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Obstacles to Digital Transformation of Labor Education in Chinese Universities, Logical Rationale and Implementation Strategies

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Abstract: The new development stage of labor education in Chinese colleges and universities focuses on "transformation", and the external obstacles arising from it cannot be ignored. First, the traditional form of labor education in Chinese colleges and universities conflicts with the integration of digital disciplines and professions; second, the goal of traditional labor education in China is misaligned with the digital labor demand mosaic; third, the main body of traditional labor education in China is divergent from the main body of the digital technology class. As a result, the analysis of the basic logical reasoning of the digital transformation of labor education in Chinese colleges and universities: first of all, we should follow the Marxist view of labor, secondly, based on the basic concept of labor education, and finally, balance between physical labor and digital labor. In order to solve the obstacles to the digital transformation of labor education and comply with the basic logic, it is necessary to adopt the strategies of consensus and common research to build lifelong labor education, construct a three-dimensional form of technological innovation and labor education, and open up practice bases to promote the value of digital labor, in order to promote the digital transformation of labor education in China's colleges and universities to the depth.

Keywords: labor education; digital transformation; labor value

1. Introduction

"Labor education" is an educational activity aimed at cultivating students' correct labor values and good labor literacy, with the former aiming to promote the formation of a positive

worldview and methodology of labor, and the latter cultivating students' good knowledge, awareness and habits of labor [1] . General Secretary Xi Jinping called on students to promote the spirit of labor at the National Education Conference, and schools should guide students to revere and respect labor, hoping that they will grow up to be diligent, honest and creative workers. As a result, labor education has become a topic of particular concern for educators. In 2023, the Central Committee of the Communist Party of China and the State Council issued the Overall Layout Plan for the Construction of Digital China, emphasizing the strengthening of the innovative application of digital technology in education. In the past few decades, education informatization and intelligent education have developed rapidly, and the new development stage of education focuses on "transformation", and the meaning of digital transformation is to follow the laws of education, reshape the internal and external aspects of the entire education system and its interrelationships, and build a new ecology of education that adapts to the digital era. This "change" in the form of education has had a profound impact on the traditional concept of labor, labor rules and labor ethics, which have also brought new concepts and creative practice modes to labor education.

Chinese academics have limited knowledge about labor education curriculum innovation in the context of digital transformation. As of September 20, 2023, there were only 60 papers in the China Knowledge Network (CNN) when the author searched with the subject condition of both "digital" and "labor education". Xu Lei (2023) [2] believes that in order to better solve the obstacles of "separation of learning and application", "insufficient integration of digital elements", and "weak connection with digital labor network" in labor education in colleges and universities, it is necessary to encourage and support the development of digital labor education in colleges and universities, and to encourage the development of digital labor education in colleges and universities. In order to better solve the obstacles of "separation of learning and application", "insufficient integration of digital elements" and "poor connection with digital labor network" in college labor education, it is necessary to encourage college teachers and students to participate in flexible labor education, build college innovation and entrepreneurship parks of digital economy, construct interaction mechanisms with digital enterprises and play the role of promoting online education. Feng Meng [3] believes that the path of reconstructing labor education in the digital labor era lies in strengthening activity guidance, innovating the curriculum system, introducing diversified teachers, developing practice bases, and other initiatives to establish an operable, implementable, and sustainable labor education model. Li Hongxiu et al. believe that the realization of digital labor education needs to clarify the development direction of labor education, contribute to the construction of the content system of labor education in the digital era, and enhance the practical justice of labor education in the digital era. Zhan Qinglong et al. suggest [4] that digital labor education requires a non-mechanical organic integration of labor education mediated by technology and centered on students. Hu Xuefeng and Hong Zaoqing believe that[5] , in the context of the artificial intelligence era, the path of action for the implementation of intelligent transformation of labor education in colleges and universities lies in the unification of the target system of labor education with the core of intelligent digital literacy of college students, innovation of the new form of labor education through the fusion of information

technology and labor education, and building a new environment of intelligent education through the platform of the "five educations in parallel". The new environment of labor education is built on the platform of "five education". These studies have provided useful references for the digital transformation of labor education, but these explorations still have a long way to go to realize the comprehensive digital transformation of labor education in colleges and universities.

