



AI as a Co-Teacher: Redefining Pedagogical Authority in Smart Classrooms

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ABSTRACT

The high development of artificial intelligence (AI) is changing the educational settings, especially through adoption in smart classrooms. The paper will discuss this changing status of AI as a co-teacher and how it redefines the traditional pedagogical power. In contrast to the traditional teaching model, where the power of the teaching side is concentrated mostly in human hands, AI-based tools bring in a distributed model of knowledge delivery, assessment, and feedback. ChatGPT and adaptive learning systems among others can progressively engage in personalizing instruction, student performance analysis and decision-making in education. The study will take a conceptual and analytical approach by relying on educational theory, philosophy of education as well as the emerging technological practices. It examines the changes in teacher student relationships, authority, and epistemic trust by AI. Even though AI will make things more efficient, accessible, and personalized, it also brings up very serious issues of dependency, dehumanization, and ethical responsibility. The article explains that AI is not to be considered a substitute to teachers but rather as a cooperative entity that enriches the human pedagogical functions. It suggests a mix of an educational system in which power is divided between human educators and intelligent systems, and a more dynamic and interactive learning space is created. The research paper ends by highlighting that AI integration requires ethical frameworks, teacher training, and policy intervention to ensure that it promotes educational values and not their



demise.

1. Introduction

The introduction of artificial intelligence (AI) is a revolution in the history of education. Educational practices have constantly been changed due to change in technology in terms of chalkboard to digital classroom. The current AI-driven technologies are transforming the knowledge delivery, assessment, and experience. The AI systems in smart classrooms do not act as tools but as the participants of the teaching-learning process.

Historically, pedagogical power was vested on the teacher who acts as the main source of knowledge, directions and assessment. Nonetheless, this hierarchy is contested by the use of AI. The intelligent system is now able to deliver immediate feedback and tailored learning experiences, and information based insights, thus, sharing the functions previously monopolized by teachers.

This change brings up the most basic questions: When AI is brought in as a co-teacher, what happens to the power of the teacher? What impact does this transformation have on the relationships of learning, trust and the production of knowledge? The given paper will answer these questions by analyzing the importance of AI in the redefinition of pedagogical authority in smart classes.

2. Literature Review

The topic of introducing artificial intelligence (AI) into education has gained a high level of attention in recent academic literature, and scholars highlight both the potential of its use and the challenges associated with it. An increasing amount of literature emphasizes the ability of AI to improve the outcomes of learning due to personalization, adaptive instruction, and effective assessment systems. Meanwhile, the opponents have been voicing concerns about the loss of human interaction, ethical issues and the potential undermining of the fundamental values of education. This two-sidedness is an expression of a constant conflict between technological innovation and pedagogical tradition.

Theoretical antecedents of technology in education could be dated back to the work of Seymour Papert, especially in his classic book *Mindstorms: Children, Computers, and Powerful Ideas* (1980). Papert contended that computers were not just providers of information but they should be used as knowledge building tools. His constructionism methodology stressed the autonomy of the learner, his creativity and active participation. In that respect, Papert saw technology as a tool of empowering students enabling them to learn and experiment as opposed to being passive consumers of knowledge. His conceptions



formed the base of modern AI-powered personalized learning systems, which are intended to adjust to the needs of the particular students.

Equally, Sugata Mitra has extended this debate with his idea of Self-Organized Learning Environments (SOLE) that has been described in books like *Beyond the Hole in the Wall* (2012). Mitra proved that children, given the access to digital resources, are able to learn through collaboration without the involvement of a teacher. According to his experiments, technology could be used to make children curious, independent, and learn through their peers. This school of thought is similar to the modern uses of AI that promote exploratory and self-directed learning and support the notion that technology can be used as an enabler and not a director of knowledge.

The modern literature extends the concepts by analyzing the implications of AI in classrooms in practice. As an example, the article by Rose Luckin, *Machine Learning and Human Intelligence* (2018) states that AI may be used to supplement human education with information that is based on data and gives an insight into the performance of a student. The learning gaps can be detected by AI systems, personalized content can be suggested, and the immediate feedback can be provided, which increases the efficiency of teaching and the interest of the students. On the same note, Wayne Holmes and others in *Artificial Intelligence in Education* (2019) point out how AI can help in providing inclusive education through meeting a wide range of learning requirements.

But with these positive views, there have been pessimistic issues that have been put forward. The article by Neil Selwyn *Should Robots Replace Teachers?* (2019) is skeptical of the growing popularity of technology as a teaching and learning tool, believing it to be dehumanizing the relationship and moral aspects of the teaching process. Education is not just a process of passing information but it also entails emotional support, moral guidance, and interaction of the social nature which AI may not fully imitate. In her book *Alone Together* (2011), Sherry Turkle also cautions about the severe consequences of overuse of digital technologies which can result in social isolation and lack of empathy and, as a consequence, affect student interpersonal skills in a negative way.

