Demand and Strategy of Lifelong Education Digital Integration and Innovative Development

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Abstract: With the comprehensive advancement of the information-based Education 2.0 action plan, digital integration and innovative development have become an important measure to promote the high-quality development of lifelong education. The digital construction of lifelong education not only has the basic characteristics of "wide, large, deep and comprehensive" but also can provide collaborative services for academic education and non-academic education so as to meet the needs of diverse groups of audiences and diverse school systems, and achieve the goal of innovation and upgrading of all elements, all processes and all scenarios. Therefore, in the process of digital construction of lifelong education, it is necessary not only to clarify the necessity of digital integration development based on realistic needs but also to determine the basic characteristics of digital integration of lifelong education through connotation analysis and to determine development strategies, so as to build a lifelong education digital integration innovation development path.

Keywords: Lifelong education; Digitization; Fusion innovation

1. Realistic demand: The necessity of digital integration of lifelong education

1.1. The basic requirements of lifelong education quality improvement

In the process of modern education reform and development, with the reform of classroom education, credit system, compulsory course selection mechanism, flexible teaching methods and other contents, the effectiveness and scientific of educational activities have been significantly improved. However, it has not fundamentally changed the way of education and the form of students' learning, resulting in educational activities still taking classroom teaching as the main form. Digital education has completely transformed the traditional teaching form. With the joint support of an Internet platform and information-based teaching resources, an online learning platform has been built for students, thus breaking the limitation of time and space. All learning groups can participate in learning activities at any time and place. And to achieve the universal education goal of "Always can learn, everywhere can learn, everyone can learn". Therefore, in order to further improve the quality of lifelong education, it is necessary to continuously expand the group scope, education time limit and teaching resources, and digital education is the only way to achieve this goal at this stage [1–3].

1.2. Students' basic needs for quality learning services

In the lifelong education system, every citizen is a lifelong education-oriented student. However, because different citizens have different education levels, occupations, ages, interests and hobbies, their learning needs are also different. This kind of student group not only has targeted and purposeful learning goals but also their learning time and pace are different. As a result, traditional classroom education cannot meet the learning service needs of all citizens. On this basis, digital education has become a key way to meet the needs of all citizen students for quality learning services. On the one hand, students can freely choose time and place, teachers and resources to complete learning tasks, and on the other hand, the education environment and service mode can be significantly improved. For example, based on artificial intelligence, cloud computing, big data and other technologies, resource recommendation, learning evaluation services, accurate guidance and massive teaching resources support, and even virtual reality technology can be used to build a simulated learning environment so as to meet the needs of lifelong education services of China's high population, and truly realize the goal of "Running a satisfactory education for the people" [4–5].

1.3. The inevitable path of lifelong education informatization development

In recent years, information-based education has become an important trend in the reform and development of the modern education system. In the university system of our country, information-based education is also continuing to promote the construction. On the one hand, the establishment of a perfect public infrastructure can achieve full network coverage, database construction, teaching platform system construction and related facilities and equipment installation and application. On the other hand, the teaching methods adapted to the implementation of information-based education and the environment have been introduced to improve the teaching level and quality of teachers. Thus, lifelong education must adhere to the basic path of information development. The integration and innovation of digital education is an important goal and direction of the development of lifelong education information, and it is also an inevitable way to achieve the goals of system reshaping, data aggregation and resource sharing [6].

2. Connotation analysis: The basic characteristics of lifelong education digital integration

2.1. Generalization and individual learning

Lifelong learning has the basic characteristics of generalization and personalized education, and the integration and innovation of digital education can transform lifelong education into educational services that everyone can enjoy and achieve the goal of "Learning anytime and anywhere."

(1) A learning space for intelligent service and personalized service can be created so it can precisely meet the goals of generalized education and personalized education. For the digital integration construction of lifelong education, one can provide accurate and adaptive learning service activities, which can provide personalized education services according to the individual differences of learners, such as learning outcome diagnosis, learning guidance and suggestions, learning resources help and so on.

(2) In addition to establishing a seamless learning space, learners can rely on mobile networks and intelligent terminal devices to complete learning activities in different environments, thereby achieving the goal of obtaining learning resources anytime, anywhere and on demand.

(3) It can record learning activities and data throughout the process and rely on data mining and analysis to provide perfect process evaluation and final evaluation results to guide learners to improve their development.

(4) High-quality resources can be pushed in real-time, and the system can automatically provide systematic or fragmented resources according to learners' learning direction, content, topics and evaluation results to meet learners' daily learning needs.