2. Obstacles to the Digital Transformation of Labor Education

2.1. Conflict between Traditional Forms of Labor Education and the Integration of Digital Disciplines and Professions

The integration of labor education and subject-specialized education requires unified planning and effective integration in terms of educational objectives, curriculum, teacher training and teaching resources. However, in the current practice, labor education and discipline-specialized education are still in a relatively isolated state, lacking the integration mechanism of interactive association. First of all, the implementation of labor education courses for digital disciplines in colleges and universities is underdeveloped, and many colleges and universities have not integrated information technology majors with labor education in terms of curriculum and course structure, while colleges and universities carrying out practical training in labor education for digital disciplines are unable to do both, and theories and practical exercises go hand in hand, so that the content of the courses lacks the scientific nature it should have. Secondly, the traditional form of labor education is not unified with the evaluation system of digital discipline specialization. The traditional form of labor education evaluation is mainly based on student evaluation and teacher evaluation, while the evaluation of digital subject specialization requires schools to use modern information technology means and platforms to record the physical and mental development of students and the development of vocational ethics in an all-round way, track and analyze the whole process of learning, and provide timely feedback on the online and offline of the academic status of the students, and on the basis of the previous steps, through the analysis and diagnosis of the combination of machine and artificial timely adjustment of teaching strategies. Finally, the objectives of curricular labor education and the objectives of professional education have not been fully integrated, and the resources and evaluation system required for labor education are fragmented from subject-specific professional education.

2.2. Misalignment between Traditional Labor Education Goals and Digital Labor Demand Mosaic

Traditional labor education focuses on concrete labor scenarios, aims at cultivating students' labor spirit and practical ability, and does not think enough about how to use labor education training programs to create a group of social talents with both digital technology and labor spirit. From the perspective of higher vocational colleges and universities, there is still a

mismatch between their teaching practice and digital labor demand. First, there is a prejudice against digital education and digital labor education in society and schools. Many people classify labor education as a physical activity, but in fact, the development of digital technology has penetrated into all walks of life, and the traditional concept of labor now hinders the process of digital labor and digital labor education. Secondly, the creative reform of labor education curriculum is insufficient. In higher vocational colleges and universities, due to the limited level of teaching and research, the primary purpose of colleges and universities is to cultivate students' vocational and technical ability and the employment rate of students, often unable to take into account the training and innovation of the practice of labor education, and the theoretical research on creative labor in higher vocational colleges and universities is also very little. In today's society, the demand for personal digital information literacy in various industries is increasing day by day, so that there will be a mosaic mismatch between the value puzzle of "labor creates value" upheld by traditional labor education and the abstract virtualization, intelligence, digital labor situation set up in a beautiful scenario.

2.3 Dual main divergence between traditional labor education subjects and digital technology-based human bodies

The doctrine of intersubjectivity originated from Husserl's theory of intersubjectivity as an important theoretical basis. Husserl believes that the depth of interaction between teachers and students in the process of labor education for college students can not be viewed in isolation, but should be observed in connection with each other, each as their own subject. With the rapid development of digital technology, students' thinking patterns, behavioral habits and learning environment have changed, digital technology brings convenience will also mislead students in the opposite direction of learning, with the upgrading and improvement of the learning environment of college students, students adhere to the subject position gradually disintegrated. When students use intelligent terminal equipment to query the information they need, the object of knowledge they obtain is not only the information itself, but the non-objective mechanized knowledge after digital information processing. Under the influence of digital technology, the subjective position of the student's brain is gradually replaced by algorithms, and it is particularly unknown what kind of thoughts are manipulated by the student's body when he or she participates in labor learning. It can be seen that digital technology is not a completely auxiliary tool to assist people to produce labor concepts and initiate labor behavior, but can be combined with specific labor scenarios to dynamically adjust the labor strategy flexibility consciousness, which completely subverted the traditional labor education on the subject's cognition.

