Research on the Path of "AI Education" to Balance Urban and Rural Education Resources under the Strategy of Rural Revitalization

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Abstract

Since the "Rural Revitalization Strategic Plan (2018-2022)" proposed the revitalization of rural education, education is gradually achieving universal and balanced. 2022 is the last year of the plan, and the development of rural education is still "unbalanced and inadequate", with the development of 5G technology, "AI education" gives a new perspective on the development of rural education. With the development of 5G technology, "AI education" has given a new perspective to the development of rural education. Based on the revitalization of rural education, this paper analyzes the potential of "AI education" to balance educational resources and constructs its role structure; based on the existing problems of its development, it constructs a framework to solve the dilemma of AI education development from the financial perspective and the four "AI education" participants. We also analyze the potential of "AI education" to balance educational resources and construct its role structure.

Keywords

"AI Education"; Balanced Education Resources; Rural Education Revitalization Path.

1. Introduction

With the development of 5G technology, the trend of education internalization and the impact of the epidemic on offline teaching, the development of "AI education" has entered an accelerated period, the demand for quality education resources is increasing, and the research of "AI" technology and the construction of education platforms have formed a boom in the world. Among the four development stages of "AI + education", China, as the leader of the world into the second stage of the leader, in recent years continue to introduce policies for the field of "artificial intelligence + education", artificial intelligence development has risen to the national strategy. [1] The education theme forum of the World AI Conference 2021, "AI Enables Digital Transformation of Education", has provided a clear direction for the development of AI education. The policies and official activities on AI education come out one after another, and these practices illustrate the broad prospects for the development of "AI" education, which will enable "AI education" to realize the transmission of high-quality education resources across time and space, accelerate the breaking of the dual structure of urban and rural education imbalance, and realize the improvement of quality of urban and rural education resources. These practices show a great prospect for the development of "AI" education.

2. Asking Questions

The current imbalance between urban and rural education resources implies the deviation in the implementation of rural education revitalization measures and the realistic bottleneck of rural education development under this surface. The current education revitalization initiatives mainly focus on the improvement of hardware infrastructure, but lack of software function

matching integration. "While "AI education" is continuously adapted to rural education, it also faces a series of problems. From the perspective of "AI education" itself, "AI" technology is underdeveloped, its application in the field of education is narrow, and there are many platforms with mixed methods and lack of uniform standards. From the external environment analysis, the financial supply of platform construction is insufficient, and quality education cannot reach the grassroots; there is a gap in the teacher team, and there is a shortage of teaching talents in new education mode; the lack of family education ability, and the home school cooperation cannot be docked and other real obstacles. With the double obstacles, both the development of technology itself and the external environment of policy funding replenishment, theme convergence and demand application need an effective solution.

3. AI Education Balanced Education Resource Potential and Structure

AI education balanced education resources mainly through technology pioneering to release the potential of AI education's supporting characteristics (i.e. big data, self-adaptability, mixed reality, human-computer interaction, resource sharing, overlapping modes, multiple guidance, etc.) acting on teaching and learning. It promotes teaching transformation and learning optimization, and implements these resources to the grassroots through the online platform, so as to achieve balanced education resources in urban and rural areas and rural education revitalization.

Artificial intelligence integrates new algorithms, cloud computing, Internet of Things, big data and other cutting-edge technologies.[2] Based on this AI education is supported by a powerful database, it digitizes the education process and evaluates that process inductively. It finds personalized teaching methods and learning methods through data algorithms, and actively adapts to teaching and learning activities of different scenarios, objects and contents. Self-adaptation not only keenly identifies students' characteristics and demands from a large number of topics and formulates personalized learning strategies, but also finds suitable learning contents from uneven learning resources and recommends them to students in time, finally realizing personalized learning and improving learning efficiency and learning experience.[3] In specific disciplines that require high practical conditions, virtual simulation improves the feasibility of teaching practice, deepens teaching perception, and improves students' ability to analyze and solve problems. Resource sharing can circulate the existing high-quality educational resources within the AI teaching platform to realize the full utilization of resources and make up for the teaching differences across time and space. Human-computer interaction achieves ubiquitous learning on the basis of simulating traditional teaching and provides personalized teaching counseling for learning. At the same time, the overlapping mode of education is different from the traditional "primary, junior and senior", "five-three-three" and "six-three-three" modes of progressive knowledge filling at different levels. It advocates the diversification of talents while assisting the increase of traditional talents, so that the teaching and learning in the countryside can change from examination-based education to diversified development goals.

