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Research on Practical Pathways for Digital Technology Empowered Mental Health Education for Rural Children in Central and Western China

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Abstract: Although Rural children in central and western China face so many challenges, such as low awareness of mental health education, limited resources, and poor diagnostic environments, Digital technology offers new opportunities to solve these issues. And on this basis, this article aims to explore digital empowerment strategies by creating a mental health education service platform called "One Point Heart Connection". It combines personalized mental health education modules, comprehensive crisis warning systems, and diverse psychological services to provide extensive mental health support for rural children in these regions, thereby enhancing the level of mental health education.

1. Introduction

In the 21st century, with the rapid development of information technology, including big data, artificial intelligence, and cloud computing, the impact of digital technologies on society is deepening. The disparity in growing environments between urban and rural children in China leads to a lack of awareness, knowledge, and skills regarding psychological health issues among children in central and western regions, preventing them from resolving various psychological challenges. In his report at the 20th National Congress, Chinese state leaders emphasized the need to accelerate the balanced development of compulsory education and urban-rural integration, optimize the allocation of regional educational resources, and pay attention to mental health and mental hygiene to cultivate self-respect, rationality, and a positive social mentality[1]. Mental health is crucial for human development in relation to others, society, and nature. Only with a healthy psyche children can grow robustly in society and become the successors of future socialism. In the digital age, how to use digital technology to provide mental health services to children in central and western regions is a question that every educator needs to ponder seriously. This study, through establishing a digital service platform called "One Point Heart Connection" and integrating personalized psychological education, comprehensive crisis warning, and diverse psychological services, aims to provide a systematic mental health service platform for rural children. By leveraging digital technology, traditional geographic and resource limitations are overcome, providing high-quality mental health education to rural children in central and western areas, strengthening the popularization and quality of children's mental health education, improving the quality of children’s lives, and enhancing their future development opportunities.

2. Current Issues in Psychological Education for Rural Children in Central and Western Areas

2.1. Weak Awareness of Mental Health Education

Teachers, parents, and students in rural areas of central and western China generally lack understanding and recognition of mental health issues. The importance placed on mental health is low, and it holds a minor proportion in school assessments and evaluations. Many schools offer psychological health courses and activities that are merely formalistic and do not truly meet the needs of children of appropriate ages, resulting in students having insufficient recognition and understanding of their own psychological health needs and issues. This often leads to the neglect and suppression of their psychological distress.

2.2. Scarcity of Mental Health Education Resources

The lack of mental health education resources for rural children in central and western areas is primarily manifested in two aspects. Firstly, there is a scarcity of psychological health education content and forms. There is a lack of appropriate textbooks and teaching methods, insufficient integration of psychological health education courses with information technology, and without strict workflow for psychological counseling. Secondly, there is a lack of professional psychological health education teachers and teams. Rural schools have weak faculty resources, and psychological health education courses are often taught by teachers of other subjects who rigidly apply psychological concepts, which leads to poor educational outcomes.

2.3. Poor Psychological Health Education Diagnostic and Treatment Environment

The poor diagnostic and treatment environment for psychological health education among rural children in central and western areas is primarily manifested in two aspects. Firstly, the physical conditions of home, school, and community settings are poor. Due to the absence of parental care and education, rural left-behind children exhibit more emotional and psychological issues than their non-left-behind peers[2]. Additionally, rural schools and social sectors face corruption and resource issues, which exacerbate students' psychological problems and hinder the timely identification and intervention of such issues due to the lack of cooperation between schools and families. Secondly, the level of informatization in psychological health education management is bad. School electronic management systems have only basic functions such as simple psychological measurements and do not provide convenient psychological health services such as online consultations or personalized psychological knowledge push, nor do they efficiently collect and share information, which hinders comprehensive and accurate monitoring and analysis of students' psychological health status.

3. Feasibility of Empowering Psychological Health Education for Rural Students in Central and Western Areas with Digital Technology

3.1. Advancement of Modern Education

With the promotion of the "Educational Informatization 2.0 Action Plan", China's educational informatization has rapidly developed, and the basic conditions of school education informatization have been greatly improved. By the end of 2022, the network connection rate of primary and secondary schools (including teaching points) nationwide had reached 100%, a 75 percentage point increase from 2012, 99.9% schools had an export bandwidth of 100M or above, more than three-quarters of schools had achieved wireless network coverage, and 99.5% schools had multimedia

classrooms[3]. This provides a foundational basis for the development of psychological health education in primary and secondary schools in the digital age, making it possible to empower rural children's psychological health education services with digital technology.