3 The Basic Logic of the Digital Transformation of Labor Education

3.1 Following the Marxist view of labor

Marx used "labor creates man"[6] to deeply reveal the relationship between man and labor. Marx believed that man's labor activity is not determined by objective things, but is a willful behavior driven by man's subjective initiative. Labor is the core influence that creates human beings. In the process of continuous labor, human beings perfect their personality and create more possibilities for the production and development of society. Entering the digital era, a large number of forms have appeared in the virtual digital environment, making the content of labor toward the diversification of multiple diversified, although this appears to be a departure from the expression of the industrial economy proposed by Marx, but the original meaning of labor still follows Marx's view of labor. The logic of the digital transformation of labor education should not only focus on the characteristics of the times, but also follow the objective law that labor creates everything in conjunction with the Marxist view of labor. We need to broaden the horizons of the Marxist view of labor at the theoretical level and determine the necessity of labor education at the practical level.

3.2 Based on the basic concept of labor education

Based on the basic concept of labor education, one should be based on the education concept of "five education". The 18th CPC National Congress puts forward: "comprehensively implement quality education, cultivate socialist builders and successors with all-round development of morality, intelligence, physical fitness and aesthetics". At the National Education Conference and the Symposium for Teachers of Ideological and Political Theory Classes, General Secretary Xi Jinping proposed to cultivate socialist builders and successors with all-round development of morality, intelligence, physical fitness and aesthetics. The transformation of "four education" to "five education" not only elevates the value of labor education, enriches the spiritual core of education in the new era, but also puts forward greater requirements for the current deployment of labor education. Second, the concept of innovative and creative labor education. Innovation is the decisive role for the nation to achieve high-quality development, Xi Jinping has repeatedly put forward the "spirit of creativity", he emphasized that the most important thing in the current labor education is to develop innovative, creative labor and encourage and support labor innovation and creation. Innovative and creative labor allows workers to start pursuing "innovation and creativity" to stimulate their labor potential, which can stimulate workers' production efficiency. Third, to establish the education concept of the spirit of the model worker, the education of the model worker is to lead the spirit of the times, reflecting the spirit of the Chinese nation of perseverance and self-improvement. The 19th National Congress has written "promoting the spirit of model workers and craftsmen" into the report, and General Secretary Xi Jinping has also mentioned the education concept of respecting labor and caring for workers on many important occasions, which has injected a solid determination for us to devote ourselves to the cause of labor.

3.3 Balancing physical and digital labor

Digital technology profoundly affects the external environment of labor education in society, which will make students' thinking and action power change and give rise to multiple labor forms. The digital transformation of labor education is not only close to the new dynamics of the industry in the future, but also deeply fits the needs of college students' career development. Digital technology empowers college students' labor education, and the situation of labor education is constantly optimized, requiring constant development of the times and promoting the dialectical unity of manual labor and digital labor. The CPC Central Committee and the State Council issued the "Opinions on Comprehensively Strengthening Labor Education in Universities, Secondary Schools and Primary Schools in the New Era", which clearly puts forward that labor education should adhere to the basic principle of "focusing on physical labor" [7]. Physical labor can prompt students to go deeper into the front line of the labor line, stimulate the deepest virtue in the heart of the students, and form the heart of gratitude for the country, the nation, the society, and the family. Gratefulness to the country, the nation, society and the family.