Wang Huaimin, an academician of the Chinese Academy of Sciences, said in the "2021 World AI Conference Education Forum" that the new generation of AI technology is still in the accumulation stage of development and is the golden period of open source. This shows that the potential of technology development to promote teaching change and learning optimization is huge, and "AI education" combined with rural education revitalization will continue to promote the open source of education resources to improve quality, cross-district integration, intensive whole complement; the teaching process is feasible, teaching according to the material, time and space freedom; the learning process of independent deepening, diversified

development, accurate burden reduction, thus Empower AI education with more skills to better contribute to the revitalization of rural education.

4. AI Education Enables Rural Education Revitalization Path Exploration

Balanced urban and rural education resources are the key to rural education revitalization. The realization of rural education revitalization path requires the simultaneous implementation of two aspects, one of which is open source to provide fresh sources for rural education and realize the optimization of education resources. The second is implementation, using the Internet AI education platform to penetrate quality education to the grassroots through the articulation between the subjects of AI education resource utilization. In response to the current internal and external problems in the development of AI education, we have constructed a framework for the role of AI education in empowering rural education revitalization by adhering to the four-in-one principle from four aspects: government, market, school and family.

4.1. Adhere to the "Four-in-one" Principle

The four in one is to form a refined division of labor and close articulation between the government, the market, the school and the family. Among them, the government and market (including scientific research institutions) balance open source and balance, and on the basis of open source and balance by the government and market, schools and families carry out detailed implementation as the receiving subjects. Through the collection, processing, analysis, management and application of education information, the coordination among the subjects is strengthened, and the real-time understanding of AI education technology development, platform operation, implementation and feedback on the effect is reduced to reduce distortion in the process of data transmission in multiple links. At the same time, existing hot spots, pain points and difficulties are analyzed and solved from the perspective of multiple subjects.

4.2. Government as Policy Guide and Cooperation Medium

Improve the operation of the functional system. The government should actively perform its duties, enhance the sense of responsibility of government departments, define the duties and obligations of each institution, and improve the cooperation mechanism between departments. In addition, the government should improve the supervision mechanism for the education sector, and provincial government departments should actively assess the promotion of urban and rural education in the province, supervise the work of local educational institutions, and increase the importance of educational institutions in promoting the balanced development of compulsory education.[4] The government leads by example and forms a good value orientation toward achieving rural education revitalization.

Reasonable financial precision allocation. Increase the financial investment in the field of rural education, and at the same time, in response to the phenomenon that the investment in education is biased toward towns, government departments should establish a reasonable education fund guarantee system; reasonably allocate the financial funds for urban and rural education, and implement the standardized construction of rural education; establish special funds for rural revitalization education development, and provide assistance in equipment purchase and infrastructure construction; apply for the provision of central direct funds for special areas to realize education The precise matching of funds.

Act as a guarantee medium for cooperation. In terms of technology, technology pioneering is not isolated, and there are real obstacles to technology exchange and cooperation. The government should actively promote cooperation among R&D entities to provide a favorable external environment and strong ties for technology development. For example, at the international level, promote cooperation with Intel's AI education program. In the domestic market, the government can organize forums related to AI technology development and

application by bringing together leaders in the AI education industry to develop new directions for AI technology development through group discussions. Play the role of the government to take the initiative to bond the upstream and downstream industries of AI education development and unblock the obstacles between industries for AI education industry.

4.3. Market as the Main Body of Research and Development, Orderly Competition

Solidifying the digital pedestal of education. Compared with other businesses derived from AI, the education sector is still far from establishing a digital trajectory for student learning and growth. Therefore, building a digital environment for education through new infrastructure is an important foundational task for the future. The purpose of building a digital base is digital transformation and smart upgrade, which takes chips, operation technology, database, and middleware as the main IT infrastructure, the most important of which is database construction. Mr. Liu Ruimin once said, "Database is the core technology of all big data industries." Database construction is especially important in the field of AI education, which is preceded by technology development and followed by implementation. Therefore, we should play the role of government policy guidance, cater to the demand of quality education, promote education informatization, digitalization, and provide demand space for database construction.

There are many AI education development platforms in a disorganized manner, and there is disorder in the competition. This is mainly attributed to the fact that AI education is in the open source period, and the government has less restrictions on the market under the policy of encouraging the development of AI education platforms, and the competitive environment is destroyed under the market competition for profit, and the quality of platforms varies. Only by building a unified industry standard can the competition boundary be clarified, market competition be regulated and industry self-awareness be improved. At the same time, the homogenization of the industry should be reduced, the functions of similar platforms should be integrated, the ineffective occupation of resources by poor quality platforms should be reduced, and the supply-side reform in AI education should be promoted.

