

# ***Research on the Impact of Artificial Intelligence on the Development of Education***

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**Abstract:** Artificial intelligence (AI) has played an indispensable role in the recent development of education, this kind of invention not only affects the education acceptance rate of people with psychological problems, but also provides more opportunities for children especially in regions with low economic conditions to go to schools. But at the same time, AI is also causing negative influences in many aspects. The convenience of AI has caused a rising trend in the unemployment rate in some countries, since some companies prefer to use AI for those jobs which require high precision. People started to worry AI may become dominant in most job markets. However, there are still some arguments about whether teachers can be replaced by artificial intelligence. According to the investigation and analysis of this issue, it's true that AI does have the trend and potential capability to replace teachers. Although there is no doubt that AI does not yet have the same emotions as humans, this would not prevent humans from adding this to their performance in the future. Nevertheless, by considering the situation of some countries in the world, emotions might not be so important compared to their capabilities since the priority now is to get the development of education on track in many countries. This means that people can design a kind of AI that is not self-aware but can replace teachers to some extent or become teacher assistants.

**Keywords:** artificial intelligence, educational psychology, the development of education, substitution

## **1. Introduction**

With the rapid development and achievements people made in technology, more and more articles and news about artificial intelligence are published and becoming widely known. Undoubtedly technology and science are important turning points in human history. People have made great progress in the study of machines and even artificial intelligence (AI) since the beginning of the Industrial Revolution [1]. Especially now, the invention of AI is playing an indispensable role in many fields. This article will mainly focus on the impacts of AI in education.

In recent centuries, the use of AI has covered many fields as people are discovering more about the development of technologies. Education and AI has been a topic with great concern for decades. AI is turning from an auxiliary tool into a substitute for people such as teachers. But this is a controversial topic for the society. Although AI has replaced some people for jobs that require precision and efficiency, current technology is still not advanced enough to let them replace teachers completely.

Moreover, the connection between education and psychology is also well known specifically in the development of educational psychology. Take questionnaires as an example. Questionnaires are a very common form of survey to many people. Although it is an approach that can collect data both within a small and large scale, the manual collection of statistics is somewhat inefficient and inconvenient. Fortunately, the method of online questionnaires is now available on many platforms and each platform will have AI assistance to help people count and analyze the data. Thus it's obvious what kinds of help AI can produce for the development of education.

## **2. The Reasons Why People Invent AI to Promote the Development of Education**

There are many reasons that can explain why people give AI the right to participate in the development of education. Just like the contents that have been mentioned above, the calculating speed of AI is unimaginable and its knowledge is far greater than that of humans. AI can find information people need in a short period of time while it can take humans a lot of time just to read the documents.

One of the most remarkable features of AI education tends to be the use of online classes. During the Covid-19, students had to stay at home and study by themselves until the discovery of online tools for classes. Students might lose the chance to go to their ideal colleges if they cannot drive the progression of study since the colleges would not give them another chance or wait until Covid-19 ends. But online class does offer them an opportunity to "back to school", and it's still helpful even after the most severe period of Covid-19.

Moreover, from the perspective of education, it can also be divided into many types of teaching methods. For example, when people are studying educational psychology and deriving theoretical knowledge, some of it needs to be obtained through experiments such as experiments that need to analyze brain waves, which require artificial intelligence technology. In some places that lack teaching resources, children at these places will probably choose to become a teacher when they grow up. But if the knowledge they accepted from their teachers is wrong, then they may make the same mistake compared with the accuracy of AI. AI trainers will be more efficient than manual trainers, and their knowledge base will also be richer [2].

## **3. Benefits AI Can Provide for Human**

In the early years, people need to take plenty of materials or essays with them when having classes. But with the help of technology nowadays, teachers can make these into PPTs or documents in the form of PDFs and send them to students, then they can check them whenever they want [3]. It's worth mentioning that AI can support teachers in transferring files to students online anywhere anytime. Not only in class, but also in people's daily life, what is widely known is the air-drop of iPhone. It only takes a few minutes for people to transmit everything to other people and this would not be limited by the number of people.

