Retraction

Retraction: Research on the Opportunities and Challenges Faced by Educational Leadership Based on Artificial Intelligence in the Education Field (J. Phys.: Conf. Ser. 1915 022053)

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This article has been retracted by IOP Publishing following an allegation that raises concerns this article may have been created, manipulated, and/or sold by a commercial entity. In addition, IOP Publishing has seen no evidence that reliable peer review was conducted on this article, despite the clear standards expected of and communicated to conference organisers.

The authors of the article have been given opportunity to present evidence that they were the original and genuine creators of the work, however at the time of publication of this notice, IOP Publishing has not received any response. IOP Publishing has analysed the article and agrees there are enough indicators to cause serious doubts over the legitimacy of the work and agree this article should be retracted. The authors are encouraged to contact IOP Publishing Limited if they have any comments on this retraction.

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Research on the Opportunities and Challenges Faced by Educational Leadership Based on Artificial Intelligence in the Education Field

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Abstract. Artificial intelligence technology is the advanced computer technology. It has brought earth-shaking changes to the education field. This paper analyzes the integration and transfer of artificial intelligence technology in the education field, and it also elaborates the challenges and development trends of artificial intelligence.

Keywords: Artificial Intelligence, AIEd, Education

1. Introduction
This paper attempts to sort out the cutting-edge progress of global AIEd. It not only analyzes AIEd's latest theoretical and practical results, but also answers the deep connection between education and AI. At the same time, it provides suggestions for China to seize historical opportunities and avoid possible problems when facing the AIEd revolution in the new era.

2. There is a basic trend of AI technology to AIEd technology transfer

2.1. The education migration trend of AI technology
From the perspective of the basic trend of AI technology development, education is the industry that is most impacted by AI, and it is also one of the earliest, deepest and most promising fields for AI; this aspect is derived from the good technology of AI deep learning and other technical principles. Migration ability and technology migration to key areas of economic and social development such as education are the key features of this round of AI development. The current AI technology transfer in the education field has just begun but has shown great potential. Education's dominant position in AI technology innovation activities is being strengthened, and a larger-scale AIEd technology innovation tide is forming. This on the other hand also stems from the policy layout of various countries for the development of AIEd \cite{1}. The AI development competition in various countries is shifting from pure technology research and development, practical application to "soft power" competition such as policy layout. Most of the existing AI policy layouts in various countries include educational elements. Education has gradually moved toward the global center of this round of AI technology innovation.

2.2. The direct application of AI in education
AI is making a fundamental change in human education activities. From the perspective of the relationship between AI and human education and knowledge production in a broad sense, the concept of AIEd, which is motivated by the massive research and application of AI in the field of education, has two core aspects: one is through AI in education High efficiency, versatility and personalized applications in the field promote the development of adaptive learning environments; second, through accurate calculations and clear manifestations, the effective expression of knowledge that cannot be quantified in the humanities and social sciences makes AI an important Technical means to crack the "learning black box". From the perspective of the development of AI and educational technology in a narrow sense, China's educational informatization development can be roughly divided into three stages (as shown in Figure 1): the first two stages are the "method innovation stage" and "platform innovation" In the AI era, Chinese education is about to enter the third stage, the “beyond reality stage”, which will realize simulation experiment education through the application of AI, data mining analysis, simulation simulation, 3D printing, brain-computer interface and other technologies. Situational communication, inquiry learning, personalized teaching, etc., have a fundamental impact on educational goals and methods [2]. Among them, AI is considered to be the most potential and influential educational information technology.

**Figure 1.** The development stage of education informatization

The NMC Horizon Report is a vane for the integration and development of global information technology and education. The 2018 NMC Horizon Report (higher education version) points out the key trends, major challenges and important developments in higher education technology that promote the reform of higher education. It can be found that the development of informatization in the education field is rapidly transitioning from mobile learning to the AI stage. In the next 4-5 years, the combination of AI and mixed reality technology will achieve a comprehensive impact on all stages of education; it can be considered that AIEd is The key force to promote the reform of education informatization in the future [3].

