

Analysis of the current situation of intelligent education based on big data and artificial intelligence

Zihan Wu^{1, *}, Wenting Pan², Yu Fu² and Zihan Li³

¹School of Management science and Engineering, Anhui University of Finance and Economics,
Bengbu Anhui, 233030, China

²School of accounting, Anhui University of Finance and Economics, Bengbu Anhui, 233030, China

³School of accounting, Shanghai Lixin Institute of accounting and Finance, Shanghai, 201620, China

*Corresponding author Email: 20192672@aufe.edu.cn

Abstract: At the present time of the information age, in response to the national requirements of intelligent teaching, high schools around the world promote the deployment of the program of intelligent education combining artificial intelligence and learning and teaching. This paper analyzes the current situation of smart education based on big data artificial intelligence combined with the results of relevant questionnaires and gives stage suggestions.

Keywords: Artificial Intelligence, Big Data, AI 4 Education, Smart Education.

1. BACKGROUND

1.1 Technical Support.

The synergy of 5G, big data and visualization technologies nowadays has a profound impact on the education field. Big data mining technology enables effective integration of student-related learning data so as to analyze the in-depth value of the data and create corresponding development space. Based on visualization technology, combined with the corresponding data information analysis system, the relationship between students' learning behaviors and changes in learning can be studied, which helps to dig deeper into the issues in the education field.

1.2 Social Change.

China is currently using a number of technologies to accelerate the reform of talent training mode and teaching methods, and to build a new education system that includes smart learning and interactive learning.

1.3 Policy Support.

In recent years, education departments at all levels have issued a series of relevant policy documents to promote the upgrade of education informatization to stage 2.0, taking into account the development trend and requirements of education informatization. Smart campus, accelerate the modernization of education", which provides a new opportunity to help the development of smart education.

In summary, riding on the wave of big data and artificial intelligence, smart campuses are being built around the world to accelerate the construction of an innovative country and to meet the social development trend.

2. RELATED WORK AND ANALYSIS

With the advancement of smart education, information-based learning has become popular in various schools and is changing to intelligence.

Fu Zhiqi in China recommends the Smart Classroom, a deep integration of modern education technology with the arts curriculum, which uses a large smart screen with PPT and teacher-student interaction through an app to fully demonstrate materials and techniques for students in a class, achieving an unprecedented intelligent experience. But it does not meet some of the traditional ways that teachers need to demonstrate and practice in person.

Wang Jingjing introduced the use of Rain Classroom in basic physics courses, such as pre-class check-in, online discussions and post-class assignments, which has the advantages of ease of use, personalised learning and the addition of big data analysis. However, it can pose different problems for different subjects and requires a lot of effort from teachers to build the teaching structure.

Zou Jianzhang and Tu Kuan chose "Smart Learning" for their paper explanation, which is very convenient for schools because of its automated marking, large scale question database and high level of intelligence, and helps teachers and students to understand their learning status through dynamic data collection in the whole process. The downside is that the Wise Learning platform supports the creation, marking and analysis of examination papers better, and there is still room for improvement in other stages of teaching.

3. FUTURE RESEARCH DIRECTIONS

From the above work we have learnt that the more popular platforms for building smart schools are Rain Classroom and Smart Learning, which provide convenience for teachers and students but also have areas for improvement. The product is for the customer, and smart education is also for the students and teachers, so it is important to identify the shortcomings and find ways to improve them in order to effectively increase the acceptance of smart education in the education community.

So from June to October 2021, our team sent out a total of 6,000 questionnaires in Bengbu, Anhui Province, to young people aged 15 to 18 years old, which included questionnaires for "". After eliminating 659 invalid questionnaires, based on the remaining 5341 questionnaires, we conducted a statistical survey on four representative questions that students currently have about the smart education platform of big data and artificial intelligence.

Table 3.1 Current satisfaction table of smart education

Optional choic	Overall satisfaction	Ease of use	Diversity of resources	Suggestion feedback
Satisfied	63.45%	81.32%	49.36%	54.69%
Preferably	22.33%	7.23%	24.62%	16.5%
Fine	1.92%	9.56%	8.26%	16.68%
Poor	2.30%	1.89%	17.76%	12.13%

The data is plotted below using visualisation techniques, and it can be seen that there is a high level of positive feedback for young students who are mainly interested in the current state of smart teaching in Bengbu, but there is still a significant proportion of dissatisfied groups in terms of diversity of resource features and feedback.

