Research on the Application of "Blockchain + Education" Technology in Universities

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Abstract: Through the White Paper on the Technology and Application development of Block chain in China, and the two projects of "Blockchain+Education", namely, education chain and credit chain, this paper tries to sort out the present situation of the development of "Blockchain+Education" in China from the point of view of cooperation field and project characteristics. According to the latest document spirit of the Ministry of Education on educational informatization, new engineering construction and outstanding engineer 2.0,this paper Comprehensi-vely analyzes the new opportunities and challenges in the cultivation of block chain talents in colleges and universities in China. Therefore, the application of Block chain technology in education informatization in China is still in the early stage of exploration. According to the development trend of intelligent campus and Block chain technology, this paper puts forward that The path of upgrading from intelligent campus integration block chain technology to intelligent "chain" campus provides a reference for the development of educational informatization in colleges and universities.

Introduction

In China, the concept and theory of the combination of Block chain and higher education, people's cognition, research and practice have just started. With the emergence of more and more ICO and encryption technology, the application of higher education is in front of us. With the increase of investment, it is necessary for educational theory researchers, network technologists, talents training in colleges and universities, as well as the active input and benign interaction of government supervision departments to explore and innovate.

At present, "Blockchain+Education" technology has been regarded as one of the basic agreements of the next generation of global degree certification and higher education system, and the importance of Blockchain technology to China's education industry and education system can not be ignored.

In a news broadcast on the evening of October 25, 2019, President Xi mentioned this paragraph in his speech:

"It is necessary to explore the application of "Blockchain" in the field of people's livelihood, actively promote the application of Blockchain technology in the fields of education, employment, pension, accurate poverty eradication, medical and health care, commodity security, food safety, public welfare, and social assistance, so as to provide more intelligent, convenient, and better public services for the masses of the people. "[1]

Education, is in this passage in the first place in the field. This is the first high-level voice, no matter what direction it will go in the future, the "educational blockchain" is at least a topic that we should face squarely.

Current status of the application of the "Blockchain + education" technology at home and abroad

For the supply side of the story, mainly reflected in the data. Including learning data, students' growth files and so on. Blockchain is essentially a new set of data storage methods, but the most valuable "transaction data" in various industries has little significance in the education industry (low frequency and immobilization). Only learning data and other data related to learning history can be chained. Blockchain + education, the ideal story is to open up the current data island with the help of the anonymity and privacy of the Blockchain, so that students, schools, training institutions and so on can share the data, so as to optimize the supply side and "teach students according to their aptitude". Blockchain is distributed The new application mode of computer technology, such as data storage, point-to-point transmission, consensus mechanism, encryption algorithm and so on, is essentially a decentralized distributed database.

Blockchain is essentially a distributed database system with cryptography technology, multi-party participation, common maintenance and continuous growth, also known as distributed shared ledger. Each account page in the shared account book is a block, each block is full of transaction records, the beginning and end of the block are connected, closely linked, forming a chain structure. Blockchain technology is anonymous, decentralized, open and transparent, non-tampering and other characteristics, so that it is favored by enterprises, and has been more widely used.

In fact, this belongs to the category of educational informatization. In 2019, the scale of China's education information market is about 430 billion yuan, of which financial education funds contribute about 70% to 80% of the market.[2]

The role of blockchains on the educational supply side, at least for now, is not as attractive as AI education. Ai tells the story of replacing the cost of teachers. In terms of the size of the $3 trillion private education market, at least 20 per cent of it is the cost of teachers, so it corresponds to a class 600 billion plate. The most important reason is that the blockchain can not optimize the teaching delivery process. And this is the most core link of education.

Let's take a look at the story on the demand side, the "token economy" written in the white paper, linking students' grades and teachers' teaching results to pass certificates, motivating them through token, and token can be used to pay tuition fees, and so on. Such a story must have spread widely in the ICO market in 2018. However, like ride-hailing chains and consumer chains, these stories are only true in the white paper. If children's learning needs to be inspired by gold coins, it is also a civilized sadness.[3]

The essence of education is service industry. No matter how the technology is upgraded, the service can not be separated from the closed loop of teaching, learning, training, testing and evaluation. Technology may play a role in one of the links, but it must not be all. Instead of overcharging the education + blockchain model, think about how to do a better job of service and human management. The application of technology in the service industry will always be slower than in other areas. For example, the Internet to education, the first year of the industry began in 2014, when the Internet had been developing for 45 years. The blockchain has only been born for 10 years. Suppose one day, there's really a rudimentary one. Blockchain+Education model appears, and it is not too late to follow up.