In addition, there is evidence of the cognitive impact of overreliance on AI tools, which can impair critical thinking and deep learning. Students who use automated systems extensively in obtaining answers and feedbacks might not go through a lot of reflections and analyses. This issue brings out the danger of producing passive students who will be tech-reliant instead of actively building their knowledge.



To sum up, the area of AI in education has a complicated and sophisticated picture as depicted in the literature. Although other academics like Papert and Mitra have been found to underline the empowering nature of technology, modern researchers and critics have been keen to highlight the necessity of caution. The situation is that it will be difficult to strike the right balance between innovation and pedagogical integrity to make AI supplementary to, not replacing, the human aspect of education.

3. Conceptual Framework: AI as a Co-Teacher

The idea of AI as a co-teacher signifies the dislocation of the tool-based integration to the partnership-based one. In this model, AI systems will work with human teachers to provide teaching, evaluation, and learning.

3.1 The characteristics of AI Co-Teaching are as follows:

The AI co-teaching is defined by a number of features that facilitate the learning process. It also facilitates customization of the learning material, in such a way that the learning lessons can be customized to meet the needs, abilities, and learning rates of the students. It also offers real time feedback and evaluation, which enables the students to realize their progress in real time and correct errors. Also, AI provides data-based information, which can help teachers to recognize the learning deficiencies and enhance teaching methods. The other significant aspect is that it is available at all times since AI systems can assist students wherever they are and at all times without interruption, unlike in the traditional classroom environment.

3.2. AI Tool examples.

- Intelligent tutoring systems
- Chatbots and virtual assistants.
- Adaptive learning platforms

These instruments show how AI can be used as an active participant in education.

4. Redefining Pedagogical Authority

4.1. Traditional Authority

Traditional classrooms place teachers in the epistemic center of being the main sources of knowledge and assessing student performance. This power is based on their subject knowledge, their training as professionals and number of years teaching. Their role is also reinforced by institutional recognition since



educational systems formally give them the role of curriculum delivery and learning outcome assessment. Students are used to being guided, clarified on and knowledge validated by their teachers. Consequently, the communication process is mostly hierarchical with teachers leading the learning process and the students taking a more passive and submissive role.

4.2. Distributed Authority

Pedagogical authority becomes decentralized with the introduction of artificial intelligence in education instead of being centralized. Knowledge delivery, personalized instruction, and continuous assessment are all areas of active involvement of AI systems, which previously were the prerogative of teachers. These systems have the potential to offer real-time feedback, adaptive learning flows, and recommendations based on the data and assist students. Because of this, teachers are no longer the sole providers of knowledge, but facilitators, mentors, and guides who are concerned with critical thinking, ethical reasoning, and emotional support. This interactive model provides a more interactive and balanced process of learning, in which the human and technological agents have an equal part in the educational process.

4.3. Epistemic Trust

The emergence of artificial intelligence in education creates new dimensions of epistemic trust, which radically changes the way students assess the sources of knowledge. Students in AI-assisted classrooms have to juggle between believing human instructors and the output of algorithms provided by intelligent systems like ChatGPT. This two-trust paradigm leads to the learner acquiring critical evaluative skills to analyze the accuracy, reliability and biasness of information. Whereas educators offer contextual knowledge and moral support, AI is fast and data-oriented. The balance of these sources of authority stimulates students to be more reflective, analytical and responsible in their learning activities..

5. Benefits of AI as a Co-Teacher

Artificial Intelligence (AI) as a teaching assistant can provide enormous benefits to contemporary education as it will turn the old approach of teaching into a more active, personalized, and information-driven process. The advantages are significant as discussed below:

5.1. Personalized Learning

Probably one of the most significant contributions of AI to education is the possibility to offer personalized learning experiences. Contrary to the conventional classroom, in which one pedagogical



approach suits all learners, AI can be used to provide instructions based on the personal learning needs, preferences, and speed. Different students possess different cognitive capabilities, strengths, and weaknesses, and AI systems can process them.

AI-driven platforms evaluate the performance of students on a real-time basis and can modify the level of difficulty of the content. As an example, in case a student is having a hard time with certain concept, the system can offer more explanations, practice works, or other learning resources. On the contrary, more sophisticated tasks can be given to the advanced learners so that they will not become bored and will be able to engage more.

Learning styles are also being served with personalized learning. Videos and graphics can be used with visual learners, and recorded lectures or explanations could be used with auditory learners. This flexibility is important in that the students will be taught in the way they understand best, thus enhancing understanding and memory.