Activate market research and development to implement the main body. By holding competitions related to education and big data, we can discover outstanding projects and talents. On the one hand, we mobilize market participation and compete for quality projects by eliminating winners and losers. On the other hand, we adopt the model of government-enterprise cooperation for projects, and partly adopt the market provision of public goods to promote the quasi-public goods of education and the implementation of new AI education skills. The talents are selected to enhance the talent pool in the field of AI education and to build up energy for promoting the sound development of AI system.

4.4. Schools for Technology Articulation, Model Optimization, and Awareness Transformation

Digital transformation, building a smart campus. With the "14th Five-Year Plan" and the "New Infrastructure" promoting the education industry, it has become an inevitable trend for the development of intelligent teaching in schools in the future to build a smart campus integrating education, teaching, management and services through information technology.[5] To build a smart classroom system as the center, to achieve intelligent teaching methods. Optimize the online teaching system and promote the interoperability and sharing of system information resources. Build a digital campus network platform to realize mobile educational information applications and break the spatial limitation of educational resources. Conduct business management integration and coordinate teaching and learning data. Focus on innovative digital resource construction and enriching service application mode, and actively promote the digitization of information resource engineering construction.

In the age of AI, education should strongly advocate the "ACE" (aesthetic, creative, and empathetic) learning strategy, the advantage of which is that it is basically in line with the original human education - to make students capable of learning rather than knowledge filling. [6] Education learning is not about absorbing knowledge from the outside, but about realizing wisdom from the inside. [7] The AI teaching platform opens up a different classroom format for students, presents different course content, and realizes a different teaching experience, allowing students to change from receiving knowledge to exploring knowledge and cultivating a new generation of diversified talents. At the same time, the ACE model reduces the misconception of traditional education that is based on marks, correctly handles the relationship between "educating people" and "educating marks", and promotes the development of diversified teaching by combining all the five educations.

The training and reserve of AI talents has become a new competition in the world. [8] Combined with the revelation of Shanghai's education digital transformation work, the digital thinking of teachers and students should be strengthened in the process of rural AI education development to improve their receptiveness to information-based teaching and learning. Promote online and offline education integration and application normalization, explore new modes of experiential, inquiry, interactive and cooperative teaching, encourage universities to develop special and high-quality educational resources, and promote open source of digital educational resources. In AI teaching applications teachers should maintain the personality of the main body, to be an accurate pusher of knowledge information; to develop their own unique abilities, to be a teacher educator with humanistic literacy and professional unique intelligence; to organically integrate instrumental rationality and value rationality, to be a teacher education evaluator who both masters technology and has correct value leadership. [9] Students, as the recipients of AI education, should maintain the development of their own abilities, beware of the dependence on AI electronic products and knowledge, and use the AI education platform as a channel for acquiring knowledge rather than a space for storing knowledge.

4.5. Families for Equipment Improvement, Application Training, Home School Cooperation

As the last stop in the implementation of the education process, the family is also the most difficult last step to get through. First of all, there is a huge gap in the use of AI technology and equipment in rural areas, and the use of AI education needs to improve the supply of home learning equipment. Government subsidies, market concessions, school purchase and shared use can be used to reduce the burden of home equipment purchase. At the same time, the infrastructure should be improved to cover the remote areas of the countryside. Secondly, through technical training, improve the ability of students and family members to operate the devices, and form a family education atmosphere that accompanies learning, participates in education, and supervises correction. Finally, close home-school cooperation, the establishment of a communication platform between teachers and parents, the use of AI education to monitor and track teaching functions, so that students' learning is a two-way feedback between parents and teachers, so that school classroom education and family after-school assistance two-way docking. The feedback and evaluation of teachers and students of education courses are analyzed through big data, and the content of education activities and teaching design are adjusted and optimized in a timely manner.

5. Conclusion

The development of AI education is gradually promoting the revitalization of rural education, and the difficulties we face in terms of hardware and software facilities need to be further solved. It is believed that through the self-development of AI technology and the deepening of the four articulation, the potential of AI education in rural revitalization will gradually appear,

the time and space barrier between urban and rural education resources will be crossed, and rural children can also feel the light of high-quality and abundant knowledge from big cities.

Acknowledgments

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