Vocational Education Resource Sharing Based on Artificial Intelligence Technology

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Abstract: The construction of vocational education resource sharing is a major project to deepen the reform of vocational education and teaching. In the rapidly developing digital age, vocational education resource sharing should be deeply integrated with artificial intelligence technology to innovate the concept of vocational education resource sharing. This paper proposes big data based on artificial intelligence technology. With cloud computing technology, artificial intelligence, machine learning, Internet of Things technology and VR virtual reality technology and vocational education resources sharing and integration ideas, these new technologies are shared and integrated with vocational education resources, whether it is for talent training innovation, or for technical resources and integration. The in-depth integration of educational resources has brought new enlightenment, providing reference value for gradually building vocational education resource sharing services based on artificial intelligence technology.

1. Introduction

It takes ten years to cultivate trees, and one hundred years to cultivate people. The importance of education as the foundation of our country's founding cannot be overstated. Talents cultivated under the traditional education model have devoted themselves to technological innovation, which has promoted the innovation and development of our education model, education methods, learning resources, etc., which has formed a positive cycle. Therefore, at the current stage of the rapid development of "educational informatization and digitization", the organic integration of artificial intelligence technology and vocational education resource sharing is conducive to promoting the reform of education models and methods [1], and improving the ability to meet the development of digital society and the training of innovative and technical talents, efficiency and quality. Nowadays, under the dual effects of the development of digital society and the normalization of epidemic prevention and control, the social needs of educational resource platforms are developing rapidly. However, some problems have also emerged in the process of its development, such as repeated construction of some educational resources, information islands and other problems. How to solve them under the background of unbalanced economic development, there are problems such as imbalance of educational resources among regions and low utilization of resources. This paper organically integrates big data and cloud computing technology [2], artificial intelligence, machine learning, Internet of Things technology, VR virtual reality technology and vocational education

resource sharing based on artificial intelligence technology, and provides suggestions and references for the sharing of vocational education resources in the new era.

2. Big Data and Cloud Computing Technology Are the "Solid Foundation" for Sharing Vocational Education Resources

The purpose of the construction of vocational education resource sharing platform is to realize the analysis, processing, screening and optimization of educational resources. Use big data and cloud computing technology to integrate data and classify it in detail, which is convenient for users to use and query. Vocational education colleges can use this platform to efficiently obtain resources, better serve education, and lay a "solid foundation" for the sharing of vocational education resources. The original resource distribution was chaotic and disordered. Through the processing and analysis of big data and cloud computing, the content structure was continuously optimized. The optimized resources will be presented to users in a systematic form, lowering the user threshold and making the operation more convenient. Under the background of big data, using advanced technology to implement personalized push and retrieval services for users, strengthen communication with users, obtain user feedback, and realize personalized modern information resource services, it is of great significance to realize the sharing of vocational education resources. realistic meaning.

2.1. Reduce Capital Investment and Reduce Economic Costs

In the past, the establishment of education data centers in schools not only required a lot of cost to add hardware facilities and network resources, but also required professional and technical personnel to operate and manage the data center, which not only consumed a lot of manpower and material resources, but also accompanied by uncertain factors. In the case of the integration of educational resource sharing, big data and cloud computing, the procurement requirements of various education departments and schools for hardware equipment will be greatly reduced, and full-time personnel will not be required for management and maintenance, so the initial investment cost and the later operation and maintenance cost will be reduced. Greatly reduced. Enterprises use cloud computing to integrate educational resources with the help of virtualization software, and build resource sharing platforms to serve education departments and schools. Figure 1 shows the return on investment ratio of cloud computing technology support and traditional data centers.
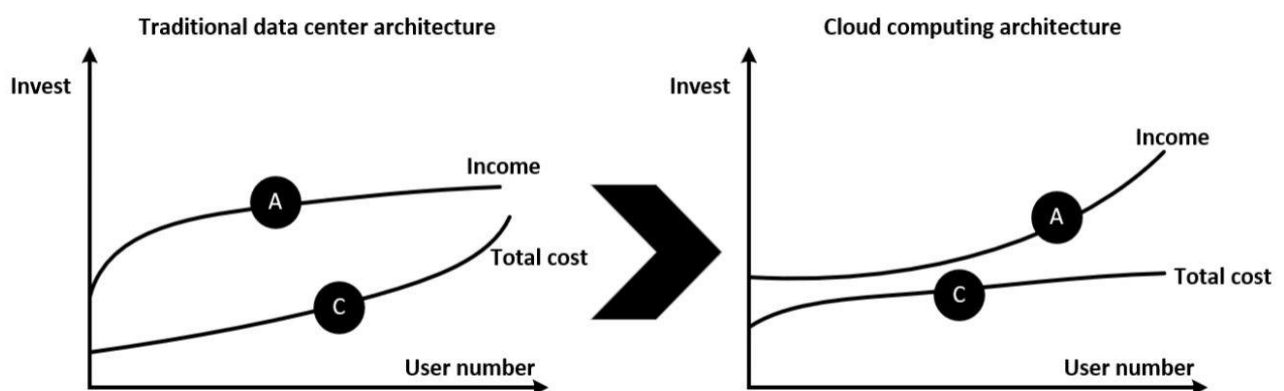