**Table 1.** NMC Horizon Report: 2018 Higher Education Edition

| Report subject | Content of report |
|----------------|-------------------|
| **Key trends to accelerate the adoption of higher-education technology** | |
| Long-term (5 years and above) | Promote a culture of innovation, cross-institutional and cross-departmental cooperation |
| Mid-term (3 to 5 years) | Open educational resources, new forms of interdisciplinary research |
| Short term (1~2 years) | Pay attention to learning measurement and reconstruct learning space |
| **Major challenges hindering the application of educational technology such as business** | |
| Challenges that can be met | A real learning experience, improving digital literacy |
| Difficult challenge | Organizational design adapts to future work and promotes fairness |
| Serious challenges | Economic and political pressure, rethinking the role of educators |
| **Significant development of higher education technology** | |
| Online time (within 1 year) | Analysis technology, makerspace |
| Online time (2~3 years) | AI, adaptive learning technology |
| Online time (4~5 years) | Mixed reality, robotic submersible |
3. Examples of frontier research and application of artificial intelligence in education

3.1. Teaching
1) Classroom teaching aids. Aiming at the existing problems of classroom teaching, the classroom supervision system based on face recognition, speech recognition, motion recognition, emotion recognition, eye recognition and other technologies adopts the classroom assistance system of "real teacher + AI assistant", which can achieve full coverage of the curriculum. It can monitor and analyze students, attendance, classroom performance and concentration. It can also intelligently evaluate teachers, teaching quality. It can generate classroom assessment reports in real time and give quick feedback. Teachers can adjust teaching content and methods in real time to ensure high quality and comprehensiveness. The interactive online classroom experience forms a complete closed-loop supervision of class behavior, behavior recognition, and recognition output [4].

2) The simulation teaching environment of intelligent virtual reality. The development of AI technology has made VR more "intelligent". It can not only simulate and restore certain situations in the real world, and build an intelligent virtual reality simulation teaching environment, but also greatly improve the effect of the virtual world and the user's interactive experience. Learners provide support and counseling, feedback to user behaviors more naturally, and help learners overcome difficulties. For example, Xueersi Online School introduces VR and AR technology into teaching scenarios, and applies them to dangerous experiments that are not easy to operate in physical chemistry teaching or experiments that are not operable in real environments. Based on a specific teaching model, "they" can propose appropriate teaching conditions. Questions, and collaborate with students to complete learning tasks.

3.2. Learning
1) Personalized intelligent teaching system. Intelligent Teaching System (ITS) is one of the earliest and most widely used technical directions of AI in the education field. Based on OCR recognition, natural language processing, data mining and other technologies, ITS can provide intelligent recommendation services, academic analysis services, fault diagnosis and decision support services throughout the learning process [5].

2) Take photos to search for questions. Based on image recognition, natural language processing, data mining and other technologies, AIEd products represented by homework help, little monkey search questions, and homework wizards support students to take photos to search for questions, and quickly retrieve the corresponding analysis methods and detailed analysis processes in the massive question bank. At the same time, it can quickly identify students' weak knowledge points through refined knowledge graphs and tags, and provide students with timely and effective personalized guidance.

3.3. Exam
In the CPA comprehensive examination in September 2018, educational robots were used for the first time in exam room invigilators, and the American College Entrance Examination (ACT) also deployed an intelligent exam invigilator robot in the world's first computer-based exam. The intelligent invigilator robot put into use by the well-known testing organization All-American Online (ATA) introduces AI technology and big data technology into examinations, examination rooms, examinee management and fraud supervision. Based on computer vision perception technology, it can detect tens of thousands of examinees in examination room videos [6]. Actions are analyzed, and suspected cheating behaviors are captured with the help of big data comparison, so as to build an AI perception analysis system in the intelligent examination room, which comprehensively improves the efficiency of invigilation and the fairness of the examination.

3.4. Evaluation
1) Research on intelligent program evaluation. After decades of development, the program online evaluation system can perform keyword analysis, programming style analysis, error detection, and plagiarism detection on program operations from the four perspectives of grammar, structure, function, and overall complexity. At present, the program evaluation system is basically embedded in the programming teaching software, which is used for classroom teaching, online homework submission and correction, online examination and so on.

2) Research on smart oral English assessment. The development of AI technologies such as speech recognition, voiceprint recognition, speech synthesis, and natural language processing, especially the breakthrough of deep learning methods in this field, has made it possible for textless speech evaluation to be used. It is available in the oral examination and language training sections. A comprehensive application. The spoken language evaluation system is based on the situational dialogue mode, covering a variety of scenarios such as spoken language learning, training, testing, etc. to achieve individualized intelligent voice scoring.

4. Main trends and challenges in the future development of educational artificial intelligence

4.1. Development trend

1) Will promote the transformation of the role of teachers to adapt to the new teaching environment In the future, the role of teachers will undergo a huge change due to the application of AIED. First of all, the flattening of information access means that teachers no longer have the advantage of knowledge and information. Teachers become leaders of teaching activities rather than power centers, designers of teaching content rather than disseminators, and teachers and students are on the same knowledge learning platform [7]. The top-down education model is no longer applicable; secondly, teachers who are liberated from simple and repetitive activities such as heavy homework review and examination judgment need to focus more on students' personalized teaching plan design and comprehensive development strategy research. Therefore, as education adapts to the development of the times, education training goals and learning paradigms change, teachers need to keep up with the trend and adapt to the new teaching environment, so as to better play their role as an important education subject.