First, AI can check the plagiarism rate of students' work, especially their essays and reports in a more efficient way. In the early century without the invention of artificial intelligence, it was relatively hard for professors to determine if some parts of the work they received from students were copied from other places in a short time and this would cause lots of energy and time; by comparison, nowadays people only need to search for the key words of an essay on websites or applications that used to confirm the plagiarism and then they will find if the students do copy parts of their work from others.

Secondly, AI is convenient for students' daily life. AI tools can regularly send reminders to students. For example, Georgia State University uses a chatbot called Pounced to chat with students and provide them with daily incomplete tasks [4]. When students are worrying about their essays,

they will appropriately apply AI to assist not only in consulting materials but also in creating simulation experiments for models. Sometimes the experiments they need to do in hours, days, or even weeks may be simulated in minutes with the help of AI. Meanwhile, chatting with AI is not unusual now, and this does provide students with a lot of new ideas for their work.

Third, the time for AI to accept new knowledge is much shorter than human need. In some regions that lack teaching bases such as teaching resources and low education levels, governments will often provide them with financial subsidies or sometimes they will get help from other countries. Even so, governments still need to spend lots of effort and time to train teachers. Instead of spending time training teachers, it would be more convenient for the countries to rely on AI. Some countries have made experiments to test if teachers in countries with low education levels have the ability to teach in English. The result was astonishing, only a quarter of them could barely teach in English. If people put the efforts they put into teachers to develop AI, perhaps they will get more obvious achievements and results.

Fourth, AI can provide various education methods due to individual characteristics [5]. Educational Psychology has come up with plentiful concepts about how children's psychological behavior affects their study. One of the purposes for people to do so is to find better ways for people especially children with psychological problems such as Autism, Anxiety and Depression. Sometimes psychological problems will also lead to cognitive errors in behavior and people might be moody with that. It would be inefficient if people spend lots of time surveying new approaches, but with the simulation walkthroughs or experiments of AI, humans can save more time and resources for new research [6].

#### **4. Different Impacts AI Caused on Different Kinds of People on Education**

The word "Disabilities" is used to describe "when a person with a physical, psychological, intellectual, neurological or sensory impairment is denied access to full participation in all aspects of life, and when society fails to uphold the rights and specific needs of individuals with impairments" [7].

Besides the groups of people, AI also leads to different effects on different groups of disabilities: Mobility impairment, hearing impairment, visual and physical impairment and cognitive impairment (Shalini Garg and Shipra Sharma, 2020). In other words, it can be expressed in people with special requirements or needs in education including reading, writing, pronouncing and understanding. Here are two examples.

AI tools can help children who suffer from Autism Spectrum Disorder (ASD) improve their social skills and understand emotions not only to themselves but also to others' emotions. Take Humanoid Robots in a British Primary School as an example, these kinds of robots are used due to their artificial neural networks and fuzzy logic to help children with disabilities [7].

Children with hearing impairment will face many problems when studying since they can hear nothing or only vaguely hear a little from the teachers and it's difficult for them to chat with others unless they are in a place where they can communicate naturally with sign language. However, with the development of technology and AI tools, Microsoft has developed a software called Microsoft Translator which can transfer speech signals into captions through a headset worn for deaf learners [7].

To those scholars exploring unknown fields, the help of AI tools will definitely enhance the efficiency and quality of the research. It's apparently AI can help both in children's daily study but also to their lives [8]. Back to normal life will probably rebuild their confidence to some extent.

## 5. The Impediments AI Caused on the Development of Education

Compared with a computer, AI tends to be more threatening because its ability to self-evolve have overpassed people's expectation [9]. Some people still harbor a fluke mentality and think AI would not attack humans who invented them. But it's naïve to firmly believe that AI would not betray humans someday. System vulnerabilities can be difficult for people to observe, but that would not become a problem for machines with their extraordinary calculating and browsing speed.

