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An Assessment of the Feasibility of Artificial Intelligence Replacing Human Labor in the Completion of Pre-university Education

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Abstract: Personalized education has discreetly entered our field of vision with the rise of numerous AIs, including Chat-GPT4, Xiaodu, and MathGPTPro. The conventional educational paradigm may become obsolete, leading society to undergo significant transformations and a refinement process. This paper examines the use of artificial intelligence (AI) in education and its influence on the conventional educational framework. The analysis encompasses a literature review and empirical research on the application effects of AI in personalized learning, intelligent tutoring, and academic decision-making. Additionally, it addresses AI technology's potential challenges and future developmental trajectories within the educational sphere. What obstacles does artificial intelligence encounter in supplanting human involvement in education? In today's tailored AI education, children are happy with using AI software for learning when the educational environments match their interests, according to the poll. According to teachers, AI will not improve students' independent learning skills or critical thinking, and pupils may prefer AI's tailored training over traditional, comprehensive teaching techniques. The study's findings indicate that while AI demonstrates significant promise in education, it continues to encounter numerous limitations and challenges that hinders its ability to support human involvement in compulsory education fully.

Keywords: Artificial intelligence, Education, Personalized learning, Intelligent Tutoring.

1. Introduction

1.1. Research Background

With the advancement of technology, artificial intelligence is improving our environment in many ways, from learning, gathering, and organizing data to developing house models, educational help, security, and more. Artificial intelligence's data processing and computational capability make this possible. It also seems to be better comprehending human language state that natural language processing helps robots comprehend, analyze, and interpret human language [1]. Due to communication technology advances, natural language processing for AI has been investigated and refined to gather, process, and analyze massive volumes of text data, allowing AI to be used in new

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disciplines. AI in education has a major influence on regular people and their families. This paper will assess how education ecosystems are changing with technology.

1.2. Research Significance

AI algorithms will adjust assignment difficulty, material, and learning path based on students' tailored question-answering talents and weaknesses examine the AI-powered platform to provide each child with a customized education path to improve academic performance [2]. Adjust arithmetic problem complexity based on student performance and improve weak connections. AI technology can display and animate information to appeal to children's visual, auditory, and preferences, helping them learn and retain it. AI systems can customize vocabulary and grammatical exercises to improve language learning for the child's growth. All of them are AI software teaching basics.

1.3. Research Direction

Virtual teachers may construct and develop "virtual AI Teachers" in the future. The virtual teacher can replace the actual one. Considering each child's psychological and learning needs may alter educational goals. We can create a database of children's ages and interests and use modeling algorithms to tailor teaching [3]. Our civilization will be colorful and skilled with deep learning, enabling real-time object tracking and feature extraction to intervene in learning programs to optimize potential. Ethically, AI-personalized instruction will lessen teacher-student conflict, school bullying, and other social issues thus, making safe childhoods [4]. Since personalized education captures children's data, AI presents ethical concerns about whether it is safe, reliable, and not lost or leaked. How reliable is AI that thinks and acts on "algorithms" for child education? Are family-created "vacuum" learning environments better than normal schools for kids? Academics differ on whether AI can replace pre-college. This paper analyzes and provides insights.

2. Literature Review

2.1. Artificial Intelligence in Education

Recent work by Al Husaeni et al. demonstrated substantial benefits of using AI in the classroom [5]. For instance, AI has the potential to customize the learning experience by adapting lesson plans to each student's unique background knowledge and skill set. Furthermore, AI -powered intelligent evaluation and feedback systems can encourage students to think critically and learn more [6]. Nonetheless, there are concerns about data security when using AI in education. Students of all ages resorted to distance learning almost immediately due to COVID-19 restrictions, and hackers have been known to target education platforms and conference software. For instance, according to Zhong, McGregor and Greenstadt [7], over 820,000 students in New York City were impacted by the Illuminate data breach, which affected millions of students nationwide. Most schools have moved back to in-person instruction, but some continue to employ remote learning technologies in extreme cases (such as during war or bad weather). The level of concern that parents have about the potential privacy and security issues posed by this technology will be revealed when its usage becomes more prevalent.

Several publications have examined the potential uses of AI in the classroom, particularly whether it can supplant more conventional forms of pre-university instruction [8-10]. The first studies to examine AI mostly looked at its potential to supplement more traditional forms of education, such as creating individualized lesson plans [11]. As computing power has According to Koedinger, Corbett, and Perfetti [12], these platforms can adapt the content and complexity of lessons in real-time

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according to how well students are learning. Much has been written on using AI in language learning and how it helps with different learning styles [13,14].