3.2. Enhancement of Teachers' Digital Literacy

In recent years, our country has placed special emphasis on the training of teachers' information skills and digital literacy. A large-scale, comprehensive national training plan has significantly improved teachers' information awareness, knowledge, skills, and ethics, comprehensively enhancing their digital literacy. This lays a solid foundation for teachers to innovate in psychological health education course design, enriching teaching activities, developing teaching resources, and managing informatization.

3.3. The Need for Development of Psychological Health Education

Traditional forms of psychological health education are limited by geography and time, which restricts the extensive conduct of psychological activities. The integration of information technology and psychological health education can play a significant advantage. Firstly, information technology not only breaks through temporal and spatial barriers, providing a guarantee for the effectiveness of psychological health education, but also stores scientific and continuous data. On the other hand, by constructing educational scenarios with multimedia, artificial intelligence, and big data technologies, it provides richer teaching resources, such as real-scene experiences and virtual reality. Finally, information technology promotes schools and parents to access psychological health education resources and student psychological health information anytime and anywhere, facilitating the digitalization and normalization of joint home-school psychological health education, and making home-school cooperation effective.

4. Strategies for Addressing Psychological Health Education Issues for Rural Students in Central and Western Areas with New Technologies

4.1. Digital Promotion - Raising Awareness of Psychological Health Education

Leveraging the power of new media such as online learning, WeChat, campus broadcasting, online psychological health education activities entering schools, families, and communities, and live streaming, psychological health education promotional activities are conducted both online and offline in a comprehensive manner to promote the importance of children psychological health education.

4.2. Digital Courses - Popularizing Psychological Health Education Knowledge

Digital courses represent a new publishing model that transitions from traditional paper-based publishing to integrated publishing. They organically combine teaching content, teaching activities, and teaching environments, breaking the limitation of traditional textbooks in terms of content, presentation forms, time, space, and distance[4]. Establishing a digital course resource library, network interactive courses, and personalized learning guides and other data-driven teaching resources facilitate teachers' and students' autonomous learning of psychological health education knowledge, promoting the popularization of psychological health education knowledge.

4.3. Digital Platform - Optimizing Psychological Health Education Management

In the context of educational digitalization, improving and optimizing the comprehensive, precise, and dynamic management of psychological health education is key. Therefore, this study fully utilizes digital technology to build a digital psychological health education platform with integrated functions of psychological education, psychological warning, and psychological services. It actively promotes data mining analysis and value-added use, enhancing the timeliness and effectiveness of dynamic management of psychological health education, and maximizing the benefits of precise dynamic management of psychological health education in central and western regions empowered by digital technology.

4.4. Online Teachers - Improving the Quality of Psychological Health Education

The number of full-time psychological health education teachers in rural areas is small, and the profession of part-time teachers are not insufficient. Teachers receive little training after joining, and centralized training lacks specificity. By fully developing and utilizing digital and networked integrated online training resources, issues such as arbitrary timing and limited training locations that arise during teachers' training processes can be improved, laying the foundation for enhancing modern psychological health education awareness and teaching capabilities of teachers in central and western areas.

4.5. Remoting Teams - Collaboratively Cultivating Psychological Health Education

The construction of professional psychological health education teams can maximize the sustainable development of psychological health education. By utilizing online platforms and new media, leveraging the strengths of schools, families, and society to recruit volunteers, and having professional psychological health education teachers as the core with college student volunteers as support, a complete psychological education team consisting of multi-disciplinary talents is formed.

4.6. Professional Hospitals - Targeted Psychological Health Education Services

In addition to schools and communities, offline psychological health service platforms also need to strengthen support from designated professional hospitals. Hiring experts from relevant hospitals and research institutes to conduct online and offline combined emotional adjustment, social adaptation, self-cognition, and psychological adjustment lectures or training can achieve complementary and shared advantages of online and offline resources, serving rural children.

5. Digital Technology Empowered Psychological Education for Rural Children - Constructing the "Heart Connection of One Point" Mini Program

Focusing on the real needs of children's psychological health education in central and western regions and fully utilizing the advantages of information technology, this study aims to build a digital psychological health education service platform with integrated functions of psychological education, psychological warning, and psychological services (as shown in Figure1). This platform is dedicated to addressing issues such as weak psychological health awareness, limited resources, and poor environments in central and western regions, comprehensively enhancing the level of rural children's psychological health education.