Second, although most of the calculation of AI is based on statistics and analysis of behaviors, humans cannot predict if the data they use is wrong and intentional. Guerra and García-Mayor pointed out the results AI may cause Medicine due to inaccurate and imperfect data in the system such as gender and race. All of these will result in the deviation of results and mislead the judgement of doctors. Patients will get hurt because of this.

Third, people will realize that AI can make their lives easier and simpler when they use it. However, such a lifestyle model will make them overly dependent on AI, and when they lose this help, they will also feel uncomfortable and helpless because they have lost some of their original life skills [10]. This is the same as people's fear that AI will lead to rising unemployment. As AI becomes more popular and optimized, it can replace multiple occupations because they are more efficient and precise, especially in industries with complex requirements for accuracy, where leaders tend to look for AI to replace humans. This also makes them over-reliant on AI.

## 6. Arguments about Whether AI Can Replace Teachers

Although it's true that AI can complete human instructions and imitate almost every behavior, but they cannot understand humans' emotions. However, emotions are an important factor that will influence human behavior.

The development of emotions is one indispensable factor in the formation of personality [11]. In other word, this also construct parts of the society. This is an unavoidable question AI needs to face. What AI or computers do is execute instructions given by people, like programming, and correct the errors that exist. In the early education of children, it's quite important to teach them the methods to control their emotions. Although parents can teach them how to deal with the problems they may face or how to judge the problems in society such as the workplace, they need to have a basic understanding of these at school. Usually, people will spend most of their time in school before graduating, and class tends to be the place where people can find the answers to these questions. The teaching from teachers will be particularly necessary to families whose parents almost have no time to accompany their children. Even if they can fix the mistakes they find in any system, they cannot solve the problems people have because of their emotions.

Besides this, people still need to consider if it's worth replacing teachers in parts of nowadays' education. The first problem humans need to face is the scarcity of teachers that are capable of teaching with high-level education. Sometimes the number of teachers is enough in some regions but the quality of education or the education level of teachers might not be able to support the quality of teaching that the countries need. It's important to study foreign language, particularly the international lingua France like English, as this would be helpful for communication. As one of the most popular languages, English is being accepted and studied by more and more countries. But this would require teachers to have the ability to teach English and speak it fluently. In countries with low economic conditions, it would be quite hard to reach that goal since some teachers can't even understand books that are written in English [11].

Although AI cannot substitute teachers completely, the situation and pressure of society compel people to worry about the invention of educational AI, which means they might need to come up with

a design of AI for education without the functions of emotions that are needed for social skills and things like that.

## 7. Methods to Avoid the Disadvantages Brought by AI

First, people can restrict permission access for AI. When people are designing the programs of AI, they can leave a backdoor for themselves. While people are making AI, there will be some security vulnerabilities that they are not aware of. If the conditions are sufficient enough, people can develop a system to automatically prevent these vulnerabilities, or implant other chips in these machines in advance in case of forced closure [12].

Second, regulating the use of AI. It's common for students to use AI tools such as ChatGPT in their work, but some of them would see these tools as opportunities to cheat and AI tools do have the ability to help them finish their work. Nevertheless, professors can avoid students using ChatGPT by assigning more oral assignments such as PPT presentations or speech [13].

## 8. Conclusion

Although AI is still flawed in many ways and humans can't fully trust them, society needs to admit that the help brought by AI is enormous. In fact, in many places, the personality setting of AI has exceeded the standards they should have. This is something that many people have experienced when communicating with AI. That is to say, some of them do have racial discrimination and even there will be some abusive words in their conversation with people. If this kind of situation occurs when they are teaching children, perhaps the negative influence caused by this would be unimaginable.

No matter whether the impact of AI on education is negative or positive, there is still a lot of people need to explore in this area. At least people should not ignore the problems AI will cause in the development of education.

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