2.2. Virtual Teaching

Conversely, as AI has advanced rapidly, conversations over the function of virtual educators have started to gain momentum. Some academics are optimistic about the potential for AI to replace human instructors in the classroom [15-18], and others are pessimistic because they worry the technology will not be able to provide the same level of personal attention and classroom community [19-22] .

2.3. Problems with Artificial Intelligence Education

Furthermore, the body of literature has thoroughly examined the ethical considerations surrounding the educational uses of AI, encompassing the potential for AI to evolve into a hybrid model that aids teaching [23], concerns regarding data privacy violations [24], and the implications of AI education on the psychological and social growth of students [25]. Moreover, the body of literature has thoroughly examined the ethical considerations surrounding AI applications in education, encompassing aspects such as data privacy [24], algorithmic bias [26], and the effects of AI education on the psychological and social development of students [25].

3. Methodology

3.1. Research Purpose and Questions

This research aims to explore and explain the views, attitudes, actions, and experiences of children, their parents, teachers, and other important groups about AI technology in education, health, and entertainment.

The study's research questions are as follows:

1. How do parents view the use of AI in children's education?
2. What is the experience of children when using AI-assisted learning tools?
3. In what ways do parents and teachers anticipate that AI will change the traditional education system in the future?

3.2. Research Methods

The researcher will collect primary data from participants using in-depth interviews and online surveys. Johnson & Rowlands [27] recommend in-depth interviews for researchers who wish to learn about someone's inner workings or explore a new topic. Research surveys provide numerical data from a larger, representative sample, whereas qualitative interviews reveal participants' experiences, reasons, and preferences [28].

The researchers also examined kids' ordinary AI technology interactions, sentiments, and reactions. Qualitative observations can assist researchers understand events or products and reveal the most complex and unique aspects of human experience [29]. Gaskins and Paradise [30] also claim that observations depend on people's willingness to provide information.

3.3. Data Collection and Analysis

The interview approach ensures open-ended, focused questions encouraging deep thought and expression. Comprehensive conversations with parents and educators will focus on AI viewpoints and expectations. During field observations, comprehensive observation notes will describe children's

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behaviours, emotions, and verbalizations. Using relevant texts, videos, photographs, and other Auxiliary resources will augment study data.

After data collection, the researcher will process, classify, and summarize interview recordings, observation notes, and other data using qualitative data analysis, including content analysis. Qualitative data analysis emphasizes understanding the study setting and its social, cultural, and historical influences [31]. Content analysis helps researchers find themes, evaluate, and comprehend data [32]. Content analysis allows an inductive approach, unlike certain qualitative methodologies that require putting data into a theoretical framework [33].

3.4. Emotional Care

Consideration was given to ensure that the research process adheres to fundamental ethical standards and honors the privacy and rights of the participants. Before commencing the research, it is essential to secure the informed consent of the participants and elucidate the objectives, methodologies, and intended use of the data collected. Throughout the research process, upholding a sense of sensitivity and empathy is essential to guarantee that the users feel content and at ease.

4. Results

4.1. Survey Results

The survey results reveal that in this modern era of individualized artificial intelligence education, children report a high level of satisfaction with using AI software for their educational purposes. This is because the instructional settings resonate with their interests. They frequently use the iPad to interact with relevant classes, allowing them to take advantage of the irregular weekend hours. The use of artificial intelligence (AI) in individualized instruction is commonly believed to encourage a stronger eagerness to learn among children, improving their academic performance and overall learning efficiency. Both parents and educators share this belief. Despite this, educators and guardians hold various viewpoints regarding the possibility that artificial intelligence would completely replace human teachers. Several parents are concerned that using artificial intelligence in educational settings will potentially weaken the emotional ties between teachers and students and the social interactions that are essential to the student's academic experience.

Regarding education, some parents are firmly convinced that formal schooling will eventually be completely replaced. In the not-too-distant future, children's education will be supplemented by robotic aid, which may result in a psychological dependency that may go beyond the problems currently linked with the consumption of short videos. This gives rise to substantial issues regarding the mental health of youngsters.