4 Implementation strategies for the digital transformation of labor education

4.1 Consensus on joint research and construction of lifelong labor education

At present, the digital transformation of education and the development of digital economy are in full swing, which provides new development ideas for labor education in colleges and universities and places it in a more complex, diversified and open environment. If we want to promote the development of labor education in a complex environment, we should establish a lifelong labor education governance mechanism of "consensus - common research - common construction". First of all, it is necessary to establish a consensus among the government, schools, enterprises, industries and other diversified subjects, so that they can make common progress in the concept and practice of labor education in colleges and universities. The common expectation of each subject for labor education should be developed through the cultivation of high-quality technical and skilled talents. Secondly, multiple subjects should jointly study and formulate the development plan of labor education, so as to clarify the rights and responsibilities, build a solid bottom line, and really make the power of all parties to play a maximum role. Finally, all subjects should build a win-win situation in order to form a real community of labor education in colleges and universities. The joint participation of multiple subjects in the implementation of lifelong labor education requires common rules of action: first, the distribution of rights and responsibilities should be clearly defined, and the power of multiple parties should be coordinated. The government is in the leading position of labor education, and should give full play to the functions of active guidance and supervision and management; colleges and universities are the main bodies of lifelong labor education implementation, and should take the initiative to act and drive the development; enterprises are the participants and helpers of lifelong labor education, and they should highlight their roles in the professional labor practice, the supplementation of teachers for labor education, and the updating and maintenance of labor education equipments. Secondly, it is to realize the cooperation and sharing of information and

resources among multiple subjects through the ways of building courses, sharing bases, researching projects and evaluating them together. Build college labor education cloud platform services, has been college labor education theory explanation as a guide, promote the transformation of results, expand the service function, enhance the education chain, the talent chain and the industrial chain, the innovation chain of adhesion[8] .

4.2 Constructing a technologically innovative three-dimensional form of labor education

To build a good technological innovation of three-dimensional labor education form is to make full use of the digital advantage, seize the important frontier technology of virtual reality technology, and build a digital online platform for labor education. It is necessary to follow the traditional labor education to organize students to devote themselves to daily labor, social labor, school labor, and family labor, but also to comply with the new situation of labor education in the era of digital transformation, to develop the virtual simulation and other technical platforms, to integrate information technology into the process of labor education, and to shape the labor scene with strong experiential and educational qualities for students. Introducing digital products such as blockchain, big data, artificial intelligence, etc., to break the limitations of time and space, and realize the sharing of labor education materials of colleges and universities at different levels, in different fields, and with different manpower. Cultivate creative labor education values and establish a positive orientation of digital intelligent labor. Integrate labor education resources and build a technologically innovative dual-line complementary resource setup. Construct three-dimensional labor education preparation, to combine labor education characteristics, based on the concept of three-pronged education. Use a three-dimensional assessment system, using technological innovation products big data, cloud platforms, Internet of Things and other modern information technology means to carry out the education process detection and record real-time evaluation, including student self-assessment, mutual evaluation, teacher review, social review, product evaluation and other 360 ° three-dimensional evaluation methods, technological innovation empowered labor education three-dimensional evaluation of the new form, to provide students in colleges and universities to provide more real, more scientific, more reliable Feedback.

4.3 Developing practice bases to promote the value of digital labor

Schools should implement the fundamental task of labor education to promote moral education, strengthen the development of on-campus labor education practice bases, and enhance the correct understanding and application of digital labor. Firstly, colleges and universities should build on-campus labor education bases, look for natural, economic and cultural resources with local characteristics of the school, and develop productive labor education bases, so that students can personally experience agricultural cultivation, scientific production, and practice; secondly, the school can make use of students' after-school time as well as their daily life practice to carry out the Schoenen or sexual labor education bases.