Figure 1: Return on investment ratio

2.2. Efficient Use of Resources and Elimination of Information islands

Traditional education data centers are built by departments and schools, and their services are not open to the public. However, under the background of unbalanced economic development, self-built data centers have increased the imbalance of educational resources to a certain extent, and educational resources will inevitably appear. Repeated construction leads to problems such as low utilization of educational resources and information islands. The cloud computing services provided by enterprises, through the unified specification of access standards and interfaces, enable all users within the scope of their provision, including education departments and schools at all levels and schools, to share educational resources, and conduct overall management and scheduling of educational resources. Cloud computing perfects the sharing mechanism. This will effectively avoid duplication of educational resources, promote educational equity, and eliminate information silos.

2.3. Reduce Capital Investment and Reduce Economic Costs

In the big data and cloud computing environment, everyone can upload learning resources and communicate with others online to achieve true "sharing". The system is also connected to the network to update educational resources in real time. In the past, some algorithms could extract user characteristics, but because the data volume of self-built data centers was not large enough, it was difficult to find the real needs of users. With the huge data support provided by cloud computing, the big data technology system analyzes users' usage habits and establishes user demand models, and provides personalized and differentiated resource push services for users, which helps users to understand the first time Up-to-date information and educational resources in their areas of interest.

The organic integration of big data and cloud computing with the educational resource sharing platform, on the one hand, realizes the integration, optimization and upgrading of educational resources of educational departments and schools at all levels, which is conducive to narrowing the gap in the quality of educational resources between regions and breaking the gap between various educational departments and schools. On the other hand, the advantages of low-cost, high-efficiency, safe, reliable and accurate services integrated with big data, cloud computing and vocational education resource sharing platform will meet the vast majority of the needs of its users, prompting the integration of big data, cloud computing and educational resource sharing platforms has become a new trend, laying a "solid foundation" for vocational education resource sharing.

3. Artificial Intelligence Technology Is the "Concrete" for Pouring the "Building" of Vocational Education Resource Sharing

The "building" of vocational education resource sharing based on big data and cloud computing must use artificial intelligence technology to pour "concrete" for it. The iteration of artificial intelligence technology has also gone through three stages: Computational intelligence, perceptual intelligence, and cognitive intelligence [3]. Thinking, from the simple "machine intelligence" to the complex and close "human intelligence" direction.

3.1. General Technical Framework of Artificial Intelligence + Education

The realization of artificial intelligence relies on three core elements: Data, algorithms, and services. Data is the foundation, algorithms are the core, and services are the purpose. The general technical framework of "artificial intelligence + education" aims to provide a macro construction method for various technical forms of "artificial intelligence + education" [4], and provide a guarantee for them to achieve a certain degree of "intelligence" and "interconnection". The general

technical framework generally adopts a three-layer model: "data layer", "algorithm layer" and "service layer".

(1) Data layer: The data layer is located at the bottom of the general technical framework and is mainly responsible for collecting, cleaning, sorting and storing various educational data. The basics. Data is the "source of life" of the data layer, which usually comes from various online or offline educational scenarios, as well as the roles involved in the educational process, such as students, teachers, administrators, etc.

