Research on the Digital Technology Framework for Teaching Ability of Future Education Teachers

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Abstract. Developing with digital and the application of digital information in the future education, how teachers will cope with the impact of new technology on teaching in the future education, how to cope with the challenges brought by future education to teachers' teaching ability in advance, how to make reasonable prediction is the focus of teachers in the future education. From the perspective of future education, this study uses the methods of content analysis and text analysis to analyse the driving factors of future teachers' ability exploration and related aspects of future education's challenge to future teachers' ability, explores the elements and development trend of teachers' teaching ability in future education, and encourages teachers to actively explore their adaptability to future education. Based on the research and the model of teachers' knowledge and technology, providing the digital technology framework for future teacher's education.

1.Introduction

The concept of digital has been talking in every field as well as education. Digital and information has been the guiding way in education and other field. Internet, big data, cloud computer, artificial intelligence and block chain bring a big change and influence the whole educational system. In recent years, digital building has been the center topic in each field. As for the teacher how to challenge digital education, and how to develop as an appropriate framework is worth to discuss.

1.1.The drive of education digitization process

With the onset of the pandemic, digitization of education has also taken off globally and played an important role. From the emergence of digitized education documents, to the pilot of digitized education in first-tier cities, to the construction of various resources such as smart classrooms, Internet education, digital teaching reform and other related platforms and resources are promoting the popularization of dig.

1.2.The drive of intelligent teaching resources

The most important guarantee of traditional teaching is books and teachers, but with the development of information technology and artificial intelligence, modern education is more dependent on equipment and environment. With the further development of information technology, the future education will be more dependent on environment and relevant resources. As the executor of education, the adaptability of teachers needs to be prepared, which should be the most discussed issue in education at present.

2. Future education challenges the ability of future teacher

With the promotion of digitalization, China has been in the intermediate stage between intelligent teaching and future education. For example, with the development of artificial intelligence, artificial intelligence replaces translation work and labor force is replaced. Teachers have felt the opportunities and challenges brought by future education and started to face the coming of future education. The specific challenges are as follows: First, what is the motivation for transformation? To realize the student-centered learning concept emphasizes the whole-person education, which is not only to realize the all-round and personalized development of people. Second, education needs continuous innovation in order to achieve educational breakthrough. The innovation of education depends on the executor of education, the teacher.[5]

2.1.Transformation of digital design thinking ability

With the development of digitalization, the construction of instructional design thinking ability based on big data will empower teachers in the future of education implementation. Big data can help teachers make more flexible adjustments in the transformation. The training of data thinking ability will make digital design thinking ability more adaptable to future education. This kind of digital design thinking ability should become the core of

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current research on future teachers ' ability to cope. Through teachers ' ability of digital design thinking to promote the future education digital transformation driven by students ' own expectations, the future education system ecology will get better vitality.

2.2.The relevant digital theory learning ability

The future education is not just limited for school and teachers. The logical starting point of the future education is the development of education, but need to adapt to change, to rise. In order to adapt to the development of education, teachers should have the learning ability of digital theory, rather than self-elimination. [3]The study of digital theory should include development theory, catalysis theory and strain theory. These educational theories can enable teachers to carry out technological enabling pedagogy innovation. Technology, teaching, students and teachers are the four basic supporting elements of future education. Only by interacting with each other can future education take effect and change the form of education. The present wisdom education is the intermediate stage of the transition to the future education and wisdom education is the theoretical basis of the future education. Intelligent education can become educational artificial intelligence,[4] which is closely related to data and an important factor affecting the substantial changes in education. Therefore, teachers should pay attention to the theoretical basis of future education and the theoretical framework supporting its development. Only with the ability of digital theoretical learning, can they become future teachers.

2.3.Comprehensive application ability of science and education

Today, all aspects of the world are rapidly developing and changing, and the competition among countries is becoming increasingly fierce. Especially after the outbreak of COVID-19, the progress of global digitalization has been accelerated. The world pattern is changing, and more attention is paid to the competition of talents, so more attention is paid to the development of people. Only by improving their comprehensive application ability of science and technology and education can future teachers face the challenges faced by the development of human education in the future, especially the huge changes in the future population of China. We should make timely adjustments in the aspect of education. Science and technology reshape the future education ecology will be reflected in the integration of science and technology and education of the new education system, through science and technology innovation of future education form, drive education modernization to achieve the great development of science and technology and education integration. Education is the main battlefield of the evaluation of the role of science and technology in the future education system. How much success can be achieved depends on the value and function of the comprehensive application ability of science, technology and education in the education system.