But we still have to be in awe. The invisible road today may be the most basic truth of tomorrow.

The application of Blockchain+Education technology in colleges and universities in the future.

Colleges and universities put forward the teaching mode of combining online and offline, so at present, the prospect of online education Blockchain project continues to increase. Since 2016, the digital currency project based on Blockchain technology has landed in the world one after another, while in the field of education, online education platform is the most linked and the most ecologically built sub-industry.

According to CoinSchedule, two online education digital currency projects have been successfully launched, with funding of $10 million and $22.5 million, respectively. Three online

education projects will be in the process of being raised in March 2018, while two online education projects will begin in April.[4]

With the continuous increase of the number of online education chains, the whole industry is also doing a once-and-another ecological optimization exploration.

The branch of online education is very extensive, and the ecological structure of each branch is different. The existing technology application platform of "Blockchain+Education" should grasp the opportunity of ecological optimization, not only seize the opportunity in its own market segmentation, but also realize continuous optimization in the whole online education market.

Provision of identity authentication and learning records: In modern society, people need proof from various authorities from birth, and accumulate personal information as they grow older, and educational and academic information also forms a part of it. At present, the educational information system is faced with three major problems: security, effectiveness and timeliness.

The educational information of college students is usually input into the computer and stored by electronic data, and it is a great challenge to ensure the privacy and security of these educational information. For example, higher education institutions such as the University of California, Berkley, Ohio State University and the University of Wisconsin Milwaukee have been hacked in recent years. Yale University has accidentally leaked confidential information on the Internet, and Indiana University stores student education information on unprotected online sites. Such practices make the security of students' educational information in jeopardy. The emergence of blockchain technology provides a perfect solution to this problem. Through the public Key infrastructure and asymmetric encryption, Blockchain technology for both supply and demand to build a secure transmission platform. In the absence of a private key, the data can not be read, eliminating the possibility of hackers stealing data.[5]

According to (CareerBuilder), the largest recruitment site operator in North America, 57 percent of job seekers exaggerate their job skills, and up to 33 percent have academic fraud. Employers want job seekers to provide authoritative academic certification and report cards, while higher education institutions charge fees for providing academic certification and transcripts, which hinders students with financial difficulties in finding jobs and further their studies. With the emergence of blockchain technology, job seekers can obtain authoritative certification of academic qualifications at an almost free price, and at the same time, they can also put an end to the problem of counterfeiting.

In the United States,75% of the higher-education students are part-time, and they usually take almost two times to graduate compared to full-time students, and only 1/4 of them can get a degree. At present, the Open Badges, Blockchain Certificates, and Learning is used to provide certification for each of the skills that the learner can learn, whether or not the skills are in-class or out-of-class. MIT Media Lab The regional Blockchain technology provides permanent electronic authentication for those who contribute to their development. In this way, the learner not only obtains the credit, but also provides the obtained certification to the employer to improve the competitiveness of the self in the labor market.[6]

Updating the learning method: In today's society, employers and governments attach great importance to higher education certificates, resulting in the time and money for learners to take time and money, as well as the loss of opportunities for job-seekers who have the ability, but have not yet obtained a degree. The self-esteem of the higher education institution and the gold content of the certificate issued by the higher education institution depend to a great extent on its educational effect. Try to learn a new way to help students improve their learning efficiency and create a better learning atmosphere. For example, students can take full advantage of the classroom time to interact with teachers and students by means of computer-based learning of basic knowledge points outside the classroom.

In the traditional higher education, teachers and students play more roles as communicators and recipients. But in the information society, the younger generation prefers to share their views and learn from the discussion. The significance of higher education is not only to impart knowledge and

specific content, but also to make students have the ability of lifelong learning and solve problems through communication and cooperative analysis.

Blockchain technology enables learners to share and exchange views with each other, such as Bitcoin. In addition, the immutable characteristics of blockchain also make the process and results of knowledge co-construction traceable to the source and protect copyright. The blockchain giant "consensus system" provides an example for the application of blockchain technology in classroom cooperation, which subverts the previous hierarchical learning structure and puts forward the slogan of flexibility, openness and consensus. Each learner chooses several interested learning projects and completes some of the project contents. The members of the team are not up and down Level 1, jointly negotiate research content, task assignment and awards, write intelligent contracts and execute. This learning model enables learners to communicate and cooperate with each other while studying independently.