In addition, AI will ease the burden on teachers as they can concentrate on mentoring and directing students by managing most of the routine teaching assignments. It is inclusive as it considers learners with various abilities including learning difficulties. In general, personalized learning boosts the motivation of students, their confidence, and academic levels by rendering education more topical and more accessible.

5.2. Efficiency and Accessibility

Education becomes much efficient and accessible with the use of AI. The conventional environment tends to restrict learning based on time, space and the presence of the instructor. But intelligent systems using AI break these obstacles as they have unlimited access to learning materials.

Education has become more flexible and convenient because students can learn in any place and any time. This will be especially useful to students in remote/ underserved communities who might be unable to access good educational institutions. AI tools would allow them to use quality content, tutorials, and tests without geographical limitations.

Automation also helps to increase efficiency. AI systems are capable of performing tasks, including grading assignments, attendance monitoring, and administration. This will make the work of teachers easier and they will be able to spend more time in meaningful interactions with the students. The



immediate feedback offered by AI helps the students know their mistakes and rectify the errors as soon as they occur, enhancing the learning process.

Also, AI promotes self-directed learning, which allows the student to learn at their own pace. This has been particularly critical among learners who require additional time to grasp concepts or those learners who want to speed up the learning process. Multilingual education is another benefit of AI since it offers language assistance and translation, which allows more people to learn.

During the crisis periods, e.g., pandemics or natural disasters, AI will guarantee the continuity of education by means of online platforms. It establishes a strong educational system that is capable of adapting to the changing situations. Therefore, AI also positively impacts the effectiveness of the teaching process and the access of education to various groups of people.

5.3. Data-Driven Insights

One more important advantage of AI as a co-teacher is his capacity to produce information-based insights that enhance teaching and learning results. AI applications gather and process data volumes on the performance, behavior, and engagement of students. This knowledge offers useful information that can be used to inform the teaching methods.

These insights will enable the teachers to detect learning gaps and close them. By way of example, when a group of students is persistently experiencing poor performance in a given subject area, the teacher will be able to adjust the instruction methodology or can offer more assistance. The analytics of data is also useful in monitoring the progress of students over a period of time and intervening early enough to students who are at risk of lagging behind.

AI has the ability to forecast learning results depending on the trends in student information. This forecasting capacity enables the teachers to make proactive strategies, including provision of remedial courses or individual instructions. It improves the decision making process by offering evidence based recommendations as opposed to using a sense of intuition.

Furthermore, based on data, there is an opportunity to develop the curriculum. Trends can be studied to understand which methods of teaching are the most effective in an educational institution and change the curriculum. This contributes to the constant enhancement of the education quality.

Transparency and accountability in assessment are also encouraged by AI. The automated systems is important to create consistent and objective assessment, as well as to eliminate the chances of human



error and bias. Students get a comprehensive feedback on their performance and this enables them know their strengths and their weaknesses.

Moreover, parents and administrators are able to obtain data reports to keep track of the student performance and the performance of the institutions. This partnership strategy creates an enabling learning atmosphere with all stakeholders.

6. Challenges and Ethical Concerns of AI as a Co-Teacher

Although the artificial intelligence in education has a lot of benefits, the integration also presents some serious challenges and ethical issues. These problems should be looked at very critically in order to make sure that AI can improve the educational process instead of harming it.

6.1. Dependency on Technology

The increasing dependence on technology is one of the greatest issues related to AI in the educational field. With the more intensive use of AI-based tools in all aspects of learning, solving problems, and evaluation, there is the possibility that students will lose their ability to think independently. The students who are offered prepared answers, explanations and solutions by AI systems might turn inactive receivers of information instead of the active learners.

Too much dependency on AI may undermine critical thinking and analytical ability. Students may rely on automated systems to do their work, and this may slow down intellectual growth instead of getting involved in issues. Indicatively, when learners are regularly using AI tools to produce answers or summaries, they fail to acquire the skill of analyzing, interpreting, and assessing information on their own.

In addition, the reliance on technology may decrease the interest of students to study concepts in an original way. Learning is not only concerned with getting the correct answers but also entails an understanding of how one goes about reasoning. Excessive use of AI can also result in the prioritization of the process of learning on the result, which can inhibit active intellectual activity.

The other issue is the possibility of losing self-discipline and time management. Students can have difficulties with organizing their studies on their own when AI systems control all of the learning process. This may impair their capability to deal with academic difficulties without the technology support.



This is why AI may assist in the learning process; however, it is necessary to find a balance that will not deprive students of the ability to think and be creative and able to solve problems. Teachers should promote active learning and make sure that AI is implemented as an assistive tool instead of a replacement of intellectual work.