2) Will speed up the quality education of Al implementation and promote the completion of the closed-loop training Under the background of the new college entrance examination, school management is in urgent need of reform. As one of the important contents of education reform, quality education urgently needs a new generation of comprehensive quality evaluation system to achieve full business process coverage from indicator construction, evaluation methods, collection plans, integrity systems to results announcements. Through the scientific integration and application of modern teaching theories and AI technology, in the future, AIED will break through the shackles of serving exam-oriented education and become a powerful promoter of inclusive and intelligent quality education [8]. Construct a data collection plan that is integrated with the school's normal education and teaching activities, record student growth data through scientific and effective content supervision and integrity system, carry out process evaluation and summative evaluation; introduce multiple evaluations such as students, parents, schools, and third parties The main body, and can provide intelligent trial calculations of evaluation results based on national and regional standards, forming a closed-loop system of timely feedback and effective intervention, assisting the education authorities in scientific decision-making, so as to achieve comprehensive training of students' exploration ability, analysis ability, and learning ability. Conduct scientific and fair evaluation of students' comprehensive quality, guide and promote the overall improvement and development of students' comprehensive quality.

3) It will promote the reform of educational research methods and push educational research toward science. The advent of the AI technology revolution may become a "watershed" for the reform of educational research methods. Educational disciplines are expected to achieve "self-salvation" through AI-oriented research methods, and through methodological reconstruction, research
technology and tool innovation, to get rid of the current disciplinary crisis and realize the subversive innovation of educational research methods, and finally realize the reconstruction of educational disciplines, and promote the scientific research of education. Educational research has the natural advantages of big data collection and analysis. If it can deepen strategic cooperation with educational institutions and technology companies such as New Oriental and iFlytek, and promote the integration of data and technology, it will be possible to form a series of scientific research conclusions. And directly apply the results of big data research to educational activities. On this basis, the AI method represented by machine learning has the characteristics of big data, strong computing, good at tracking and repeatability, has the ability to learn independently, can form a large database with self-renewal function, and then develop better teaching strategy.

4.2. The key challenge

1) AI technology itself is not mature enough. The problems and controversies in AI itself have brought a series of challenges while providing opportunities for AEd. Restricted by technological maturity, technical research based on empathy, emotion, and long-term interaction is still at a relatively primitive stage; in terms of product service objects, many AI technologies are only applied in the field of children's education; at the same time, AEd is applied in many fields. Most of them are still in the conceptual stage. The potential of market application diversity has yet to be tapped.

2) AI's potential moral and ethical issues lack legal system norms [9]. At this stage, AI is moving towards a strong AI that can truly reason and solve problems, but strong AI lacks policy guidance and authoritative supervision. Supervision, the ethical and moral issues caused are worrying. For example, the realization of AI technology is based on a large number of data training sets and automatic discrimination and screening, especially in the field of education with distinct personality characteristics. Massive teaching data is used for the development of AEd products. And as the underlying data foundation. This makes the risk of the privacy of students and teachers' social communication, teaching behavior and habits, and other privacy leaks sharply increased, and data security is questioned. Any technological development should not be at the expense of human privacy. Therefore, data protection needs to be done to ensure that the teacher Students have absolute ownership and control of their own data, and seek to strengthen the management and protection of private data in legislation and ethics to minimize the possibility of data leakage and abuse.

3) Excessive reliance on AI may lead to education vassalization. The rapid development of AEd has made the current education enter a comprehensive technology period, and education's dependence on technology has also shown an intensifying trend; the research and development of educational products is still biased towards technology, and the phenomenon of product homogeneity is serious, and the production of high-quality educational content cannot be taken into account. At the same time, excessive reliance on AI and neglect of teachers' experience knowledge and mental work, students' learning ability and innovative thinking may lead to teachers' loss of teaching ability [10]. No more diligence in teaching strategies and intentions: students lose the motivation and training for independent thinking, indulge in the completeness of tools and cannot cultivate a healthy and comprehensive personality and conduct. The purpose of education is no longer to cultivate people but to cultivate AI. Education may completely become a slave and accessory of AI.

5. Conclusion

In general, AEd brings more opportunities than challenges. This has greatly affected the direction and pace of global education reform. It has effectively improved the intelligence level of education informatization. At the same time, education must follow the trend and update the educational goals and connotations timely. We must train more core talents to enrich the reserve force for future AI technology.

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