How Artificial Intelligence Will Shape the Future of Education

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Abstract
The study investigates the impact that Artificial Intelligence can have on education. This paper examines the current education landscape, the prospects of AI, and the potential struggles that can arise. Apart from that, this paper proposes potential solutions to some struggles that are discussed. This was done by using research design and analysis techniques. Through these methods, we were able to conclude that AI can improve education to a certain extent. It cannot surpass the human connection between individuals in a classroom setting. The mentorship, bond, and experiences shared cannot be replaced with AI. In the study, we further explore the irreplaceable role of teachers in education. Due to the idea of hope from example, personal connection, and mentorship, AI won't be able to duplicate this. The article goes more in-depth on the crucial role that all these play in students. Not only that, but we discuss the major role that life lessons shared by teachers to students can play them both the short and long-term.

Key Words: Artificial Intelligence, Education Landscape, Large Language Models (LLMs)

To understand how Artificial Intelligence (AI) will shape the future of education, it's crucial to first examine the current state of education. This involves looking at literacy rates, enrollment statistics, teacher-student ratios, and access to educational resources. We also need to address the significant challenges facing today's education systems.

Current Education Landscape [1]
Literacy Rates: Globally, literacy rates are improving, but significant disparities remain, particularly in sub-Saharan Africa and parts of South Asia. For instance, while the global literacy rate is approximately 86%, some countries report rates below 50%. In the United States, the National Center for Education Statistics (NCES) indicates that 79% of adults have medium to high literacy skills, leaving 21%—about 43 million adults—with poor literacy skills. This deficiency impacts the U.S. economy by limiting job prospects and productivity, with estimates suggesting a $2.2 trillion annual loss. Notably, California has a higher proportion of adults with basic or below-basic reading and writing skills, making it the second least literate state.

Enrollment Rates: Primary school enrollment is high worldwide, surpassing 90%. However, secondary and higher education enrollment rates drop significantly, especially in low-income countries. The COVID-19 pandemic exacerbated this decline, with public school enrollment in the U.S. falling from 50.8 million students in fall 2019 to 49.4 million in the subsequent years.

Teacher-Student Ratio: The national average teacher-student ratio is 15.5. Countries like Norway have a more favorable ratio of one teacher per 10 students, while California has a higher ratio of 20.9 students per teacher, which is 35% above the national average. This disparity impacts the quality of education significantly.

Access to Educational Resources: Access to educational resources varies greatly. In some low-income nations, fewer than 20% of schools are connected to the Internet, whereas almost all schools in high-income countries have

Internet access. These disparities highlight the unequal starting points and challenges faced by different regions.

Major Challenges in Education [3]
Today's education system faces several key challenges:
Accessibility: Ensuring that all students have equal opportunities to attend school.
Quality of Education: Many institutions struggle to provide high-quality learning experiences.
Technological Integration: The digital divide creates disparities in learning outcomes.
Teacher Shortages: Insufficient numbers of teachers strain educational systems and affect student-teacher ratios.
Funding and Resources: Many schools lack adequate financial support.
Educational Inequality: Socio-economic factors continue to create gaps in educational quality.

The Role of AI in Education
AI is increasingly being integrated into education, offering both opportunities and challenges. As technology advances, schools are incorporating AI into the curriculum, with applications ranging from personalized tutoring to practical AI courses. However, integrating AI poses challenges such as managing plagiarism and ensuring the integrity of the learning process.

AI is evolving beyond simple search engines to become more like personalized tutors. For instance, Large Language Models (LLMs) [2] provide more targeted and relevant information compared to traditional search engines. AI can offer tailored learning experiences, real-time feedback, and support for various learning styles. For example, Khan Academy uses AI to adjust learning levels based on student understanding, while augmented reality (AR) and virtual reality (VR) are emerging as effective tools for hands-on learning.

Digital textbooks, equipped with interactive features like quizzes and flashcards, are another example of AI's potential to enhance education. Educational institutions are also emphasizing "learn to learn" skills, fostering metacognitive abilities that support lifelong learning.

Prospects
Looking ahead, AI has the potential to revolutionize education in several ways [5] :
Personalized Learning: AI can cater to diverse learning styles and needs, providing step-by-step explanations for complex subjects.
Enhanced Research: AI tools, like advanced summarizers, could simplify the process of finding and citing research sources.
Tutoring Systems: AI can accommodate each student's learning style by offering a more efficient and effective way to tutor them.
Teacher Support: AI can assist in grading and administrative tasks, although it is unlikely to replace the nuanced role of teachers in fostering social skills and life lessons.

