EVOLUTION OF E-LEARNING WITH AI TO ADDRESS THE OBSTACLES, AND REFORM ROUTES FOR THE EDUCATIONAL SYSTEM IN PAKISTAN WITH AN ANALYSIS OF CHINESE AND INDIAN ACADEMIA

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ABSTRACT
The implementation of artificial intelligence (AI) in distance education is now a transformational force with substantial prospects for the future of development as distance education demands innovation and creative thinking in the teaching-learning process. This paper highlights the influence of AI and educational policy developments. The implementation of AI in education is also being discussed in an underdeveloped country such as India and a developed neighbour China to achieve universal access to high-quality, reasonably priced education. This article outlines a constructivist theory that argues how the use of AI in educational settings is altering how instructors impart information, students learn, and institutions function. AI-assisted approaches completely transform distant learning by enhancing ease of access, encouraging interactive features, assisting instructors and students, and developing complex

learning platforms. This study examines the obstacles to the Pakistani educational system through analytical and qualitative study and explores how AI may be used to update learning probabilities and uses examples from nearby developing nations as a case study to show how it can be integrated with current educational institutions and leverage data to raise the standard and quantity of education in these nations. Thus, the paper concludes by highlighting the problems in teaching sustainable development and the practical implications and advantages of AI to overcome these issues.

KEYWORDS
AI (Artificial Intelligence), Academia, Distance learning, EdTech

INTRODUCTION

Distance learning is a type of hybrid education that employs several synchronized and designed modalities and ways to convey the curriculum and help students learn adequately(Bhuiyan, Supe, & Rege, 2015). Distance learning can be categorized into two distinct groups: asynchronous and synchronous learning. Asynchronous distance education involves relationships between the teacher and the pupil at distinct times, which includes learning from printed guidelines, engaging with audio recordings of lectures, or attending previously recorded visual lessons. Synchronous learning necessitates connections in real-time frames, such as participating in live online courses(Hwang, Ghalachyan, Song, & Education, 2023). Both approaches are renowned, and the choice of appropriate teaching methods is determined by the specific skills that the pupil wishes to acquire. Presently a combination of asynchronous and synchronous instruction is most prevalent. Classes are taught online, and learners have personal interaction with teachers through communicators(Ahlf & McNeil, 2023). Now, consumers are only required to spare a couple of minutes enrolling online, and they can take part in world-class teaching sessions open to people from anywhere without moving from their homes(DiGiacomo et al., 2023). Yet, the accessibility of distant learning is strongly related to the advancement and accessibility to a variety of technologies(Chatterjee, Bandyopadhyay, Chakraborty, & Dutta, 2023).

Global technology advancements have impacted several parts of life, including politics, economy, culture, art, and education. Education continues to evolve as

a result of these changes. Technology has enabled global educational breakthroughs. Technology and education are inextricably linked, making it impossible for education to progress without it(Leuwpl, Setyawan, Riyadi, Al Hidayat, & Saputra, 2024). Proper usage of technology may outcome in improved learning due to its potential benefits. Many people assume that technology leads to tasks simpler, more productive, and more accessible. Using technology to create an improved and more engaging learning environment can also impact how teachers present material. The atmosphere for learning is a crucial component of the educational system(Wang, Gao, Lin, & Yuan, 2019). Distance learning, enabled by collaborative communication networks and other resources, enables learners to learn from anywhere and at any time(Beckman, Polyzois, & Cha, 2019). Artificial intelligence has been widely employed in the education industry, in tandem with the acceptance and application of new technology(Chen, Chen, & Lin, 2020).

Artificial intelligence has begun to play an essential part in various fields, such as health and education. AI has transformed education by utilizing information technology to create a more efficient and productive environment for online education. AI promotes efficiency and production by augmenting human talents and assisting with various tasks(Hassani, Silva, Unger, TajMazinani, & Mac Feely, 2020).

These strategies are not meant to substitute humans but rather serve as a tool to improve abilities and job performance. AI technology may assist teachers give tailored and comprehensive instruction to pupils, and boost information transfer efficiency. AI enables tutors to spend better time communicating with pupils, cultivating their morality and abilities, and focusing on their psychological and physical health. The application of artificial intelligence can bridge regional gaps and lessen educational disparities among pupils from underserved areas and those in urban centers. Remote-tailored instruction is possible with the integration of the Internet and AI technology(Hao, 2019)AI is transforming the world of education by addressing gaps and promoting a more equitable and innovative system of learning.

Pakistan has not been at the forefront of AI applications in education. For the time being, its most prevalent application among the students is CHAT GPT to complete coursework or assessments, as well as to write compositions.

Professors are employing AI-based tools to detect AI-generated projects and assessments.

When it comes to the creation and use of artificial intelligence procedures and technological advances in broad terms, China is recognized as a trendsetter(Liu-Schuppener, 2023). The distance learning system in China has been crucial in developing talent and accelerating the social economic growth of the country(Ji, 2023).

One special instance of how AI has brought about a whole new degree of change is Indian academia. According to the Hindustan Times, AI has been a part of schools for the past few years, changing teaching and learning in ways never seen before and expanding the possibilities for individualized instruction(Loharkar, 2024).