6.2. Loss of Human Interaction

Education is not a cognitive process only but a process that is entrenched in social and emotional interactions. The possibility of losing the human connection in the classroom is one of the major issues of AI integration. Conventional teaching implies the face-to-face communication, emotional support and the establishment of interpersonal connections between the teachers and the students.

Even with the sophisticated features of AI systems that cannot completely substitute emotional intelligence, empathy and moral counsel of human teachers. The teachers are vital in knowing the information about the students, encouraging them, and supporting them in their personal problems. Such lack of human contact can result in the more mechanical and less interactive learning process.

Moreover, there is the possibility that decreased communication between students will influence the social skills. Communication, teamwork and empathy can be developed through classroom discussions, group work and learning together. When AI-driven learning takes the place of such interactions, students can be isolated and they will not be able to develop meaningful social relationships.

Educational emotional dimension is more especially relevant in the development of attitude, values and character of students. Teachers are role models and they impact ethical and moral growth of the students. The AI systems, in turn, are incapable of giving someone subtle moral advice or addressing the complicated emotional context.

Moreover, overutilization of online platforms can cause loneliness and isolation. Research has revealed that excessive dependence on technology may decrease face to face communication which is crucial in psychological health. Thus, despite the fact that AI could be used to improve the process of learning, it should not take away the human factor that is at the core of education.

To overcome this obstacle, a mixed approach should be implemented, in which AI will be used to supplement human instructions and not to substitute it. Holistic education requires a balance between the use of technology and human communication.



6.3. Bias and Accountability

The other important issue with the application of AI in the education sector is the question of prejudice and responsibility. AI systems are created according to algorithms and trained using large data. In case such datasets have biases, they can be replicated or even enhanced by the AI system. This may result in unfair or discriminatory results in the learning situations.

As an illustration, AI-based assessment tools can be biased by accident and discriminate against some groups of students against others. On the same note, the recommendation systems may offer learning opportunities, which are unequal, due to incomplete or distorted information. These prejudices may destroy the ideals of equality and equity in education.

The other big problem is accountability. In case AI systems are involved in the process of making decisions that concern grading, feedback, or student evaluation, it becomes rather hard to define who should bear responsibility in case of errors or inaccuracy. AI does not have moral responsibility, and its actions cannot be accounted as is the case with human teachers.

The issue of transparency is also a point of concern where most AI systems are viewed as black boxes where the process of decision making can hardly be understood easily. This mistrust may arise between students and educators due to lack of transparency. Unless the learners are informed on the ways the decisions are made, they will doubt the effectiveness and impartiality of the system.

These issues are closely associated with data privacy. Artificial intelligence gathers and processes a lot of student data, such as academic achievement, behavior, and personal data. This data can be abused or revealed without proper protection, and this will be a significant ethical concern.

In order to overcome prejudice and responsibility, the establishment of the ethical rules and control systems in the field of AI in education is necessary. Developers should make sure that the datasets are not homogeneous, but rather representative, whereas educators need to assess AI outputs carefully. To create trust in the AI systems, transparency, fairness, and data protection should become the priorities.

7. Conclusion

The concept of artificial intelligence is essentially redefining pedagogical authority by altering the position of teachers as traditional carriers of knowledge to guides, mentors, and facilitators. In AI-assisted learning, the emphasis on the one-way delivery of information is replaced with the more interactive and student-focused learning process. Teachers are not seen as the only source of knowledge



anymore; they are going to work with intelligent systems to offer personalized learning, real-time feedback, and data-driven insights.

This revolution necessitates a reevaluation of the educational practices so that technology does not lead to a decline in the quality of learning. Educationists should be provided with the ability to use AI in the teaching process and preserve their fundamental functions of developing critical thinking, creativity, and moral consciousness. Simultaneously, educational policies should resolve concerns like privacy of data, bias in algorithms, and responsibility to control the safe use of AI.

Further, frameworks that will inform the relationship between humans and intelligent systems in learning should be established. It is aimed not at substituting teachers but developing a more balanced and collaborative system in which AI supplements human activity. Through this considered change, education systems will be able to utilize the promise of AI and maintain the human values that are at the core of meaningful learning.

8. Recommendations

In order to successfully implement AI as a co-teacher, a number of measures are required. To begin with, educators need to be trained to use AI in a way that is both pedagogically and confidently to ensure that the teachers are equipped with the necessary skills. Second, ethical guidelines should be developed to respond to issues associated with data privacy, bias, and accountability. Third, the hybrid teaching models should be promoted to provide a balanced approach in which AI complements and does not substitute human teachers. Lastly, the promotion of critical digital literacy in students will allow them to assess information created by artificial intelligence in a responsible manner and acquire the ability to think independently in a technology-based learning setting.

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