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Strategies and Practices of Precise Training for Teachers in Border Areas Under the Background of Digital Transformation of Education

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ABSTRACT: Teachers in border regions are the driving force behind the development of education in these areas. Enhancing the professional competence of teachers in border regions is a "green" path to promoting sustainable education development in these areas. The higher the precision of targeted training within the region, the greater its effectiveness. Precision training means that the content and methods of training meet the essential needs of teachers in border regions, align with their current levels, stimulate internal motivation and potential for professional growth, and ensure teacher participation and satisfaction.

KEYWORDS: Digital transformation of education; Border areas; Accurate training of teachers

"A centurys plan hinges on education; a grand strategy for education centers on teachers." Since the 18th National Congress of the Communist Party of China, the Central Committee with Comrade Xi Jinping at its core has attached great importance to the construction and development of the teaching profession. During the 2021 Two Sessions, President Xi Jinping addressed the issue of uneven regional educational development, emphasizing the need for precise training for teachers in central and western regions. The report from the 20th National Congress of the Communist Party of China reiterated the goal of "cultivating a high-quality teaching force" and "promoting educational digitalization." To implement the spirit of the central government, the Ministry of Education and the Ministry of Finance have repeatedly stressed in the Notice on Implementing the National Training Program for Primary and Secondary School Teachers (2021-2025) the importance of conducting "precise training" for teachers, particularly those in border areas. This precise training has officially become an important principle and basic requirement for teacher team building in China.

1. The value and significance of digital education and precise training for teachers in border areas

1.1 Theoretical significance

High-quality education development has put forward new demands for teacher professional development, endowing it with new connotations. Currently, precise training for teachers in many counties and districts remains at the level of expert lectures. This traditional mindset-focused approach to precise teacher training will exhibit new characteristics and pose new challenges as education develops at a high quality. In border regions, it is necessary to address the difficulties of precise teacher training from a new perspective of "embodied cognition," seeking new strategies to promote teacher professional development. Research on precise teacher training in border regions under the background of educational digital transformation can help enrich relevant theoretical research content and further improve the theoretical research system.

Teachers in border regions are the driving force behind the development of education in these areas. Enhancing the professional competence of teachers in border regions is the "green" path to promoting sustainable educational development in these areas. The higher the precision of targeted training within the region, the greater its effectiveness. Precision training means that the content and methods of training align with the actual needs of teachers in border regions, match their current levels, stimulate internal motivation and potential for professional growth, and ensure their participation and sense of achievement.

1.2 Practical significance

Based on the fundamental perspective of embodied cognition theory, transforming teachers precise training methods through embodied learning approaches is beneficial. By adopting "five aspects" (holistic, diversified, contextualized, life-related, and generative) embodied training strategies, it helps to ignite teachers enthusiasm for precise training, fully engaging them in the learning process to achieve efficient training. Promoting the digital transformation of education in border regions will empower the research and teaching levels, classroom instruction capabilities, and the entire process of interaction between families, schools, and communities among teachers in these areas. This initiative aims to make education in border regions vibrant and distinctive. In the context of rural revitalization, it also enhances the coverage of quality educational resources, accelerates the construction of

a collaborative home-school education system, and expedites the realization of high-quality and balanced development in education in border regions. The research on precise training for teachers in border regions under the background of educational digital transformation has significant practical significance and research value.

1.3 Policy support

"A centurys plan hinges on education; in education, teachers are fundamental." Since the 18th National Congress of the Communist Party of China, the Central Committee with Comrade Xi Jinping at its core has attached great importance to the construction and development of the teaching profession. During the 2021 Two Sessions, President Xi Jinping addressed the issue of uneven regional education development, emphasizing the need for targeted training for teachers in central and western regions. The report from the 20th National Congress of the Communist Party of China once again stressed the importance of "cultivating a high-quality teaching force" and "promoting educational digitalization." The Notice on Implementing the National Training Program for Primary and Secondary School Teachers (2021-2025) repeatedly highlights the need for "targeted training" for teachers, particularly for those in border areas, making it an important principle and basic requirement for teacher team building in China.

