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Research on the Mixed Study and Teaching Mode of Rural Teachers Under the Background of Digital Transformation of Regional Education

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Abstract. The digital transformation of education is an important trend of the current education development. Through the introduction of digital technology and tools, it promotes the reform of education and teaching and improves the quality and effect of education. In the context of the digital transformation of regional education, classroom teaching also needs to carry out corresponding changes to adapt to the new educational environment, improve the quality of education, and promote the all-round development of students. Based on this, starting from the background of digital transformation of regional education, this paper builds the classroom teaching mode of mixed research and study, drives the reform of education and teaching, explores the development path of digital literacy of teachers and students, in order to provide program reference and case reference for regional classroom teaching reform, and realize the balance of education.

Keywords. Digital transformation; education balance; classroom reform

1. Introduction and background

With the breakthrough and extension of the new generation of information technology represented by artificial intelligence and 5G technology, human society has gradually stepped into the digital era of "Internet + artificial intelligence", and the huge change potential of digital technology in the field of education has made the digital transformation of education has gradually become an international consensus [1]. During the 13th Five-Year Plan period (2016-2020), China put forward the concept of "Internet + education" and emphasized the innovative application of information technology in education and teaching. During the 14th Five-Year Plan period (2021-2025), China put forward the strategic task of digital transformation of education, emphasizing that digital transformation should drive the reform of education and teaching. The policy is oriented to take the region as the construction application unit, promote digital transformation and information development, optimize the allocation of educational resources, promote

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educational equity and improve the quality of education. During this period, the Ministry of Education carried out the pilot work of information technology to support students' comprehensive quality evaluation and launched the selection activities of educational information construction and application. Based on this, this study, based on the digital transformation at the regional level, constructs the mixed research and classroom teaching mode of teachers from the perspective of reform and achieves some application results, in order to provide program reference and case reference for the digital transformation of regional education. Therefore, it is very important to improve the role of information technology in education, especially in rural teachers.

2. The theoretical basis of the practice of rural teachers

2.1. Digital literacy

Cultural and digital technical literacy is a necessary condition for democratic citizenship in an information society. Citizens who do not know how to use digital technology intelligently (know how to connect and browse the Internet, search for useful information, analyze and reconstruct information, and communicate with other users) will not be able to enter the culture and market of the information society [2]. Digital literacy has become an essential core skill for educators. It not only covers information technology capabilities, but also extends to innovative thinking, data awareness, and information management capabilities.

Digital literacy is a basic quality for both educators and students. In the information age, information technology has become one of the key skills of educators. Teachers need to master various information technology tools and resources to carry out education and teaching work more effectively. At the same time, students also need to have a certain digital literacy, so as to use information technology for independent learning and inquiry learning, and better adapt to the learning style of the information age. Classroom reform provides an effective implementation strategy for the improvement of teachers 'digital literacy. Teachers can better integrate digital technology into classroom teaching, promote communication and cooperation among teachers, and provide more practical opportunities, so as to improve teachers' digital literacy and education and teaching level.

2.2. Knowledge and action should go hand in hand

Teachers should master educational theories, methods, subject knowledge and educational psychology, so as to design teaching plans, select teaching methods and evaluate teaching effects. Theory is the foundation, but also needs to communicate and cooperate with peers, and share resources. Teachers need to combine theory and practice, apply theory to practice, reflect on experience, in order to improve the teaching level.[3][4].

The cross-school mixed study mode expands the boundary of teachers' research and study, is conducive to the integration of theory and practice, and promotes the integration of knowledge and practice. Through the training and practice of mixed training, teachers can master various information technology tools and resources, such as multimedia courseware making, network teaching resources development, online course design, etc., and apply them to classroom teaching. The cultivation of this ability can not only

improve teachers 'teaching effect and students' learning effect, but also lay a solid foundation for teachers' career development.

3. Theoretical concepts in teacher training

3.1. Teacher training community

Teacher training community is a learning exchange organization in teachers 'continuing education. It aims to improve teachers' professional ability [5], emphasizing common beliefs, vision and cooperation, sharing insights and information, and solving teachers' practical problems collectively, reducing the burden and improving the quality of [6].

3.2. Constructivism theory

Constructivism teaching is student-centered, and teachers play various roles. They use situation, collaboration and dialogue to stimulate students' initiative and realize knowledge construction. Constructivism emphasizes students' meaning construction of knowledge, and the application and transfer of skills[7].