(2) Algorithm layer: The algorithm layer is located in the middle layer of the general technical framework, and is the core of the realization of various "artificial intelligence + education" technical forms. The algorithm layer is mainly composed of various artificial intelligence algorithms that integrate the education business. According to the systematic method, various kinds of education data in the data layer are calculated and analyzed to realize the intelligent processing of the data and solve the problems of users. This process usually it is executed automatically.

(3) Service layer: The service layer is located at the top of the general technical framework, and is the final functional embodiment of the realization of various "artificial intelligence + education" technology states. As an output port, it receives the data processing results from the algorithm layer and provides different educational services to different users.

3.2. Artificial Intelligence Enhances User Experience

Artificial intelligence plays the role of an intelligent agent in the sharing of vocational education resources. Through accurate user portraits, intelligent agent servers are used to collect and push learning resources for users according to users' daily learning habits and learning interests, and further calculate and infer based on the user's learning situation [5]. User learning goals, customized and adjusted learning plans for users with technologies supported by big data and cloud computing.

3.3. AI Agents Help Teaching Practice

The intelligent agent, also known as the agent, can actively collect the most interesting information for the user through the intelligent agent server according to the criteria defined by the user, and then use the agent communication protocol to push the processed information to the user in time, and can infer the information. The user's intention is to independently formulate, adjust and execute the work plan.

(1) Classification of educational intelligent agents. Educational intelligence agents can be classified from the perspectives of educational objects and educational processes. From the perspective of educational object-oriented, educational intelligent agents can be divided into: Intelligent agents for student learning, intelligent agents for teachers' teaching, intelligent agents for resource services, intelligent agents for education managers, intelligent agents for families, and intelligent agents for the whole education etc. (see Table 1 for details).

From the perspective of education process-oriented, different objects participate in different processes. Teachers participate in the process of preparing lessons, teaching, and answering questions and evaluations. Students participate in learning, collaboration, homework, and examinations. Families participate in school teaching cooperative activities (see Table 2).

(1) The agent hierarchy of educational agent: The agent of educational agent adopts a three-layer architecture of "data layer + algorithm layer + service layer". Among them, the bottom data layer provides educational big data and general data for educational agents, and its data sources include local databases and remote shared databases, including teaching strategies, learning resources, learning behaviors and other data; the middle algorithm layer is the intelligence of educational agents. The core contains algorithms related to the practice of educational agents, as shown in

Figure 2.

Table 1: This caption has one line so it is centered

Serial Number	Name	Function
1	Intelligent Agent for Students	According to the learner's interests, learning needs and other parameters, recommend personalized learning resources and learning sequences, designate corresponding learning plans for learners, provide learning suggestions, record the learning process of learners, generate dynamic learning files, and recommend learning partners to learners , to support learners' collaborative learning.
2	Intelligent Agents for Teachers	Assist teachers to analyze their learning situation, prepare lessons automatically according to their learning situation, determine teaching content, select teaching strategies, plan teaching process, select teaching resources, conduct homework assessment automatically, and answer questions for learners.
3	Intelligent Agent for Managers	Provide authentication, automatic personnel management, learning data management, auxiliary course management; provide data analysis.
4	Intelligent Agent for Famliy	Assist learners to preview before class, automatically send homework reminders, communicate with home and school, and carry out parent training
5	Education-Oriented Intelligen Agents	Coordinate all intelligent agents to provide a complete intelligent education platform

Table 2: Educational intelligent agents for educational process

Object	Name	Function
Teacher	Intelligent Agent For Lesson Preparation	Conduct learning situation analysis, select teaching resources, teaching strategies, plan the teaching process, and automatically prepare lessons according to learning style, learning needs and other parameters.
	Teaching Intelligent Agent	Provide teaching aids, track students in real time, feedback students' learning, and provide teaching suggestions.
	Q&A Intelligent Agent	Receive questions, build a question bank, answer questions automatically, and transfer typical questions to teachers to answer questions for learners.
	Job Intelligence Agent	Edit assignments, send and receive assignments, automatically evaluate assignments, and analyze results.
	Exam Intelligent Agent	Assist teachers in building a question bank, automatically group papers according to the rules of paper grouping, publish exams, collect exam papers, and supervise the exam process.