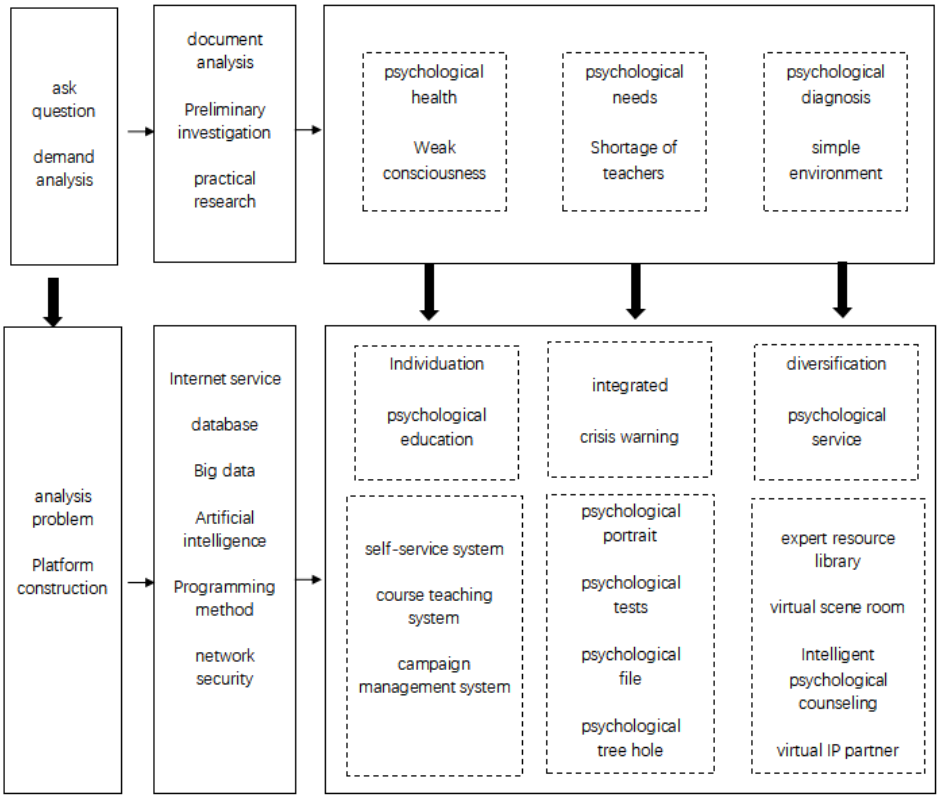

Figure 1: Education Digital Service Platform

5.1. Personalized Psychological Education Module

Targeted at the issues of insufficient psychological health awareness and resources in central and western regions, the personalized psychological education module aims to guide students through implicit education. Through self-service systems, course teaching systems, and activity management systems, the aforementioned issues are addressed.

5.1.1. Self-Service System

The psychological education self-service system, supported by artificial intelligence, big data, and intelligent algorithms, is a module for all users focusing on self psychological health education, psychological stress relief, and self-emotional adjustment. It includes services such as reading best-selling psychological books, choosing psychological courses, and interesting assessments. Its features include personalized customized services, availability anytime and anywhere, data-driven decision-making, and interactive information.

5.1.2. Course Teaching System

The course teaching system develops systematic psychological health education themed micro-courses for rural children, teachers, and parents, including psychological science, interpersonal relationships, academic psychology, and employment psychology. Micro-courses are concise, targeted, and utilize elements such as animation, video, and audio to construct situational teaching. They adopt project-based courses, informatized courses, and game-based courses as teaching forms, while integrating psychological health education elements into class activities and butterfly claps, enriching psychological health education activities.

5.1.3. Activity Management System

The activity management system, based on intelligent system recognition, uses cameras, microphones, and comment areas for listening or sharing functions to conduct psychological education activities and improve psychological education issues. For example, by integrating online group psychological games into daily education and teaching through intelligent activity exercises, students' psychological issues are analyzed and resolved in a relaxed atmosphere.

5.2. Comprehensive Crisis Warning Module

Psychological issues are implicit and only when they manifest in obvious behaviors and tendencies can they gain the attention and help of others. The comprehensive crisis warning module utilizes big data to precisely track students' psychological health status and implement warning functions. This module consists of psychological portraits, psychological assessments, psychological records, and psychological confession trees.