1.4 Definition of concepts

Education, as a social activity aimed at nurturing individuals, follows its own development patterns but is also influenced by technological changes and shifts in societal needs. In the context of the ongoing new round of technological revolution and industrial transformation, these impacts have become increasingly prominent, leading to global attention on the future development of education. This has manifested three common characteristics: the belief that education will undergo profound changes under the new technological revolution; the focus on strategies for education to address common human crises; and the elevation of future educational initiatives to the level of national strategy. International organizations, concerned about the fate of humanity, systematically explore future education through various reports and launch related initiatives or action plans, calling for international cooperation to advance future education and promote the renewal of peoples competencies to better survive in the digital and globalized era. In contrast, countries focus more on enhancing their national competitiveness, striving to improve the core competencies of human resources, and fully utilizing information technology to comprehensively promote future education from a national strategic perspective. From the current development status, Chinas educational digital transformation is currently in the transition phase from data empowerment to platform application. At all levels, educational departments have largely reached a consensus on the goal of moral education, promoting the balanced development of five aspects of education, and cultivating students core competencies. They have initially developed an awareness of educational digitalization,In practice, it presents a scatter digital transformation exploration, and has not yet realized the linkage of the core business process of education and teaching.

2. the dilemma and demands of digital education to empower teachers in border areas to provide accurate training

Teachers in border regions are crucial for the development of education in these areas. Prioritizing the development of education in border regions, teachers are the primary resource for educational advancement. The development of education in border regions requires a high-quality teaching force. Precise training for teachers in border regions should shift from a "blood transfusion" function to a "blood production" function, with targeted courses designed to optimize the knowledge structure of teachers in border regions, enhancing their teaching skills and sense of responsibility.

2.1 Difficulties in implementing precise training for teachers in border areas

As an important link in teachers continuing education and a major means of lifelong education, precise training for teachers plays an important role in their professional growth. The current situation of precise training for teachers in border areas generally shows the separation of body and mind.

2.1.1 The training course setting does not meet the actual needs

Through on-site investigations, it can be seen that the training organized by relevant departments is currently pre-set, neglecting the subjectivity of teachers. When setting training objectives, the differences among teachers are overlooked, and the content of the training does not take into account the actual reception ability and existing knowledge level of teachers in border regions, as well as the insufficient development conditions for teachers in these areas. This has led to some teachers being uninterested in the training courses, showing low enthusiasm and reduced initiative.

2.1.2 The training effect deviates from the pre-set

According to the survey, some training institutions set up teacher training courses for border regions with overly theoretical content and poor practicality, failing to effectively contribute to the overall educational development of these areas. During the training, there is too little subject knowledge provided to teachers, while general educational theory lectures dominate. The

personal knowledge and practical skills that teachers urgently need are not closely linked to reality. Teachers cannot truly apply what they have learned in their classrooms, which does not help improve their teaching standards.

2.1.3 Lack of immersion in the way and process of training

In the precise teaching methods for cultivating teachers in underdeveloped areas, expert lectures still dominate. The training targets are not stratified or categorized, even ignoring the learning characteristics of in-service teachers. Traditional methods are used to impart advanced educational concepts and teaching methods. Teachers participating in the training lack sufficient experience to concretize the content they receive and fail to appreciate the significance of the trainers lessons. The invited experts do not truly understand the development environment and teaching ecology of teachers in border regions, nor do they pay attention to real-life examples and vivid educational stories from these areas. They prefer to teach only what they excel at, making it difficult for teachers in border regions to grasp their ideas and spirit. As a result, there is a phenomenon where teachers cannot effectively apply what they learn, focusing on learning without writing, using without explaining, with strong theoretical foundations but poor practical application.