3.The possibility of digital education for teachers presents

The transition phase of information technology should shift from empirical exploration to data support. Therefore, education digitization should strengthen the analysis and application of teaching process data and learning data, and carry out the teaching practice of basic numbers. Educational big data can mine the intentional rules from the complex structure of big data, so as to provide the basis for the development of education, the decision and deployment of education and the adjustment of education, and provide new impetus for the all-round development of students.

3.1.Practical exploration in the transitional stage of exploration

From 2020, our school began to explore the construction of a primary digital learning system based on "teacher adaptability + digital learning", benefiting more than 1200 students during COVID-19 epidemic. Learning based on data resources such as rain class, micro class and MOOCs has penetrated into teaching. Through in-depth analysis of data, The students ' learning behavior, learning characteristics, emotional attitude and ability level are evaluated. Compared with traditional means, the learning effect increased by 9.8% compared with one shot.

Particularly, the generation of digital test question store bank can immobilize the content of formative examination to urge students to complete the language knowledge they have learned. This practice of constantly promoting the generation of ability through the connection of question bank also plays a role in promoting digital teaching.

3.2.Conception of intelligent language laboratory

Firstly, the existing problems of laboratory construction are analyzed. The first problem is that the teaching support function is not enough and the utilization rate is not high. [7]The second problem is that the data collection rate is low, the storage function is poor, the lack of analysis, and the teaching support of the subject is insufficient.

Smart learning environment is very important for students' learning. Smart Language laboratory can integrate other disciplines and make use of the Internet of Things and cloud computers to establish a new smart language laboratory with safe, efficient and open data, which can better promote language teaching, scientific research and serve teaching through learning data collection and analysis. One of the most important points is the resource acquisition of the intelligent lab, and can realize the interaction between intelligent man machine and machine.

4.The digital technology framework for future teacher's education

Based on the above analysis, the realization of teacher education ability in the future needs to realize the collection, sorting and analysis of diversified data and multi-types of data based on digital platform, digital education network, cloud platform and other technologies.

4.1.The model of teachers' knowledge

Technology has great influence on education as well as for teachers. The influence deeply reflects teacher ' s knowledge accumulation and skills. [6]This influence enforces teachers to pursue the change absolutely. For long time, developing with the education practice, in the teaching field, a qualified teacher must have knowledge of teaching methods as well as specialized fields. While, today ' s education generally adheres to this principle. According to Lee S. Shulman and decade ' s character, referring to the feature of the era, the model of teachers' knowledge and technology is provided as the following Fig.1:

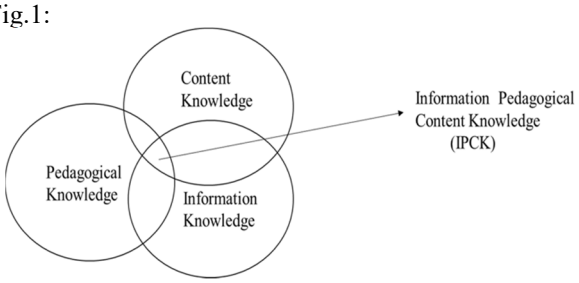

Fig.1 The Model of Teachers' Knowledge

4.2.The teachers' ability of future education

With the development of science and technology, from the technical point of view, computerization links systems and data through computers and electronic equipment,[1] which promotes the interconnection of information within and between systems. At the level of information and conversion methods, there are higher levels of ideas such as intelligence, speed, accuracy and quality. Big data relies on digital technology to realize the dynamic change of information, and uses digital and information transformation to realize the optimization and upgrading of data, that is, digitalization. Finally, all information is integrated to achieve systematic development and digital transformation. The teachers' ability of future education Fig.2 is show as the following:

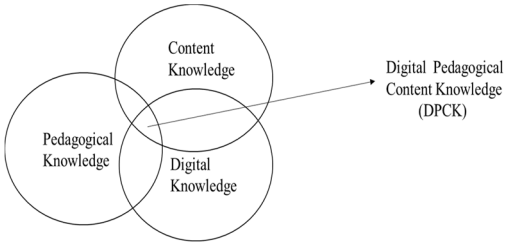

Fig.2 The Teachers' Ability of Future Education

The transformation of teachers' digital ability in education is also the bedside process of technology empowerment. Digital transformation is a long-term process of change, in which numerous educational innovations have to be experienced.[2] Teachers, as participants in the process of digital transformation, should improve their own digital ability, change their traditional thinking, change from passive to active, strive to be sentient learners who support education transformation, and form an open, orderly and sustainable good education ecology.