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	Evaluation Intelligent Agent	Automatically grade papers, analyze test papers, provide teaching suggestions, send scores to students, and push relevant knowledge points.
Student	Learning Intelligent Agents	Diagnose students' learning styles, provide learners with personalized learning services, recommend personalized learning resources and learning sequences, formulate corresponding learning plans for learners, provide learning suggestions, and record learners' The learning process generates dynamic learning files.
	Collaborative Intelligent Agent	Recommend study partners, participate in discussions, and form study groups.
	Q&A intelligent agent	Ask questions, answer questions, see answers.
	Job Intelligence Agent	Receive assignments, do assignments, submit assignments, and view graded assignments.
	Exam Intelligent Agent	Take the test, remind candidates of the test time, provide necessary test aids (such as electronic rulers, etc.), submit test papers, and check test scores.
Manager	Academic Affairs Intelligent Agent	Provide authentication, personnel management, learning data management, and auxiliary course management.
	Transaction Intelligence Agent	Designate education regulations, macro-control student learning and teachers' teaching process.
Family	Home Smart Agent	Cooperate with school education, assist learners in pre-class preview, automatically send homework reminders, conduct home-school communication, and carry out parent training.
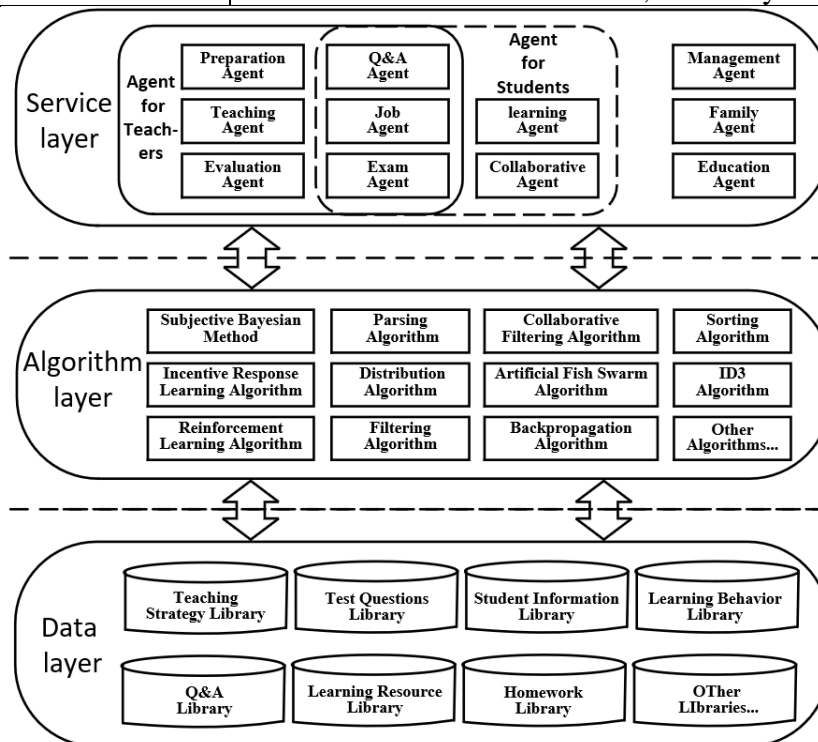
Figure 2: Agent Hierarchy Architecture of Educational Agent

4. Machine Learning Technology Provides Personalized "Fine Decoration" for Vocational Education Resource Sharing "Buildings"

In the field of artificial intelligence, machine learning technology can simulate the operation mechanism of the human brain to the greatest extent, and realize the acquisition and correlation analysis of various knowledge resources. Situation perception mainly includes the perception of regional situation and inner situation, which mainly embodies the characterization of real-world entity attribute information [6]. In different situations, people's personalized reflections are not the same. The contextual data fusion of the vocational education resource sharing platform based on machine learning is to deeply mine and extract the acquired user contextual data to form the user's personalized demand characteristics, so as to achieve the purpose of gaining insight into the user and understanding the user.