5.2.1. Psychological Portrait

A psychological portrait is a data analysis model established based on students' browsing trajectories, network usage habits, speech records, etc., to deeply understand students' psychological states. The warning function assesses students' psychological portraits from general psychological issues, severe psychological issues, to psychological crises. The psychological portraits of students provide an important basis for personalized education and psychological intervention, enabling targeted education and care.

5.2.2. Psychological Assessment

Psychological assessment is a method of systematically collecting and assessing an individual's psychological characteristics, including assessment scales, questionnaire assessments, interview assessments, and neuroscience assessments. Relying on the algorithm and analysis capabilities of big data, assessment reports are generated that can objectively, clearly, and quantitatively assess an individual's psychological characteristics. Psychological assessment is an effective means to monitor students' psychological health education work, facilitating the subsequent screening and intervention of psychological issues.

5.2.3. Psychological Record

Based on psychological assessment scales, psychological records are established, utilizing data-driven natural diagnostics to achieve precise tracking and recording. Big data can quickly detect changes in students' psychology, allowing adverse reactions to be promptly fed back to teachers and parents. Teachers can educate students on psychological health through the platform, and through home-school collaboration, provide personalized psychological intervention and support for students.

5.2.4. Psychological Confession Tree

The confession tree implements a full-process online anonymous confession, providing students with an outlet for emotional expression while fully protecting their privacy and revealing their most genuine feelings, receiving sincere care and responses from other users. However, it is important to note that the anonymous environment can breed some negative emotions and speech, potentially causing harm to students due to inappropriate remarks. Therefore, the publication of anonymous remarks should be strictly monitored.

5.3. Diversified Psychological Services Module

The diversified psychological services module consists of four parts: an expert resource pool, virtual scenario rooms, intelligent psychological counseling, and virtual IP companions.

5.3.1. Expert Resource Pool

Most students' psychological issues stem from family, society, individual, and other factors, and the work of psychological health education requires a team of highly professional teachers. By consolidating, integrating, and sharing psychological resources through the digital heart-nurturing platform, targeted education is implemented. The expert resource pool integrates psychological professional teachers and professional psychological medical practitioners, encompassing psychological health knowledge, psychological counseling skills, and psychological research achievements, breaking through temporal and spatial constraints, establishing an expert resource pool, and providing professional one-on-one psychological counseling and intervention.

5.3.2. Virtual Scenario Room

The virtual scenario room uses VR technology to build a digital psychological classroom, utilizing computer-generated three-dimensional images and virtual reality 3D interactive technology for a full-sensory immersive scenario experience. Through tactile, olfactory, and other sensory organs, students' anxiety indexes, stress indexes, body-mind balance indexes, fatigue indexes, etc., are obtained, thereby simulating virtual treatment plans tailored to students' own needs.

5.3.3. Intelligent Psychological Counseling

Intelligent psychological counseling relies on artificial intelligence technology to provide 24-hour psychological counseling for students. Artificial intelligence psychological counseling can draw on the professional knowledge and experience of a large number of counselors through deep learning technology. By constructing psychological counseling models through emotional dialogue generation theory, professional psychological counseling services are provided to visitors[5]. Additionally, intelligent psychological counseling can analyze data to generate students' emotional fluctuations and psychological health status, providing data support for formulating reasonable psychological counseling plans.

5.3.4. Virtual IP Companion

The virtual IP companion is one form of the virtual scenario room, introducing a "psychological companion" virtual image to add human care to human-computer interaction, replacing traditional descriptions of "self" issues, reducing students' privacy concerns and emotional burdens when confiding and seeking help. Psychological research shows that emotional emotions are an experience of whether individual needs are met. When objective things or external situations meet the subject's needs, positive and affirmative emotions and feelings are evoked, making individuals more willing to maintain the current relationship and state. When objective things or external situations do not meet the subject's needs, negative and negating emotions and feelings are produced, making individuals unwilling to maintain the current relationship and state.

6. Conclusion

With the application and development of the new generation of digital technologies in the education sector, digital transformation has become an inevitable trend in the development of

psychological health education, pointing the way for mental health education services for rural children in central and western regions. Building a digital psychological health education platform with integrated functions of psychological education, psychological warning, and psychological services facilitates the effective implementation of psychological health education for rural children in central and western regions, enhancing the psychological literacy of rural children in these areas, promoting the sustained and healthy development of rural economy and society in central and western regions, meeting the beautiful life needs of the people in these areas, and maintaining the security and stability of central and western regions.

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