A Study on The Pathways for AI Technology to Enhance Teachers' Work Efficiency

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Abstract: Teachers in the basic education stage are faced with heavy transactional work pressure, which occupies the time for teachers to carry out educational activities and professional development. The development of AI technology provides a new solution to solve the problem of teachers ' burden. Based on the front-line teaching practice, this paper analyzes the practical difficulties such as insufficient tool adaptability and weak digital literacy of teachers in the process of AI empowering teachers ' work efficiency, sorts out six types of high-frequency repetitive work scenarios such as courseware making and homework correction, and gives matching AI tools and operation steps in combination with some application scenarios, and puts forward the optimization strategy of AI empowering teachers ' work efficiency. Practical research shows that AI tools can significantly reduce the length of teachers ' transactional work, help teachers return to the essence of educating people, and promote the high-quality development of education.

Keywords: AI Technology; Application Scenarios; Digital Literacy

1. Introduction

At present, teachers in the basic education stage are facing heavy transactional work pressure, and they need to invest a lot of time every week in repetitive tasks such as homework correction, courseware making, and performance statistics. Such tasks are low in intellectual input but time-consuming, which seriously squeezes teachers ' time for teaching design, personalized counseling and professional development. With the rapid development of big model technology, mainstream AI tools such as beanbag, DeepSeek, ChatGPT have the ability of human-computer natural language communication, text generation, data processing, intelligent correction and so on, which provides a new possibility to solve the problem of teachers ' workload. How to reduce the burden and increase the efficiency of teachers through technical means has become an important issue in the field of education. Based on the front-line teaching practice, this paper explores the landing path of AI technology to improve teachers ' work efficiency.

2. The Existing Dilemma of AI Empowering Teachers ' Work Efficiency

Although AI has outstanding advantages in improving teachers ' work efficiency, it still faces many difficulties in the current application process, which restricts the full play of the empowerment effect.

2.1 Insufficient Tool Suitability and Poor Application Experience

The survey found that ' weak formula recognition ability and frequent knowledge point errors ' are the core reasons why many science teachers give up using AI tools. Most of the existing AI tools lack the pertinence of disciplines, and the professionalism of the generated content is insufficient. Teachers also need to take time to manually correct, which increases the operational burden.

2.2 Teachers ' AI literacy is Insufficient and Their Application Ability is Weak

Some teachers are afraid of new technologies, and because of the lack of effective tutorials, they are not familiar with the operation methods and interactive logic of AI tools, and it is difficult to give full play to the functions of tools.

In addition, there are also problems such as data security and copyright division. However, AI technology has become more and more mature, which restricts the implementation of its ability to empower teachers ' work efficiency. The important factors lie in teachers ' forward-looking consciousness and the ability to explore the adaptation of teaching scenes and AI

tools. As long as teachers can make good use of AI tools in combination with their own teaching needs and realize human-computer collaboration, they can give full play to the enabling value of AI.

3. Application Scenarios and Operational Methods

Through the investigation of front-line teachers, six types of high-frequency repetitive scenes are sorted out, including homework correction, courseware production, test paper preparation, lesson plan writing, student comment writing and text notification writing. At present, AI technology has mature technical support and simple operation in most application scenarios.

3.1 Courseware Making

(1) Open the official web page version of the bean bag and enter the instruction : ' generate a special parallelogram teaching design, including teaching objectives, key and difficult points, examples, classroom exercises, classroom summaries ' ;
(2) Upload the teaching design to the bean bag ;
(3) Input instructions : generate the corresponding PPT according to the teaching design ;
(4) Teachers download PPT, further fine-tune, refine the content, and can also give the adjustment instructions to the bean bag to regenerate the PPT that meets the requirements.

3.2 Job Correction

3.2.1 Correction of objective questions
(1) Enter the WeChat applet answer card assistant and make the answer card ;
(2) The mobile phone scans the answer card and gives the right and wrong judgment and score in time ;
(3) Teachers mark scores on the answer sheet.
3.2.2 Correction of objective or subjective questions .
(1) shoot the job with a mobile phone or upload the electronic document 1 to the beanbag ;
(2) input instruction : correcting document 1 ;
(3) AI generates correction opinions, which are fine-tuned by teachers and fed back to students.
3.2.3 Student Comment Writing
(1) Open the WeChat applet student comment assistant and import the student name ;
(2) Teachers match labels for each student according to the characteristics of the students ;
(3) Comment setting ;
(4) Generate comments ;
(5) Export the comment document, use it directly or modify it slightly.
Even in complex scenes with strong professionalism such as homework correction and courseware making, AI can be efficient and competent. As for simple scenes of plain text, AI processing is simpler and easier.

4. The Optimization Strategy of AI Empowering Teachers ' Work Efficiency

In the process of promoting the application of AI, we must always adhere to the core principles of ' teacher-led, AI-assisted ', and clarify the auxiliary positioning of AI. Teachers need to review and adjust the content generated by AI to avoid the problem of teaching homogenization. On this basis, the following specific optimization strategies can be implemented :

4.1 Optimize the Development of AI Tools to Improve Scene Adaptability

R & D institutions should focus on the actual needs of teaching, develop special AI tools that fit different disciplines and learning segments, and solve the problem of high-frequency repetitive work in teachers ' work.

4.2 Hierarchical Digital Literacy Training. According to the Technical Basis and Teaching Needs of Teachers, a Hierarchical Digital Literacy Training System Is Built.

Basic application layer : for teachers with weak technical foundation, focus on the basic operation of AI tools (such as information retrieval, text polishing), supporting graphic operation manuals and short video tutorials, and reducing the threshold for use ;
the scene fusion layer : for teachers with a certain technical foundation, combined with the actual needs of teaching, learn how to integrate AI into lesson preparation, correction and counseling ;
innovation leading layer : for key teachers, cultivate their ability to use AI to carry out teaching research and curriculum innovation.

4.3 Security and Ethical Protection

Standardize the use of AI tools, follow the relevant provisions of data security, and prevent information leakage between teachers and students ; clarify the copyright ownership and responsibility definition of AI-generated content, avoid ethical risks, and allow teachers to use it

safely.

5. The Practical Effect of AI Empowering Teachers ' Work Efficiency

Through a three-month practical research on the application of AI tools for front-line teachers, the results are as follows :

5.1 Analysis of the change of working hours. The length of time spent on transactional work by teachers in the pilot project has been significantly reduced, with the most significant decrease in the duration of courseware production. This shows that AI tools can effectively replace repetitive transaction work and greatly reduce time costs.

5.2 Teachers ' job satisfaction and experience. The survey shows that 90.6 % of teachers think that AI tools reduce the workload, and 87.5 % of teachers think that efficiency is significantly improved. Most teachers reflect that after mastering the basic operation, they can put more energy into the optimization of teaching design, and realize the shift of work focus from ' transactional work ' to 'educational work'.

6. Conclusion

At present, artificial intelligence has been widely used in all walks of life, showing strong enabling value, and its development potential in the field of education is beyond doubt. Some schools have adopted platforms such as intelligent marking system, which has initially shown the practical value of reducing burden and improving efficiency. As the core subject of education and teaching, teachers should face up to the opportunities and changes brought by AI, take the initiative to adapt to the development trend of intelligent education, leverage artificial intelligence to simplify transactional work, deepen professional teaching, and return more energy to classroom education and students ' growth itself, so as to help the high-quality development of education in the new era with more efficient working conditions and better teaching services.

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