4.3.The establishment of educational digital technology frame work

Education digital transformation is an innovative upgrading process based on the conversion of analog format to digital format and digital upgrade. In the upgrading, external information and text mentioned here need to be converted into serialized digital objects, which is a challenge for future educators.[8] Digitized objects are readable and can be constructed, edited, serialized and deserialized in a variety of ways, shared, copied, transformed, and presented to teach object awareness or drive value creation in organizations and systems. Data is the core element of digital transformation. From the perspective of the potential of data empowerment, digital transformation realizes optimization through deep mining of data, extends value ecology by data ecology, and teachers, as participants, have clear goals and are closely connected with digitalization. Together with the enabling effect of digital, forms one of the core elements of digital transformation of education, seen as Fig.3:

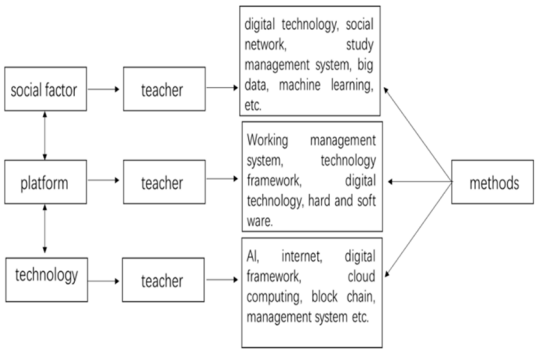

Fig.3 The Teachers' Ability of Digital Technology Frame Work

4.4.Human-computer cooperation ability

Education digital transformation is also a challenge for teachers' teaching ability. If we emphasis more on the application, it seems that we are controlled under Artificial Intelligence. How to understand and rebuilt the future educational world is a key issue for present teacher, including the research of educational theory. As a teacher should clearly know the limitation and the requirement of education in the future society. According to this, we should pay more attention to the cooperation ability between human and computer. The purpose of study of the cooperation ability is to make innovation in education. AI will be a cooperation partner in the future. The cooperation

ability is the core of future teachers' ability.[9] In the era of man-machine collaboration, the importance of knowledge began to be replaced by skills. The advent of artificial intelligence has enabled machines to help people acquire and digest knowledge faster. Knowledge that used to require a lot of time and effort to learn can now be quickly fed back and summarized with the aid of machines. This allows people to focus more on learning and developing skills. Knowledge remains an important foundation, but the development of skills has become more critical. By developing skills, people are able to cope with complex work and living environments and better adapt to future changes and challenges.

Artificial intelligence can help us learn and digest knowledge more efficiently. By inputting the content of books, AI can help us to screen and summarize important knowledge points, providing us with more refined and valuable learning materials.[10] At the same time, AI trained with multiple optimizations is more accurate and faster at answering puzzles than traditional teachers. This means that we can get answers to puzzles faster and avoid long periods of confusion and confusion.

In the education model of skill first, people can reduce a lot of knowledge learning time through the aid of machines, while improving the efficiency of knowledge absorption and digestion. More time will be devoted to learning and innovating skills that will enable us to better adapt to the demands of work and life in the future. This will have a positive impact on an individual's career development and quality of life.

5.Conclusions

Artificial Intelligence is driving society changes from life to education and even the battlefield. But in the educational span, the artificial intelligence is taking sharp changes, especially promoting the evolution of teacher's role and the teaching models. We not only emphasis on the application of the technology but also the meeting of the challenges. In the future education, teachers should be ready to meet the challenges, improve the cultivation and adjustment of their information technology ability, and realize the adaptability of their ability in the future education. Man-machine collaboration not only has great potential in work, but also plays an important role in learning and education. Although the development of computers and the Internet has changed the way learning is done over the past few decades, progress in knowledge acquisition has not been evident. Learning a book still takes a lot of time and energy, and requires us to think and absorb independently. However, with the advancement of artificial intelligence technology, we can now more easily use machines to assist learning. The composition of teachers' ability has changed in the future education. The competency model includes the formation of digital ability. Teachers, including students, are also lifelong learners and take the initiative to innovate. The digital technology frame work can help teacher's make clear about the factors of future education's digital develop trend to be a qualified teacher in the future education in the digital information development.

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