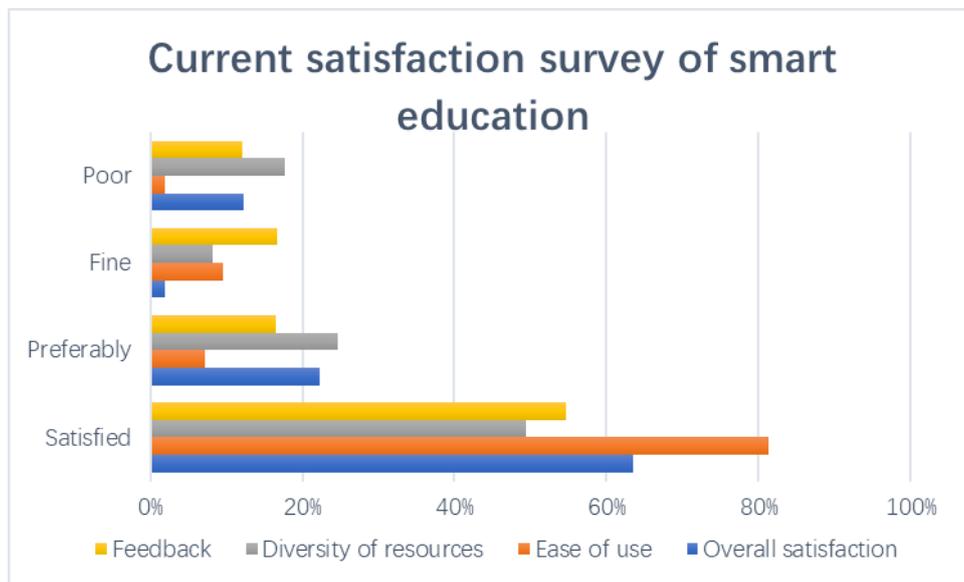


Fig 3.1 Current satisfaction survey of smart education

When we take these three parts of the detail in three dimensions, we can see that there is a trend towards a flat development in all three areas as satisfaction decreases. The normal trend would be to move from higher to lower satisfaction levels, so there are some pressing issues in these areas that need to be addressed at present.

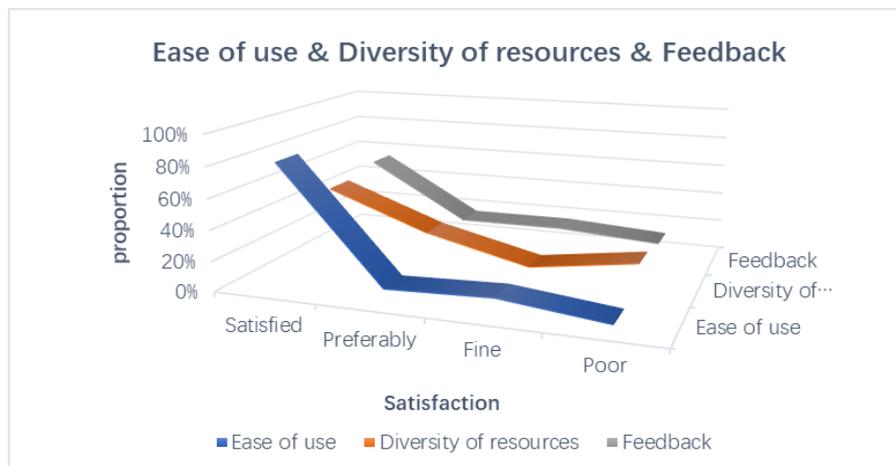


Fig 3.2 Ease of use & Diversity of resources & Feedback

The feedback mechanism, which is not only the teacher's assessment of the student, but also includes negative feedback from the educated to the educator for moderation. The point spread questionnaire revealed that students often have difficulty finding or pinpointing specific teachers on the platform for feedback when they have problems or make suggestions. Not only does this cause some disruption to students' learning, but it also creates a potential problem for teachers to prepare lessons in the future at a time when the epidemic is raging and people are unable to meet.

Ease of use is also extremely important. Firstly, students have a heavy academic load and the clutter of function menus and message notifications can cause a degree of disruption to students who are concentrating on their studies. Secondly, the questionnaire reflects that the average age of the current main teachers is high, their ability to use new things needs to be improved, and they are still having trouble creating classroom PPTs and dealing with unexpected equipment failures.

Limitations in functionality and resources are also bottlenecks in the development of smart education today. Most of the smart education platforms that we know of are geared towards online classes and homework exams related, and some students with weak foundations reflect that they still need to watch online lectures on other video platforms for self-study after class, and use exercises from other teaching aids as practice supplements. Some students also suggested that the experimental courses only included online video lectures, which were of limited help in improving their practical skills, so we can see that the current smart education platform still needs to be improved in terms of functions and resources.