Future Struggles
Moving forward, AI can fail to help education in several ways:
Diverse cultural perspectives: AI cannot fully understand everyone's diverse backgrounds and experiences. It will not provide that sense of belonging and community to students.
Personal Growth: AI cannot assist in motivating a student in their personal growth. It can only trace it, creating no connection with the student.
Inclusivity: AI cannot create a safe environment for students to not react to their peers with biased opinions and discrimination.
Attention Span: AI cannot engage each student in any lesson plan or tutoring session being done online for a long period. The attention span has decreased due to technology having a major impact on many.
Integrity: Students will rely on AI instead of using their own knowledge and work ethic in homework, projects, and discussions.
Mental Health: AI will add to the screen time for students contributing to an increase to anxiety, anti-social tendencies, and behavioral problems.
Innovating Thinking: AI cannot think outside of the box therefore, it doesn't motivate students to be creative and to bring their own set of uniqueness.
Independent: AI causes students to depend on it completely without expressing their perspectives of things.
Ethical Considerations
With all the AI features that can be added to education, students will have a difficult time navigating without AI's help if they are accustomed to relying solely on it. For this reason, the percentage of students cheating on exams, papers, and assignments will drastically increase. This can be expected even with the measures established by institutions. The only solution is to bring awareness to the ethical considerations and the consequences of

plagiarism.

The Irreplaceable Role of Teacher to Students
Teachers cannot be replaced by AI, due to these immense impacts on students:

Hope From Example: Teachers play a vital role in the hope they instill in their students. Either intentionally or not, teachers create an impact on students by sharing their struggles and providing students with that extra push of motivation. In other words, they provide students with a living example that their goals aren't as impossible as they thought they were.

Personal Connection: AI cannot have a long-term impact on students because no bond is created. If there is no bond, then students will feel discouraged, lost, and confused. This is due to the lack of guidance that students will feel. When teachers connect with the students it eliminates the division and hierarchy of teachers and students. It makes both individuals realize that at the end of the day, we are all just human beings that are very similar yet unique in our way.

Mentorship: This is a big one. AI cannot provide students with advice that is tailored to each student's experiences and well-being. AI won't provide the in-depth guidance that a student may need when dealing with issues academically or personally. Teachers can detect when a student is not doing well, allowing them to check in with students to see what is going on. Through that process, teachers put themselves in a position in which they can be that continuously support students in their academic journey.

Crucial Role of Life Lessons
Each person has their own set of experiences that shape the person who they are. For this reason, when teachers begin to share their struggles, it opens a space for students to feel more inclined to share more about themselves. Apart from that, when students hear someone talk about their challenges and how they overcame them it produces an interaction that isn't the same if they just read it from a book. It brings more excitement to them when they see it.

This is due to teachers being seen not only as educators but as mentors. The way teachers present themselves and the goals they have accomplished can give students that extra boost to start to pave the way to their long-term goals. Seeing someone who has been there in the position that they want to head to, gives them that extra encouragement that was needed. Apart from that, it is also a fun way to teach a topic. There is no better way than to share a story that can be connected to what is being taught. It not only brings a sense of humor, but it begins to form a community.

Community Building
AI will not be able to create a community with students because there is no human interaction. Building a community is intimate between individuals. It allows individuals to share their perspectives, stories, and experiences, and most important of all there is real human emotion with every word. As humans, we interact with others by expressing how we feel. AI cannot do that; it can only produce information which means that no emotion will be involved.

Community building is not only done with teachers, but it is the whole classroom full of students that makes a huge impact on each other. Students get to learn from their peers, sharing their perspectives and providing feedback to each other. Apart from that, students can also challenge each other creating a space for students to motivate each other when students feel discouraged. AI will not be able to surpass this bond that students create with their classmates and with their teachers.

Potential Solutions
Looking ahead, AI has the potential to have a long-lasting impact on education if these implications are considered:

AI not taking over the whole education system, still having human intervention. AI cannot replace teachers' vital role in students' education but more importantly in their lives, helping their overall well-being. Teachers will continue to impact students' lives through the dedication, mentorship, friendship, and community that is built thanks to the opportunity of being in a classroom setting together.

Creating a system where students only turn things online if teachers want to ensure that they are not using AI to complete the work. This will help with all the ethical concerns that institutions will have regarding the

performance of students. Only through this, teachers will be able to detect those students who are solely relying on AI.

Bringing awareness to the privacy and security of AI. This is a major one because students should be protected when using AI as a resource for school through the potential mechanisms that can be established to help them in their educational path. Therefore, students need to be aware of the sensitive information they provide to technology in general.

Conclusion

This study aimed to investigate the potential prospects and challenges that artificial intelligence will face in the future of education. The research suggests that AI can have a long-lasting impact on education by keeping in mind the negative implications that can be encountered. Ethical considerations around AI's impact on academic integrity and the potential for misuse, such as cheating, must be addressed. Teachers and educational institutions will need to adapt to these changes, balancing the benefits of AI with the essential human elements of teaching.

While AI holds great promise for enhancing education, its successful integration will depend on addressing current challenges and leveraging technology to support and enrich the learning experience. With the evolving AI metrics, the prospects and challenges will continue to be explored to refine the approaches.

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