4.2. Interview Results

The argument put up by educators is that a multitude of limitations characterizes artificial intelligence; it is highly improbable that it will cultivate students' aptitude for autonomous learning and critical thinking. Concerns have been raised over the possibility that students would develop a preference for the individualized training provided by AI, which would result in a disregard for the fundamental concepts employed in conventional, all-encompassing education. There is a widespread belief among educators that artificial intelligence is not capable of replacing traditional teaching methods. This is because the conventional educational framework is more effective in fostering children's holistic development, facilitating knowledge acquisition, nurturing social connections, and cultivating empathy among young learners. Some teachers may view artificial intelligence as useful for handling activities beyond basic teaching objectives. These tasks include designing lesson plans after the class

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has ended and evaluating student work. During the interview, several respondents brought up the issue of potential concerns with data privacy in artificial intelligence education. The guardians will establish a password security method for the educational platform account and block the camera on the device when it is not being used. There is a strong conviction that the privacy of data must be protected.

4.3. Observation Results

What aspects of the traditional educational system might be affected by using artificial intelligence in the future? Due to the abundance of ambitious ideas available, youngsters may get the impression that they can "invite" Altman and other virtual personalities to participate in their academic pursuits without putting their most intimate relations in jeopardy. It is common for parents to approach this topic with a very pessimistic outlook; some people believe that in the not-too-distant future, conventional schooling will become extinct because brain implants might be able to satisfy all of the educational requirements, which might otherwise result in a significant shift in society. The education bureau, schools, instructors, and any other professional positions related to education will be eliminated, according to those who work in the field of education, if this day ever arrives. However, rather than concentrating simply on the child's physical and mental sustenance, focusing on the growth of the child's knowledge and abilities could be more helpful.

4.4. Discussion

As a result of the outcomes of this research, it appears that education in artificial intelligence may provide significant benefits in terms of tailored learning and enhanced educational efficiency. Despite this, there is still a requirement for improvements in social interaction and emotional support. Nevertheless, the dynamic feature restricts artificial intelligence, highlighting the ongoing requirement for a "human" equivalent in education and scientific research. At the same time, it is of the utmost necessity for the national society to underline the crucial relevance of data privacy within the context of artificial intelligence education. It is of the utmost importance to thoroughly analyse the possible dangers and difficulties associated with artificial intelligence(AI) education, as well as devise policies and methods that can successfully address these problems. In addition, there is a need to enhance the real-time monitoring and assessment of artificial intelligence education algorithms. This is intended to guarantee the safety, dependability, and conformity of these algorithms with educational objectives and societal standards while preventing significant social difficulties.

5. Conclusions

Despite the many benefits and potential uses of artificial intelligence in pre-university learning, there are still many reservations about replacing human educators with AI. This is why AI-driven learning should be understood as a supplement to traditional education rather than a substitute. Artificial intelligence teaching requires a systematic method that considers student growth and technological advancement while keeping ethical standards. During this interim phase, we must prioritize AI research in education. We must also establish and enhance its implementation and effect evaluation methods.

Effective AI tool implementation depends on educators. Their technical and methodological expertise can greatly impact instructional tool use. AI tool proficiency among instructors warrants more study. The research emphasizes students' need to learn advanced AI skills, especially content production. They must master AI technologies to improve, expand, and synthesize content. Using AI in higher education is a technological and methodological leap. Engaging with this transition requires recognizing the gap between perceived and real tool capabilities. As AI continues to impact education,

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institutions, instructors, and students must accept, adapt, and use these tools. This report shows the current state, although AI in higher education is only beginning. The future promises tremendous changes, and scholars must be ready to traverse this exciting frontier.

This study is limited by its circumstances and methodology. The study was limited to one educational institution, limiting its applicability to higher education. The study ignored important factors, including digital literacy, economic accessibility, and AI technological knowledge, which might affect AI application uptake and efficacy. Ethics like data protection and AI use were neglected. Self-assessed and perception-based metrics may skew outcomes and misrepresent AI tool skills and experiences. Future studies should track AI tools in education using a longitudinal strategy. Qualitative methods like interviews and focus groups will help educational stakeholders understand AI's role. Expanding the research to include other institution types might help identify barriers to using AI tools. Comparative evaluations of AI technologies may reveal their educational effectiveness. Understanding discipline-specific AI acceptance barriers may influence implementation strategies. Additional indices may clarify the relationships between AI adoption, student performance, and teacher evaluations, enhancing knowledge of AI's educational impact.

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