THE CONSTRUCTIVIST THEORY AND E-LEARNING

The constructivist theory's reference demonstrates that the goal of e-learning should be personal accomplishment, where each learner controls their learning process based on their abilities and capabilities. The method stresses that education ought to be limited by context, and the information must be customized for each student(Rohde, Flindt, Rietz, Kassymova, & Humanities, 2023). Rather than having lectures on abstract ideas, constructivist education fosters learners to build their knowledge via experiences and activities. Constructivist educators foster skills and topic mastery by using hands-on activities and self-guided learning. The technological resources that enhance this idea of learning are given below.

- Virtual Interaction
- Virtual Meeting
- Interacting with online courses and modules(University)

According to Piaget, a newborn exhibits the "behaviour of the stick" when he tries to grab an object that is out of reach of his arms and utilizes a stick as a tool to bring it into reach before claiming it. We may limit our discussion to the scenario in which an adult gives the child the stick to keep things simple. In this instance, the baby usually reaches the fifth sensorimotor substage of Piaget's theory between the ages of 12 and 18 months(Guerin). The situation in which the baby is not provided with the stick and has to come up with the notion to use it on his own is more complex and falls into the next substage. Take note It

should be noted that giving the baby the stick and demonstrating the appropriate behavior does not in any way make the work easy for them. Piaget focuses on the mental processes that occur, rather than on the actual measure of the intellect.

He defines intelligence using four categories. These regions are a biological perspective on knowledge, intellectual competency, intelligence, and the progression of phases. However, Piaget may learn a great deal from AI since it has created new perspectives on the intricate structures and workings of complicated behaviour (Rosenberg).

Two approaches can be compared now to modelling the behaviour of the stick in an AI system. The first is a non-constructivist approach that relies on pre-existing knowledge, and the second is a constructivist approach where the infant must build this knowledge. In the non-constructivist model, a reinforcement learning algorithm could be used. Through trial and error, the infant would eventually learn to perform actions that bring the object closer. This method is feasible with current technology.

Some findings from the 1990s suggested that much more knowledge is innate than Piaget had proposed. However, constructivist researchers responded with their studies, reaching different conclusions. The debate remains active, with ongoing disagreements about experimental methods, over interpretation of data, and issues replicating results(University).

RESEARCH QUESTIONS

- What effective AI educational policies and practices exist in China and India?
- How may Pakistan adjust and apply these ideas to get beyond existing educational obstacles?

RESEARCH METHODOLOGY

This research study utilized qualitative approaches to gathering information from a variety of sources, including newspapers, publications, blogs, and research papers. This research is based on a case study to carry out in-depth examinations of AI and e-learning applications in China and India.

HYPOTHESIS

By utilizing effective techniques from Chinese and Indian academia, the incorporation of Artificial Intelligence (AI) into e-learning platforms will greatly alleviate current challenges in Pakistan's educational system and open reform avenues.

PURPOSE OF THE STUDY

- To determine and Examine Barriers in Pakistan's Educational Framework.
- To assess AI-powered distant learning in China and India EdTech
- To Outline a roadmap for implementing these AI-driven reforms in Pakistani academia

OBSTACLES IN PAKISTAN'S EDUCATIONAL AFFAIRS

According to the report of UNICEF, approximately 22.8 million children between the ages of 5 and 16 are not enrolled in school, Pakistan has the second-greatest number of out-of-school children (OOSC) worldwide, accounting for 44% of the entire population in this age category. About five million kids in the 5–9 category do not attend school, and once they reach primary school age, the number of out-of-school children (OOSC) doubles, with 11.4 million teenagers in the 10–14 age range deprived of any formal education. Ensuring that all children, especially the most economically disadvantaged attend, remain in, and learn in school is a significant problem for Pakistan.

The Status of Gender socioeconomic background, and geographic differences are substantial; in Sindh, 52% of the lowest-income children (girls) do not attend school, while in Balochistan, 78% of girls do not attend school. Being able to get to formal learning is severely hampered by deficits in services offered at all educational levels. Adolescent girls, in particular, face additional challenges due to sociocultural factors demand-side barriers, financial constraints, and supply-side issues like school facility availability(Zaidi).

The main cause of Pakistan's failed educational system is that a sizable section of the populace lacks access to high-quality education. The poor infrastructure in schools, especially in rural and isolated locations, makes this problem worse. Pakistan has attempted multiple times to improve the nation's educational standing but has not been able to meet its goals. For example, the country

continues to struggle with low literacy. The fundamental cause of the current state of affairs is the inadequate execution of educational policies(Akram, Yang, & Innovation, 2021).

CHINESE LEADERSHIP ADOPTED AI

China, unlike every other sector, aims to be a leader in the deployment of educational technology. They seek to provide the public with the most up-to-date information possible to establish leadership in economic growth worldwide(Kour, 2023). China is expected to adopt AI and other developing technological advances faster than nearly all other AI powers could. Both authorities and the general population are more willing to experiment as well as adopt emerging innovations that they assume will improve the effectiveness and accessibility of their work and lives. As a result, pupils can learn and practice AI technology through hands-on, real-life implementations in several fields, including IT and sciences, the discipline of linguistic psychological research, and social sciences. In this setting, innovative technologies, such as artificial intelligence, are viewed as potential jobs by parents and pupils, making them enticing in the initial phases of education. The Chinese government has taken on an enormous establishing course and investor-like ownership in developing its AI business, and it is presently doing the same in the field of AI education (Liu, 2022).

