

AI and medical education

Artificial intelligence has already been widely used in the industry and is very likely to continue to prosper and develop over time. However, despite a large number of applications and the positive outlook of artificial intelligence in healthcare, its ethical issues should also be addressed carefully. And this should be supported by appropriate artificial intelligence education, especially medical education. Artificial intelligence education should include 2 basic parts, studying to use artificial intelligence and using artificial intelligence to study.

AI for education in general

United Nations Educational, Scientific and Cultural Organization has a publication named “AI and education- guidance for policy-makers” in 2021 (<http://creativecommons.org/licenses/by-sa/3.0/igo/>). The paper points out 3 main functions when using artificial intelligence to study: using artificial intelligence to provide education management, using artificial intelligence to provide educational assessments, and using artificial intelligence to reduce repetitive work. This focuses on the main development goals of future artificial intelligence used in education to play the role of a guide, an assessor, and a recorder. Advances in AI-powered solutions carry enormous potential for social good and the achievement of the Sustainable Development Goals.

However, this may also bring potential drawbacks or even ethical problems. For one thing, for artificial intelligence to provide such services described above, data collection of users would be unavoidable. Therefore, the private data security problems including but not limited to private insurance are brought by the threat of dataveillance and the ownership of the data. Also, not only the data collection but the de-humanizing nature of artificial intelligence. These data-based analyses and judgments present the chance for prejudice and injustice to take place. Except for what was mentioned, the fact that artificial intelligence would replace humans in certain job positions and weaken the connections between humans. This problem becomes especially severe when it comes to job positions that require human touch, for example, teachers.

However, these problems could be dealt with if they are properly addressed. For the data security problems, announcing the exact usage of the data collected to the public and allowing the public or specialized departments to supervise would be both a solution and a goal that must be reached in the future. To ensure the equality and inclusiveness of artificial intelligence, developers should allow more disadvantaged

groups like females and African Americans, to be involved in the development of artificial intelligences. In the meantime, the learning ability of artificial intelligence should also be improved. Besides, the focus of artificial intelligence should be based on reducing the workload of the workers and enhancing more humanity-dense interactions instead of replacing humans and causing fewer interactions.

Furthermore, for policy-makers, four strategic targets need to be met, interpreted for the local context: Ensuring the inclusive and equitable use of AI in education; Leveraging AI to enhance education and learning; Promoting the development of skills for life in the age of AI, including teaching how AI works and its implications for humanity; and Safeguarding the transparent and auditable use of education data. Accordingly, recommendations as follows are made: Interdisciplinary planning and inter-sectoral governance; policies on equitable, inclusive, and ethical use of AI; develop a master plan for using AI for education management, teaching, learning, and assessment; pilot testing, monitoring and evaluation, and building an evidence base; and fostering local AI innovations for education.

All in all, we should adopt a humanistic approach as an overarching principle for AI and education policies. The bottom line is that the deployment and use of AI in education must be guided by the core principles of inclusion and equity.

AI For medical education in special

Medical education is moving from the information age to the age of artificial intelligence. According to a review in 2019 (Chan KS, Zary N. Applications and Challenges of Implementing Artificial Intelligence in Medical and Healthcare Education: An Integrative Review. *JMIR Med Educ*, 2019, 5(1): e13930), since AI has the ability to provide feedback and a guided learning pathway and to decrease costs, AI is applied in medical education for learning support, assessment of students' learning and curriculum review.

However, two challenges of AI implementation in medical education are presented: difficulty in assessing the effectiveness of AI in medical education and technical challenges while developing AI applications. Clinical problems are often ill-structured and multifaceted and to solve it needs clinical reasoning, which is conflict with some un-explainable AI algorithm. The learner's data integrity and personal data protection also make the technical difficulty. We also should pay attention to that AI maybe unable to address ethical issues which is very important in medical decision-making.

Methodological improvements are required to increase AI adoption by

addressing the technical difficulties of creating an AI application and using novel methods to assess the effectiveness of AI. To better integrate AI into the medical profession, measures should be taken to introduce AI into the medical school curriculum for medical professionals to better understand AI algorithms and maximize its use.

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