4.1. User Context Data Collection

User context data collection is the basis of context-aware recommendation services. The vocational education resource sharing platform obtains data information related to the user's situation by using various smart devices such as sensors, smart terminals, and wireless contact information devices. This paper uses machine learning technology to identify the acquired user context information, uses neural network algorithm to establish the connection between different data, and establishes data labels that conform to the user's personalized characteristics, so as to facilitate the use of the recommendation service of the vocational education resource sharing platform [7].

4.2. User Context Model Establishment

The user context data collected by the system is usually irregular data, and some data may even be wrong or ambiguous. Before using the data, it needs to be processed. User context data processing mainly involves mining and feature extraction of the data, and discovering the common and individual feature information hidden in the data itself. Through the analysis of these feature information, the data can be identified and classified. Using machine learning technology to process user context feature data can simulate the way of human brain thinking, distinguish different features of context data, and establish the association of each feature data to form user context data feature units. The feature unit is the semantic description of the user context. It can be the general data feature description of the user context or the individual data feature description of the user context. The association of different feature units forms the basic model of the user context. Based on the establishment of user context data feature units, the cloud vocational education data resources are integrated, a context instance database corresponding to the feature units is built, and finally a machine learning-based user context model is established.

4.3. Matching Users' Personalized Needs

User personalized demand matching is the core of the context-aware recommendation service of the vocational education resource sharing platform, which establishes a corresponding connection between the vocational education resource sharing platform's collection resources and the user's context. The matching process of user's personalized needs is a process of carrying out similarity retrieval in the resources of the vocational education resource sharing platform, using the semantic description of the user's situation as the characteristic word, and sorting the retrieval results by similarity, and the data resources with high similarity are retained and provided to users. In the

entire similarity retrieval process, machine learning technology has played an important role. It takes the semantic description of the user context as the object, and compares the resources of the vocational education resource sharing platform one by one through iterative algorithms and neural network algorithms, so as to improve the user's personality. The accuracy and accuracy of the matching requirements.

5. The Internet of Things Technology Will Build A "Building" for Sharing Vocational Education Resources into A "Smart Building"

The Internet of Things technology is based on Internet technology to realize the interconnection between people and things, things and people, things and things [8]. In the Internet of Things environment, many aspects of vocational education resource sharing need to strengthen the attributes of the connection between things and things, so that individual education resource platforms can better hold together for warmth, and cooperate deeply with regional vocational education resource platforms and school-enterprise cooperation companies to create a real resource sharing and mutually beneficial vocational education resource sharing platform.

5.1. Characteristics of Vocational Education Resource Sharing Supported by the Internet of Things

The Internet of Things is an intelligent network that integrates multiple technologies such as radio frequency identification, wireless remote sensing communication, and artificial intelligence. The application of the Internet of Things technology in the sharing of vocational education information resources mainly has the following characteristics: First, the information transfer enables the Internet of Things to be organically linked with the Internet, and uses a variety of communication networks to understand the information and data within a known range. Respond quickly and deliver information accurately and securely. Due to the fusion of various technologies such as sensors, radio frequency identification and readers, it can not only identify a single target or phenomenon, but also obtain comprehensive data from different perspectives. Second, intelligent decision-making and management. Through various intelligent technologies such as fuzzy identification and cloud computing, the Internet of Things can analyze and process massive data information, and can intelligently control and manage diverse objects, including not only the narrow information flow in the Internet of Things, but also the Internet of Things. The association and intercommunication between various objects. Third, there are associations between entities. The Internet of Things needs to carry massive amounts of information, which is very different from the Internet that transmits information and the sensors that collect data. The objective objects contained in the Internet of Things are diverse, so diverse communication modes and information interfaces are required to accommodate various types of information data and circulate among perception, processing and application.

5.2. The Application of IoT Technology in Vocational Education Resource Sharing

With the development of the information industry and the advancement of the Internet of Things technology, countries around the world attach great importance to educational innovation. Internet technology has had a profound impact on the field of education. However, Internet-based network teaching presents a one-way flow of education, which has a negative impact on the timeliness of teaching. There are certain limitations in upgrading and so on. The emergence of the Internet of Things technology with human-machine interconnection provides an effective technical means to break through these limitations [9]. In the digital classroom based on the Internet of Things

technology, students can use a variety of equipment to participate in the interaction of the classroom more deeply, and at the same time use the Internet of Things technology to interact with students in different places, solve problems together, exchange learning experience, and improve the classroom. The interactive effect of the classroom is put into the cloud through the Internet of Things technology, so that users in the cloud can participate in the classroom after passing the certification. Users can join the classrooms they are interested in without geographical restrictions.