2.2 The demand for precise training of teachers in border areas

Accurate training for teachers is an important measure to promote the professional development of in-service teachers, improve their teaching level and ability. Since 2010, the Ministry of Education and the Ministry of Finance have jointly implemented a national training program, known as "National Training Program".

Over a decade of experience has accumulated rich insights and laid a solid foundation for building and improving a socialist teacher development system with Chinese characteristics. Under the strategic backdrop of Digital China, our countrys teacher development system will welcome new opportunities for development. It is bound to transition from the previously relatively monolithic standardized training system to one that achieves differentiation, personalization, systematicness, and lifelong precision training.

The border regions, due to their objective environment, face more complex and diverse impacts on educational development. Teachers, as the most critical factor among various key elements influencing educational quality, have been widely recognized in both domestic and international studies for their importance. Therefore, conducting precise teacher training can not only effectively promote high-quality and balanced education in border areas, achieving the goal of equitable and quality education for all citizens, but also serve as a model for China to provide solutions and exemplary demonstrations for "how to utilize high-quality public service resources to serve special groups in education" under more complex educational contexts, based on its basic national conditions.

The precise training of teachers in border regions has four key objectives: First, to accurately address the pain points and challenges in the current educational development of border areas, focusing on promoting high-quality and balanced education through targeted teacher training; Second, to ensure that training courses, methods, and content precisely match the knowledge levels, foundational skills, and learning habits of teachers in border regions; Third, to establish a comprehensive precise training ecosystem, building an environment that meets the characteristics and requirements of precise training from four aspects: textbooks, faculty, curriculum, and training methods; Fourth, to form a teacher development system and mechanism centered on precise training, deeply reshaping management mechanisms, evaluation systems, and tools for teacher development.

The connotation of precise teacher training in border regions has four fundamental aspects: top-level design, whose primary task is to innovate and reconstruct the values of training, aiming to form an awareness and mindset of precision within organizations and institutions; systematic innovation, which involves implementing precise transformation across all elements, processes, business areas, and fields of the entire training system, to promote the formation and development of a precise training ecosystem; core pathways, which involve strengthening the capacity for precise training, including the construction of precise capabilities among training instructors, trainers, and managers; key driving forces, which should be problem-oriented, ensuring that training implementation precisely addresses issues and challenges in educational reform.

3. The promotion path of digital education to empower the precise training of teachers in border areas

The significance of the digital transformation in education aligns with the goals of Digital China and the digital economy, representing an active adaptation to the new wave of technological revolution. Logically, the digital transformation in education and precise teacher training form a dialectical unity. The digital transformation in education requires that the content, form, objectives, and mechanisms of precise teacher training be presented in a digital format. Therefore, under the comprehensive digitalization of education, precise teacher training must be presented with precision down to the digit. To achieve true precision and even scientific rigor in precise teacher training, it is essential to focus on the digital upgrade of its internal structure. As Engels said, the true perfection of any science lies in the widespread use of mathematical tools. In the context of digital transformation, improving precise teacher training for teachers in border regions can be promoted through the following specific approaches.

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3.1 Strengthen top-level design and overall planning, and build the four beams and eight pillars of digital transformation for accurate training

From international experience, digital transformation is a process that builds on the foundation of digital conversion and upgrading, involving systematic planning at the strategic level to enhance digital awareness, thinking, and capabilities in multiple aspects. The digital transformation of precise teacher training is a comprehensive process that covers all elements, processes, business areas, and fields, involving various institutions and departments such as government agencies, university systems, basic education systems, publishers, and industrial companies. Participants include educational administrators, university professors, frontline teachers, company technical personnel, and training organizers. Therefore, it is essential to develop appropriate top-level design to ensure that all departments and groups work together towards a common goal, collaborate effectively, and form a united force, ultimately ensuring the successful digital transformation and upgrade of the entire system.