In the coming period, smart education will assist students in all major cities, including Bengbu, to learn, and while developing the technical points of smart education in depth, more attention should be paid to the feedback mechanism, simplicity, expansion of functional resources and other breadth in parallel.

4. FUTURE RESEARCH DIRECTIONS

In summary, taking Bengbu City as an example, students and teachers as direct participants in smart education, improving student and teacher satisfaction and recognition is the fundamental way to promote smart education. Therefore, in the future, the vertical development of smart education based on big data and artificial intelligence should also focus on the optimisation of feedback mechanisms, the construction of experimental course platforms, the reduction of the threshold for teachers' use, the expansion of functions and the sharing of resources. In this regard, I have the following recommendations.

4.1 Optimising Feedback Mechanisms

Online communication is not constrained by location and time, providing a free and convenient communication channel for students and teachers. We need to ensure that the feedback interface between students and teachers is easy to find, that the peer-to-peer communication process is smooth, and that multiple channels of communication within and outside the classroom are beneficial to the promotion of smart education and the improvement of the platform.

4.2 Emphasis on experimental curriculum development.

The national goal of building innovative talent requires students to have not only theoretical knowledge, but also the ability to experiment in reality. In this regard, the platform can combine its

data and technical advantages to build a cloud laboratory operation platform for physics, chemistry, biology and other science and technology courses to carry out experimental layout, so that students can carry out step-by-step simulation experiments and cultivate their practical skills even in an environment without experimental conditions.

4.3 Provide a low-threshold platform for teachers.

At present, the main content of courseware on the Smart Education Platform is PPT and various types of experimental screen displays. We can develop a low-threshold application for creating courseware by combining the strengths of teachers and technology. This will allow teachers who are not familiar with computer operations to provide their students with courseware content that includes their own insights and tips, helping every teacher to work and students to learn.

4.4 Expanded functionality and resources.

As the most unsatisfactory part of the student satisfaction survey, we should first of all open up cooperation and learn from the models of educational enterprises such as "BBK" and "MOOC" to launch online courses, mainly by teachers from our own schools, to showcase the strength of our teachers and to avoid students having to spend a lot of money. The teachers' strength, and avoid students spend time to find course resources to waste energy. Secondly, each platform should step up its research and development in terms of breadth, such as the development of online courses and the optimisation of recommendation algorithms in the case of the original examination function of Smart Learning, so that students and teachers can truly experience the greater significance of big data technology and artificial intelligence in smart education.

REFERENCES

- [1] Fu, Zhiqi. (2020). Focusing on intelligent teaching and learning to deepen the teaching of art appreciation in high school - an example of teaching case "Manners and edification". *Research in Fine Arts Education* (01), 150-151.
- [2] Wang Jingjing, Song Changsheng & Zhao Tingyu. (2019). An introduction to the application of rain classroom in teaching basic general physics. *Educational Modernization* (A3), 231-233. doi:10.16541/j.cnki.2095-8420.2019.103.079.
- [3] Zou JZ & Tu Kuan. (2022). The advantages of combining "Wise Learning" with biology paper lecture and assessment. *Encyclopedia of Knowledge* (09), 81-82.
- [4] Liao C.F., Dai S.Y., Liu F.Y., Lin D.J. & Lu X.L.. (2022). Exploration and practice of intelligent classroom teaching mode in higher education. *Fujian Computer* (07), 114-117. doi:10.16707/j.cnki.fjpc.2022.07.030.
- [5] Xing Xishen & Guan Jia. (2022). Smart teaching in the new era: classroom practice, problem review and development countermeasures. *Research in Electro-Chemical Education* (05), 109-114. doi:10.13811/j.cnki.eer.2022.05.015.
- [6] Gu, Yin & Zhang, Hui. (2020). Research and application of intelligent teaching space model based on cloud-side collaboration. *Heilongjiang Higher Education Research* (12), 145-150. doi:10.19903/j.cnki.cn23-1074/g.2020.12.027.
- [7] Zhang, Luo Yi. (2022). Analysis of wise teaching strategies for junior high school mathematics based on big data. *Science Advisory (Educational Research)* (01), 193-195.
- [8] Liu Shu Kun, Pan Xian Min, Li Chao Liang & Tang Jin Peng. (2021). Strategies for accurate learning needs perception in smart education in the era of big data. *Journal of Higher Education* (18), 14-17.
- [9] Xu Shengdong. (2021). Analysis and research of student performance prediction model based on big data technology. *Popular Standardization* (12), 51-53.
- [10] Lin, Mengnan & Li, Jinhui. (2022). A neural network model for student grade prediction based on adaptive differential evolution. *Modern Electronics Technology* (03), 130-134. doi:10.16652/j.issn.1004-373x.2022.03.024.