6. VR Injects a Sense of Technology into the "Building" of Vocational Education Resource Sharing

6.1. Combining AR Technology with MR Technology

Mixed Reality (MR) integrates the best features of Virtual Reality (VR) and Augmented Reality (AR) to seamlessly fuse the real world with the virtual world to generate new environments, enabling the coexistence of physical (real) objects and digital (virtual) objects and interact naturally in real time. In the future, mixed reality will be combined with distance education, STEAM education, gamified learning, real learning, and collaborative learning to improve learning methods, improve teaching quality, and promote educational equity. By connecting VR and AR with online teaching, the maximum reality of online teaching can be achieved. Augmented reality technology is added to course learning, making teaching more interesting and providing learners with a unique learning environment and a lot of learning. Resource [10]. In addition, through the mixed reality technology, the plane world is made three-dimensional and the abstract world is concretized, which solves the teaching closed-loop problems of lack of attention, passive acceptance, and inability to use after language learning for traditional teaching vocational education students [6]. It improves learning quality and learning efficiency at the same time, to enrich the creativity and imagination of learners.

6.2. Combining AR Technology with MR Technology

VR virtual reality technology is to reshape people's learning methods after multimedia and computer teaching. Using VR virtual reality technology can also achieve educational resources that break through geographical and national boundaries, break the sharing of time and place restrictions, meet diverse teaching needs, and provide flexible method of teaching. In the previous practical training, it is often difficult for students to combine theory with practice due to the limited hardware equipment and lack of venues in schools, and it is difficult for students to effectively improve their skills. Using VR technology, the actual environment in the enterprise can be simulated, so that students can role-play, accumulate experience in actual operation, and feel the knowledge learned more intuitively, which is no longer limited to the content of the book and the teacher's explanation [7]. It not only increases students' practical ability, but also changes the rigid teaching methods in the past, improves learning efficiency and improves learning quality. Learning in practice can also change the problem of poor teaching interaction, so that teachers can directly observe students' problems in practice, and timely propose and correct them [11].

In the context of the development of the times, the integration and sharing of vocational education resources has become more and more important. With cloud computing and big data as the basis of the platform, we collect, process and optimize the resources we have, and use artificial intelligence technology to make the platform's service human nature. Systematized, systematic and detailed, and then through machine learning to discover the deep-level needs of users, so that users can obtain a more perfect experience, and finally, with the blessing of Internet of Things technology and VR virtual reality technology, the entire resource sharing platform will be based on a more

modern approach brings convenience to users. The emergence of these new technologies has brought new enlightenment to the innovation of talent training and the deep integration of technical resources and educational resources. With the continuous development of new technologies, taking the opportunity of optimizing educational resources, advanced technology and education will be highly integrated, and a sustainable ecosystem of vocational education resource sharing will be gradually created.

7. Conclusions

In the context of the digital age, the integration and sharing of vocational education resources has become more and more important. With cloud computing and big data as the basis of the platform, the existing resources are collected, processed and optimized, and artificial intelligence technology is used to humanize the platform's services, systematized and meticulous, and then through machine learning to discover the deep-level needs of users, so that users can obtain a more perfect experience. Finally, with the blessing of Internet of Things technology and VR virtual reality technology, the entire resource sharing platform will be more modernized way to bring convenience to users. The emergence of these new technologies has brought new enlightenment to the innovation of talent training and the deep integration of technical resources and educational resources. Due to the limitations of vision, this study has not completely integrated several high-tech and vocational education resources, and it is still necessary to continuously improve the vocational education resource sharing system. With the continuous development of high and new technology, the deep integration of artificial intelligence technology and vocational education resources, and the creation of sustainable development of vocational education resource sharing services have gradually become a new requirement in the new era.

Acknowledgements

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