(5) It can promote the transformation of learning results and guide learners to obtain certificates or achievement certifications according to their learning progress [7–8].

2.2. Open and resource sharing

The pursuit of lifelong education digital integration development is "Everyone can receive education services everywhere, anytime, as always", which requires the construction of an open, shared and inclusive learning environment, learning resources and learning methods. From the technical point of view, it is necessary to rely on the open platform to build an open data resource system and an open educational resource library, thereby building an open resource-sharing platform to meet the basic needs of digital development and the construction of lifelong education. To achieve this goal, the digital integration and development of lifelong education not only need to re-integrate and construct educational activities, educational forms and educational resources but also needs to provide sufficient modules such as school education, vocational education, adult education, community education and elderly education, so as to realize the upstream and downstream linkage of the education system. Education administration, schools, enterprises and student groups will be integrated.

2.3. Balanced and efficient development

The digital integration of lifelong education adheres to the basic principles of open sharing and technology empowerment, so it needs high-quality education concepts, network services, teaching platforms and educational resources. Digital construction can not only promote the high-quality development of the lifelong education system but also promote educational equity, providing the same educational services, resource choices and educational products for all learners. Therefore, in the actual development process, the digital integration of lifelong education should not only highlight the balance and promote the regional equity and resource balance of modern education but also highlight the efficiency, which can improve the school level and system structure and realize the education goal of everyone, integrated development, co-construction and sharing [9].

2.4. Digital innovation and teacher competence

The mastery of digital skills is helpful in improving teachers' modern teaching ability. Digital technology is becoming a necessary educational skill. Mastering the ability to use digital teaching tools and platforms will effectively improve the teaching effect of teachers. Through the application of digital technology, students' learning needs and characteristics can be better understood, and more targeted teaching programs can be created. At the same time, digital skills can also help teachers better conduct teaching evaluations and feedback and achieve personalized teaching and practical guidance. While constantly learning and mastering digital tools and technologies, teachers can also better adapt to the digital era in which they grow up with students, improve their professional knowledge and skills simultaneously, and break through the original bottlenecks in depth and breadth to carry out academic exchanges and cooperative discussions, broaden their teaching horizons, and inspire more teaching inspiration and innovative ideas.

In addition, the improvement of teachers' digital literacy has led to the reform of teaching mode. Digital literacy of teachers not only includes digital awareness and technical ability but also needs to comprehensively improve information literacy, innovation and computational thinking, digital teaching design ability, etc. Besides, it can also explore innovative teaching modes based on digital characteristics, adjust and improve their own teaching strategies and methods, combine digital technology with teaching objectives, and create rich

and diverse teaching experiences and learning scenarios, stimulating students' learning interest and innovation motivation. At the same time, the improvement of digital literacy can help teachers make better use of educational data analysis, assist teaching decision-making, deeply understand students' learning processes and characteristics, and provide targeted learning advice and support.

3. Development strategy: Road to digital integration, innovation and development of lifelong education

3.1. Deepen top-level design and strengthen overall planning

In the process of digital integration, innovation and development of lifelong education, it is necessary to prioritize the establishment of a top-level design mechanism so as to strengthen the overall coordination ability and guide the government, schools, and relevant units, institutions and departments at all levels of society to form a good collaboration, so as to promote the digital development and innovation of lifelong education jointly.

(1) Enhancing the strategic position of lifelong education digital construction and promoting an all-round integrated development path is necessary. Lifelong education has the characteristics of overall and holistic, and digital construction needs to establish management mechanisms, collaborative systems and implementation norms from a global perspective so as to ensure that relevant construction plans and measures can be implemented from the top down and establish a generalized lifelong learning digital ecosystem to promote the integrated development of resources and forces of lifelong education [10].

(2) Promoting the synchronous development of academic and non-academic education is necessary. Establish a unified management and support system based on the integration and construction of digital innovation and form a lifelong learning platform based on an online and offline teaching environment to promote the in-depth application of information education.

(3) Relevant government departments and educational institutions should also differentiate business processes according to different educational functions and build an overall framework for digital development for academic education, adult education, vocational education, and elderly education so as to lead learners in the whole society to actively adapt to the digital and intelligent educational environment, and form a lifelong and integrated educational consciousness. With the help of digital transformation reform to promote the modernization of lifelong education governance system.

3.2. Strengthen digital thinking and drive business restructuring

Digital thinking and digital literacy are prerequisites for promoting digital transformation. In the process of digital transformation and upgrading lifelong education, teachers, learners and other relevant groups in society should establish digital thinking.