4. The construction of the classroom teaching mode under the mixed study

4.1. Teacher training community

With the progress of information technology and intelligent teaching, various teaching methods and modes of subjects are constantly emerging. Based on the realistic demands of teachers to develop digital literacy and the needs of students to improve digital literacy, this paper constructs a model of literature research and a classroom teaching mode based on collective lesson preparation, so as to provide strong support for the digital transformation of regional education. This model is applied in the pilot teachers of the pilot schools, and has achieved good results.

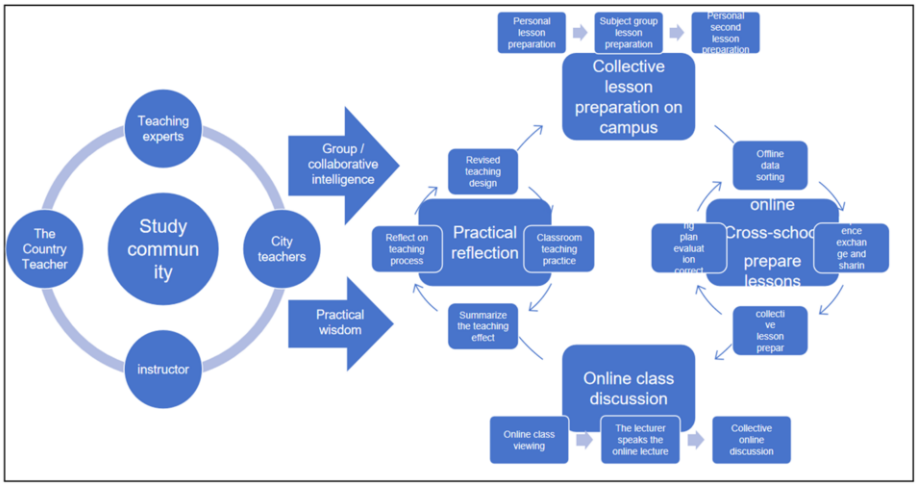

Figure 1 Cross-school online teaching and research mode diagram

The cross-school online teaching and research mode includes four links: collective lesson preparation, teaching preparation, course observation and discussion, and practice reflection, forming a closed loop. Combined with online and offline, using online platform interaction. The research community includes teaching and research staff, experts, rural and urban teachers, each performing their own duties. With the support of the information technology platform, we will promote students' core competence and teachers' professional development through research activities.

4.2. Flow chart of subject classroom teaching based on collective lesson preparation and study

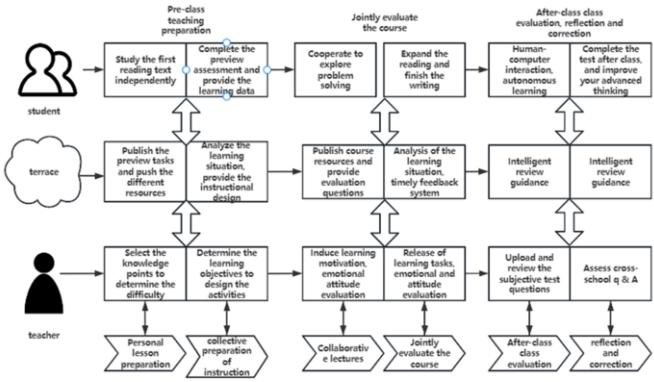

Figure 2. Flow chart of subject classroom teaching based on collective lesson preparation and study

The subject classroom teaching flowchart based on the collective lesson preparation mode is divided into three links: classroom teaching preparation, in-class teacher teaching and after-class student development. In lesson preparation, the teachers at our school adopt the advanced network classroom interaction of the same frequency, and then conduct students' study and teacher study based on the platform. In class, the platform is used for effective teaching, and after class, the platform corrects students 'homework to effectively support students' self-study. With the support of the information technology learning platform, students can learn the subject knowledge from all aspects and angles, improve students' core literacy, and realize the professional development of teachers.

5. Application of the Model and Outcomes

Through the introduction of advanced information technology, the classroom teaching mode has been greatly improved, and the teaching quality and efficiency have also been significantly improved. The whole process of school education and teaching management is informationized, forming the teaching mode of Chinese, mathematics, English and other subjects, improving the quality of classroom education and teaching, and realizing the quality and efficiency under the background of "double reduction".

5.1. Information-based teaching enables students to improve their academic performance

Taking mathematics as an example, background data analysis can provide teachers with personalized teaching reports. Pre-class analysis helps teachers to master students and adjust teaching; classroom data is used for personalized homework, tutoring and after-class content.

5.2. Development of teachers' information technology ability

The reform of information technology classroom has achieved remarkable results: first, the classroom mode is improved, students are paying attention to personalization; the teaching quality is improved, students master skills more effectively. Secondly, teachers get more resources and management interaction is more convenient; evaluation is a more scientific and timely solution. These achievements promote education modernization and help students develop in an all-round way.