3.2 Build a big data platform for basic education and create a smart brain for accurate training

The fundamental purpose of conducting precise teacher training is to enhance teachers core competencies, increase their knowledge reserves, and improve their skill levels through training, thereby addressing the quality pain points and difficulties in regional education development. Therefore, only by accurately diagnosing the true pain points and difficulties in regional education development can we achieve targeted precise teacher training, making it truly precise. This is particularly important for border regions, as compared to eastern regions, these areas have more scarce comprehensive resources available for precise teacher training, thus having fewer opportunities for trial and error. Only by precisely targeting the weak links in educational development can extremely limited resources be used efficiently. The construction of a big data platform for basic education will help gather educational data, apply model analysis, integrate educational resources, accurately present student conditions, teaching conditions, and school conditions, achieve precise diagnosis of regional education development, and become a smart brain for precise training, ensuring that precise teacher training truly serves the pain points and difficulties in regional education development.

3.3 Reform training materials, teachers, courses and methods to build a digital ecological environment of precise training elements

Digital transformation is a comprehensive, systematic, and profound transition. To adapt to this transformation, precise training must reform all elements of organizational training. Textbooks, instructors, courses, and training methods are the core elements of precise teacher training and form the foundation of the training ecosystem. Therefore, to implement precise training in border regions under the background of digital transformation, it is necessary to carry out systematic digital reforms in four areas: training materials, instructors, courses, and training methods. Truly integrate the concept of digitalization into the development of training materials, invite instructors who understand digitalization to the training podium, incorporate the concept of digitalization into the curriculum, promote digitalized training methods, and truly achieve a comprehensive ecological environment for precise digital training.

3.4 Improve digital infrastructure and lay a solid foundation for precise training of digital teachers

In the context of comprehensive digital transformation, the effective application of information technologies such as artificial intelligence and big data is undoubtedly an intrinsic requirement for precise teacher training. Without a good digital hardware environment, the promotion and application of these technologies would be impossible, and precise teacher training would inevitably become a castle in the air. Preliminary research shows that the most direct and severe factor affecting online teaching in border regions is network instability and insufficient bandwidth. In fact, the gap between eastern regions and border areas in terms of digital infrastructure has become a critical factor limiting teachers ability to conduct digital teaching and participate in digital training. Therefore, from both regional and school perspectives, only by continuously building stable, reliable, and secure new digital infrastructure can we further solidify the foundation for precise teacher training under the backdrop of digital transformation.

3.5 Digital technology enables accurate training and evaluation, forming a complete closed loop of evaluation to promote reform

The evaluation method for precise teacher training significantly influences the implementation of such training and is crucial for its improvement. In border regions, digital technology can be utilized to reform the evaluation methods for precise teacher training. Establishing data collection standards promotes data interactivity and operability, advancing comprehensive data collection on teachers overall qualities. Develop a comprehensive quality evaluation system and standards to promote new capacity building for teachers. Construct a data-based precise evaluation approach, implementing formative evaluations during the training process, and leverage big data, artificial intelligence, and other digital technologies to empower precise training evaluations. This forms a complete closed loop of "training—evaluation—training," continuously iterating and promoting improvement through evaluation.

EPILOGUE

Overall, as trainers, we should assume the roles of service providers, organizers, guides, and collaborators, implementing training content that closely aligns with the actual situations of participating teachers. At the same time, we should create suitable activity environments and conditions for generating, to activate their potential for development. In this way, participating teachers will show interest and ability in learning, actively engage in the training, and better achieve professional growth. It has been proven that only when individuals develop a strong interest in what they are learning and participate in the learning process with a willingness to learn can their enthusiasm be greatly stimulated, maximizing learning outcomes. If teachers lack such motivation and join the training process passively, they will approach it negatively, making it difficult to achieve the expected goals and even more challenging to realize generative learning. Therefore, as trainers, we need to guide participants to actively bring themselves into the training process, participate in discussions, and interact with others. Through these interactions, they can gradually form self-awareness and positively create various scenarios to induce embodied experiences for participating teachers, thereby creating conditions for experiential learning.

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