Digital thinking should be established within teachers so that they can make educational service products with the help of an information education environment and related equipment so as to meet the learning needs of different groups and provide digital services for lifelong education. On the other hand, students need to establish digital thinking so that they can use the Internet platform, terminal devices and network channels to learn the ability and accomplishment and can use data information and intelligent assistance to establish a scientific and efficient independent learning plan [11–12].

In addition, relevant practitioners should also have digital thinking, such as teaching platform and system builders, lifelong education managers at all levels, education resource development and production personnel, etc., need to fully integrate digital thinking with curriculum knowledge and daily life so as to drive

the reconstruction of lifelong education services and business. The integration of digital awareness, digital technology, digital skills, and digital resources can be realized and can effectively solve the problems of special education scenarios such as juvenile education and elderly care service education and help lifelong education be implemented in the category of vulnerable groups, to achieve the goal of serving a better life with digital technology.

3.3. Adhere to technological innovation and enable integrated development

Technological innovation and popularization are important prerequisites for promoting the digital integration and development of lifelong education and are also key to achieving the goal of full coverage of digital education [13].

(1) Infrastructure construction should be comprehensively promoted to create environmental conditions suitable for digital education services.

   (a) First, network infrastructure construction is necessary to create a good, convenient, stable and safe digital education service environment for the whole society through big data, artificial intelligence, 5G network, IPv6 and other technical means.

   (b) Second, to build a smart education service environment and multi-level education service platform, not only to create appropriate education resources and service activities for different learners, learning scenarios, learning terminals, etc., but also to carry out diversified education service scenarios and forms, through online education activities, special video courses, special education conferences, large-scale live teaching and other ways.

(2) We should promote the sustainable construction of smart education and improve the quality and value of academic education.

   (a) First, it is necessary to build a multi-level school-running service system and an intelligent and multi-terminal learning environment that meets the regional learning needs, thus creating a large-scale and highly concurrent online education scene, ensuring that the "learning, assessment, evaluation, management" and other stages of the lifelong education system can be implemented on the online service of the whole process, and relying on the big data system to establish an intelligent auxiliary education mechanism. This can provide support and advice for teachers in lesson preparation, class, tutoring, resource selection, etc.

   (b) Second, we should actively explore the application mechanism of deep integration of technology and business, promote the coordinated development of personalized learning, differentiated teaching, fine management and intelligent education, and then create "cloud platform" and "cloud classroom" for students through online live teaching, video recording and broadcasting courses, remote defense system, etc., so as to continuously introduce high-quality lifelong education resources.

(3) In addition, we should promote the construction of a learning society for all.

   (a) First, it is necessary to build a lifelong learning "supermarket" platform to provide everyone with the services and products needed for lifelong learning, including educational resources, teachers, educational projects, self-study space, etc., and then create a multi-level, multi-type and diversified online open course system to form a lifelong learning resource library.

   (b) Second, we should build a lifelong learning resource management integrated platform to facilitate learners to choose online learning methods and approaches freely, independently choose course resources, and independently use artificial intelligence assistance so as to achieve better lifelong academic results [14–15].

3.4. Deepen education reform and build a smart environment

First of all, based on the construction of data-driven intelligent learning services and scientific governance system, it is necessary to give full play to the role of big data, establish an analysis and application system around the data center, and build a learner data portrait based on different learners' roles, so as to conduct research and judgment according to their specific situations and provide personalized learning guidance. At the same time, the data portrait of all learners is integrated, and learners are further divided into different types, and unified and safe education standards and governance rules are established according to the classification so as to understand the digital management of the whole life cycle of lifelong education.

Besides, it is necessary to establish ubiquitous learning scenarios and personalized learning platforms based on artificial intelligence, not only to cultivate a team of teachers with outstanding professional and high digital literacy but also to give full play to the value of cutting-edge artificial intelligence technologies and large models such as ChatGPT and apply them in activities such as student management, teaching management and teaching evaluation, so as to improve the auxiliary quality of artificial intelligence, thereby reduce the stress and burden of related work.

4. Conclusion

In conclusion, lifelong education development and system construction is an important way to promote the change of social environment to a learning society, an important opportunity for China's social internationalization and modernization, and an important direction for the reform and upgrading of the education system. However, in the process of building a lifelong education system, it is not only necessary to take education for all as the basic system but also to deeply explore the application advantages of scientific and technological revolution and new information technology so as to create a digital education service system and achieve the goal of building a lifelong education platform based on artificial intelligence, big data, blockchain, cloud computing and other technologies.

Disclosure statement

The author declares no conflict of interest.

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