5.3. Teachers' TPACK level is improved

To effectively evaluate the teacher TPACK level, the pilot-school teachers were surveyed by questionnaire survey, and 28 valid questionnaires were collected. TPACK analysis of teachers is shown in figure 3.

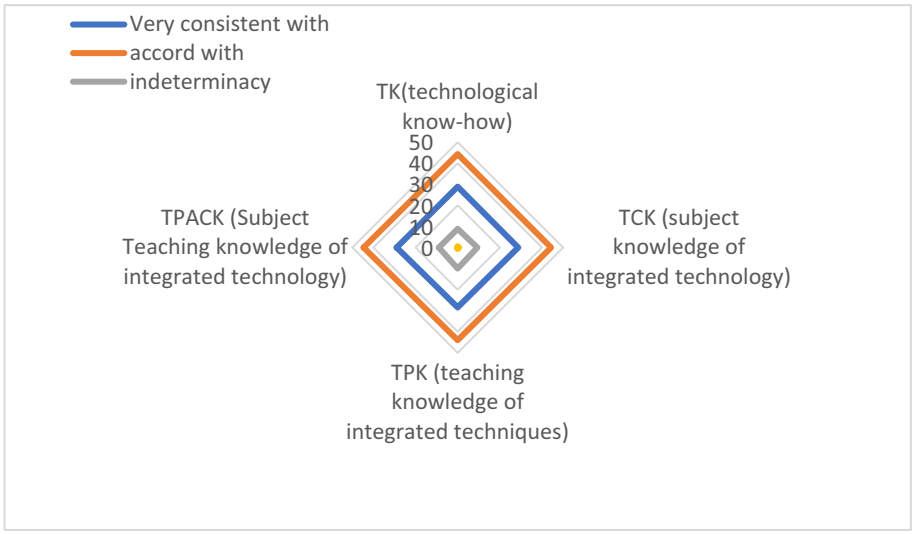

Figure 3 questionnaire survey radar map

Through the analysis of these four dimensions, the relevant knowledge level of teachers can be observed to a certain extent. Most teachers have a good grasp of all kinds of knowledge (TK, TCK, TPK, TPACK), teachers have a high level of information teaching ability, and the level of school information construction is good. From the perspective of TK (technical knowledge), teachers have the consciousness of integrating subject knowledge and information technology. Most of them can skillfully apply information technology software related to teaching, which can solve teaching problems through information technology, and timely repair teaching equipment in case of

emergency. Most teachers hold a positive attitude towards information technology to promote teaching and learning. From the perspective of TCK (subject knowledge of integrated technology), most teachers have a certain grasp of the integrated application of information technology and disciplines and can flexibly use information technology and put it into teaching practice. From the two dimensions of TPK (teaching method knowledge of integrated technology) and TPACK (subject teaching knowledge of integrated technology), teachers have an ideal mastery of technology and can effectively adjust their teaching with the help of information technology.

According to the above dimensional analysis, the situation of the pilot teachers in this school is relatively good, but they still need to be further improved. In order to realize the integration of information technology and subject, teachers need to deepen subject knowledge, find application scenarios, integrate technical resources, design innovative activities, and encourage students to practice evaluation, so as to promote knowledge dissemination and improve students' literacy and ability.

6. Conclusion

The cross-school mixed training model promotes teachers 'exchange and learning, improves teaching quality, promotes education reform, and promotes teachers' professional development. This model is helpful to broaden teachers' horizons, learn new teaching ideas and strategies, and improve the teaching level. At the same time, teachers can jointly discuss the problems encountered in teaching together, study the curriculum design, and jointly develop a more scientific and practical teaching plan. This cooperation helps teachers to learn from each other, improve the quality of teaching, and promote cooperation and common development between schools. Some teachers' courses have been rated as municipal quality basic education courses. Central schools and subject teaching and research base schools give full play to their advantages of teachers and education resources and share generative resources such as teaching and research results to all schools through the platform, so as to realize the sharing of high-quality education resources and drive the development of weak schools. In addition, the cross-school mixed training model also helps to break the shackles of traditional educational concepts and promote the innovation and development of education and teaching. In the future education practice, will continue to study the effective use of informatization in education teaching, improve and improve the existing education teaching management application, further optimize the intelligent teaching mode of various disciplines, in order to improve the efficiency of classroom teaching and teaching quality as the goal, improve teachers' information technology literacy, build a sufficient scale, quality qualified teachers to adapt to the development trend of education informatization of strong teachers.

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