues, data base and ethical issues must have to be dealt with education (ShieldSquare Captcha, n.d.)

It is also essential to remember that the advantageous possessions of AI would certainly be impacted by the accessibility of resources such as electricity, power, internet connectivity and proficient employees, including the rules and regulations implemented by the government in the educational sector, in Pakistan (2023).

RECOMMENDATIONS

The entire world is gradually becoming digitalized and the AI is becoming an important part in the educational system globally. Hence it is mandatory for Pakistan to modernize its educational system with help of the AI to fill the bridge and assure that the public has easy access to the education.

Pakistan should reassess its curriculum and provide advance training to the teachers. To identify the advantageous of AI completely, it is essential that the teachers are fully trained in AI domain.

In the process of digitalizing education through setting up AI in it, it is natural to expect the alteration in the traditional mode of education. The access to electronic resources of education such as videos of the world best lecturers and teachers in any language, the automatically generated translation and captions of the video make speeches simple to comprehend.

Pakistan must adopt the AI in the educational sector to fill the gap between its traditional and textbook education and the anticipation offered by the AI for the advancement and improvement in the educational system. Setting up AI in the educational sector would assist students to boost confidence, enhance their abilities and learning and institute the way to a future full of success and prosperity (Riasat, 2023).

Currently, Pakistan is suffering from acute economic crisis, therefore, it is not possible to allot more budget for establishing new schools and colleges, but opting for AI and digitalized learning would help in improving the drastic condition of the education of Pakistan (“AI And Education in Pakistan: Challenges and Way Forward,” 2023). Continuous availability of power and the elimination of load shedding are also crucial for the utilization of AI based tools in education.

Surely, the AI has the ability to revolutionaries the educational sector of Pakistan, along with the downsides. It is highly recommended that effective measures should be

taken so that the AI does not create typical immense ethical issues and the technology should be confined by protected algorithms to make certain the safety and security of data and to limit the biased nature of the AI. The overdependence on AI should also be restrained to deal with the laziness and insufficiency of rationale (Abbas, 2023). It is also crucial to look up to the thriving examples while transforming the educational system. Higher Ground Education a notable program in the United States provides such an example. The objective of Higher Ground is to transform and renew the international Montessori movement. This goal is to be accomplished through the amalgamation of technology into the classroom, hence the students can access to the several learning practices, associated material and the real world appliances of knowledge (Jillani, 2023).

Pakistan has also initiated to implement AI in different sectors; however, in general the rate of development of Pakistan in technology continues to slow. Furthermore, the assurance of government for the embracement of is obviously not enough. To prosper in the realm of digital governance, Pakistan needs to adopt modern technologies at the educational institutions in order to boost the government influence in future.

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