China has established itself as a leader in using artificial intelligence to change the way it educates students. Incredibly, even elementary school pupils benefit from AI services in acquiring complicated Chinese theories as machine learning and speech generation enable seamless teaching and learning. This AI-powered approach examines each pupil's written narratives and provides instant feedback, whereas real-time tutorials via synthetic speech and web-based videos let six-year-olds learn at their convenience. According to a survey, over fifty percent of pupils admitted to employing AI for research and translation, while approximately one-fourth use these resources for innovative projects including painting, video editing, and presentation design (Rui, 2023).

China's industries and government have been adopting digital technology in recent times to bring high-quality education to far-flung regions. The objective of the Ministry of Education's Educational Digitization 2.0 Strategic Plan is an "integrated, digitalized, intelligent, customized and lifetime learning system.

The real-world issue is addressed by digital volunteer teaching, which concentrates on enlisting both seasoned unpaid volunteers and students from Chinese colleges. Following training and assessment, they make up the volunteer basis for the initiative. It makes it possible for millions of rural institutions to simultaneously offer top-notch digital courses. According to research by Beijing Typical University's School of Educational Technology professor Feng Xiaoying, children's academic information and ability to think critically have significantly improved(Peng, 2023).

The adoption of artificial intelligence in Chinese academia overcomes conventional obstacles, providing a solution for societal and age-associated concerns. Women in their homes have the opportunity to attend top-tier facilities for learning up to the postgraduate level, and seniors can pursue their educational ambitions without social restrictions or stigma(Hassan, 2024).

AI EDTECH IN INDIA

Based on the current state of the global educational technology (EdTech) scene, it appears that China, India, and the USA are leading the race to emerge as the global benchmarks in EdTech. These three nations rank first in terms of expanding EdTech startups as well as inventing and creating enhanced, more compact fueled by artificial intelligence EdTech. China and India - both flourishing beacons - have established themselves as viable competitors in the previous years. Each of these nations invests significant sums of GDP in education advancement and technological development. Consequently, over 70% of the international EdTech finances in 2019 were jointly held by China and India(Bhutoria & Intelligence, 2022).

In the period of past five years, India's system of online and distance learning has evolved into one of the most significant ways for both professionals and learners to keep on learning, growing, and developing in the country. Reputable institutions and universities around the nation are now concentrating on advancing Indian education by collaborating with reputable EdTech frameworks to offer online courses. The implementation of AI in education has established incredible promise in India, changing conventional wisdom and ushering in a new era of customized learning and inventiveness. India's higher education industry is predicted to increase by US$ 2.28 billion throughout 2021

and 2025, with 41.38 million students enrolled in distance studies in 2020–21, according to an analysis(Saxena, 2022).

The remote learning infrastructure has revolutionized higher education in India, especially in marginalized and far-flung locations. By enabling universities and colleges to link with students who are geographically unable to attend physical classes, these channels have enhanced accessibility as well as convenience in higher education by enabling students to get involved in live classes, expose educational materials, and communicate with fellow learners and educators from anywhere at any time(Anand, 2023).

CONCLUSION AND RECOMMENDATION

The way education is delivered in Pakistan can be revolutionized by utilizing technology. By bridging the divide in both metropolitan and rural locations, projects like digital libraries, online educational platforms, and distant teaching programs can give underprivileged people access to high-quality education(Hassani et al., 2020).

Pakistan ought to expand the implementation of AI in the field of learning to maintain its competitiveness with industrialized nations' educational advancements and to establish the groundwork for future prosperity(Amin & Uddin, 2023).

The incorporation of AI has the promise to revolutionize Pakistan's educational system. Pakistan can set the stage for a more equal and technologically advanced educational landscape by tackling current issues related to education and utilizing AI to improve education and student achievement. Policymakers, educators, and other stakeholders may use the World Economic Forum (WEF) report's recommendations as an effective guide to leverage artificial intelligence (AI) and influence Pakistan's educational landscape(Roonjha, 2024). Online educational platforms that utilize artificial intelligence (AI) may examine personal data about learners, such as preferences for learning, styles, and competencies. Using this data, educational activities and materials are customized to each student, guaranteeing that they are given a curriculum that fits their learning preferences and speed. Educational professionals may save time and money while offering students individualized and successful learning opportunities by utilizing AI to support the assessment and evaluation of student learning as well as improve both the development and distribution of

eLearning material in remote areas. In the same way that students utilize videos, online apps, calculators, and other internet resources to learn(Martin, 2023).
As the advent of artificial intelligence has been applied in the field of distance education, the variety of persons involved in distance skilled education has sharply increased. Additionally, an increasing number of common people are joining the ranks, allowing for real-time zero-distance communication between teachers and pupils(Hongyan Zhang, 2014).

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