Reducing financial pressure on students: Melanie Swan, founder of Institute for Blockchain Studies,is committed to learning certification of MOOC and the application of blockchain in educational pay for success. She points out that Blockchain can play a role in the following three aspects: first, to provide credible certification on whether students who enroll in Coursera courses have completed the course and test, and whether they have mastered certain knowledge; second, to provide payment channels for financial assistance; and third, to plan the learning process through intelligent contracts.[7]

Through intelligent contracts, donors or enterprises can put forward specific skills requirements for aided students, students complete the established learning tasks within a fixed time, and carry out online testing. After confirming their identity, the blockchain automatically pays the next stage of subsidies to reduce the economic pressure of students in higher education.

"Learning to use" offers another solution. Students can give their current professors to others or apply them directly to their jobs in exchange for financial rewards. The blockchain automatically tracks and records learning behavior, knowledge sources, and where to go. On this basis, students can identify the benefits and value of each course, and employers can easily find the level of guaranteed talent.[8]

Construction of a new model of higher education: Usually we describe the university as an ivory tower, which provides a relatively quiet environment for teachers and students to study and study, but it also means that there is a lack of contact between universities and a relative isolation from each other. Blockchain can break this isolation, make universities form network and even educational ecosystem, and realize resource sharing, open and win-win. Different from the general online learning on the Internet, the education system under the blockchain attaches more importance to the record and continuity of learning, advocates linking the identity of learners to their learning achievements, and rewards the benign interaction and cooperative behavior in the system. The establishment of education system based on Blockchain mainly goes through the following three levels. Paragraph The first stage is content exchange, and university teachers share their own teaching materials and viewpoints with more people through the Internet; the second stage is content collaborative innovation, teachers and students cooperate together to create new teaching materials; the third stage is to form a global education network, university teachers, students and research institutions will become a node of the global education network to achieve the social construction of knowledge.[9]

The first stage, content exchange. In order to maintain their competitiveness, universities usually do not publish internal information such as teaching materials. MIT pioneered an open courseware platform (https://ocw.mit.edu/), offers a range of content, including teaching materials, handouts, assignments, tests, and so on. At present, more than 200 higher education institutions have joined the platform. Blockchain technology enables all content contributions to be traced back to the source, and learners can not only support comments, but also sponsor them to support in-depth research. In turn, this helps stimulate interest in research and protect knowledge. Intellectual property rights to improve the academic reputation of knowledge content providers.[10]

The second stage is the collaborative innovation of content. The second stage is not only to share the existing content, but also to create new teaching materials and improve the existing teaching. The Wikiversity, owned by the Wikimedia Foundation, is a classic app at this stage.Wikipedia allows individuals to choose interesting learning projects to edit and provide financial support for valuable research projects aimed at working together to develop the best curriculum resources.

The third stage, the formation of a global education network. Individualized learning is the general trend, and the current cost of higher education shut out some people with learning ability. For example, it is difficult for middle school students who have the ability to learn to have access to the contents of the university classroom. At this stage, learners do not have to stick to their age and existing levels of education, but are free to explore and discuss courses that match their abilities around the world. The blockchain will record and certify all learning content and learners' achievements to form a free and open global education network.

Conclusions

Create a new growth pole of international competition for education development. Blockchain technology has the characteristics of decentralized, difficult to tamper, traceability and so on. It has the characteristics of academic certification in higher education, expansion of educational resources and establishment of self-organizing education system. Significant advantages. Yang Ximin and others believe that the application of blockchain technology in education mainly includes the establishment of big data, the education Taobao platform based on intelligent contract, the certification of degree certificate, the new ecology of open and efficient education, the self-operation of network community and the decentralized education system. But at the same time, it is faced with many challenges, such as the resistance of educational application promotion, the ambiguity of educational data property rights, the bottleneck of data storage space and the risk of user privacy disclosure caused by the immaturity of Blockchain anonymity technology.

At present, the application of blockchain in the field of higher education in China is still in its infancy, but its potential is not limited to the certification of educational qualifications. The rational use of Blockchain data can be traced back and difficult to tamper with. Combining it with all kinds of open educational resources is helpful to reduce barriers to higher education, realize a retrieval, a sharing and a reliable guarantee to realize the sharing of resources, and at the same time improve the enthusiasm of learners for targeted learning and the quality of education.

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