Through a survey and analysis of the disciplines and specialties set up in different types of colleges and universities, the screening and positioning criteria for labor education practice bases in different school years are formulated. The advantages of colleges and universities lie in the possession of experts and professors, laboratories and experimental equipment, scientific research funds and innovative spirit. Colleges and universities have excellent and strong educational resources, and most of their teachers are combined with science and education, industry and education, and application-oriented talents. The long vacation time of colleges and universities can be docked with the vacation time of other school students, and they can use the experimental equipment of colleges and universities for guidance and practical experience. Different types of schools have their own advantages in teaching, scientific research, social services, etc., and can provide differentiated labor education practices for students at different levels with different differences. Relying on the support of equipment and resources of colleges and universities, they can effectively supplement the shortcomings of different levels of schools in carrying out labor education. Examples of labor education bases provided by colleges and universities for schools at various academic levels are shown in Table 1.

Table 1. Examples of educational and practical bases provided by higher education institutions for schools of various academic levels

Academic Discipline	Provision of Equipment by Universities	Practical Contents of Labor Education	Goal
Biology, medicine, food	DNA/Genetics Laboratory	Combination of hands-on training, digital microscopy, utilizing modern and traditional laboratory techniques	Experiencing biological mysteries and determining if learners are interested in working on a deep learning team
computer science	Digital sensors, wireless transmission-capable tablet PCs, high-performance computing computers	Characterization of EEG signals for neurological diseases, identification of crop diseases, and human action prediction research	Apply complex network theory, graph theory method and nonlinear synchronization analysis to multi-dimensional EEG signal analysis, to portray the coordination and interaction among neurons, neuron clusters and brain

			regions in various time-space scales, and to explore the coupling relationship between different brain regions and the changing law of brain network topology, which can help in the diagnosis of neurological diseases and the prevention of human emergencies.
Digital Media Technology, Educational Technology	HTC Vive, kinect, high-performance graphic cards, AR Vuforia	Sports Physical Rehabilitation, Power System Virtual Training, Microcontroller Experimental Teaching Resources Design and Development, Sports Martial Arts Virtual Training	The use of Htc Vive, Kinect and other virtual reality, motion capture equipment to realize the digitalization and simulation of production labor, students experience digital technology, enhance the hands-on, hands-on ability to master the new requirements of labor capacity in the digital era

5. Conclusions

After China entered the new digital era, labor is no longer a simple production activity, but a harmonious unity that changes the subjective and objective labor of people, which provides the main way for people to base on the basic concept of labor education and balance physical labor and digital labor. China's new-era college labor education needs to follow the Marxist view of labor, adhere to the goal of establishing lifelong labor education, adapt to the new characteristics of digital labor, build a new form of innovative labor education, introduce innovative technologies such as cloud computing, big data, blockchain, artificial intelligence, quantum information, and other innovative technologies, and through strengthening the guidance of activities, reforming curricula, introducing faculty members, and opening up labor education bases and other initiatives to continuously de Explore new strategies for the digital transformation of labor education in Chinese universities.

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References:

1. Tan Chuanbao. Conceptual Understanding of Labor Education--How to Understand the Basic Connotation and Basic Characteristics of the Concept of Labor Education. Chinese Journal of Education,2019(02):82-84.
2. Xu Lei. Labor education in colleges and universities in the context of the rise of digital labor. Zhejiang Social Science,2023, (09):89-96+159.
3. Feng Meng. Logical starting point, reconstruction path and implementation scheme of labor education model reconstruction in the digital labor era. Education and Career,2023(05):5-12.
4. Zhan Qinglong,Sun Xin,Li Yinling. Hybrid labor education: a new form of labor education in the digital era. China Electrochemical Education, 2022, (08):41-50.
5. HU Xuefeng,HONG Zaoqing. Intelligent Transformation and Contingent Path of Labor Education in Colleges and Universities. Educational Theory and Practice,2022,42(06):13-17.
6. Marx, Engels. Selected Works of Marx and Engels (Volume III). Beijing: People's Publishing House, 2012: 988
7. Opinions of the CPC Central Committee and State Council on comprehensively strengthening labor education in schools and universities in the new era. People's Daily, 2020-03-27(001).
8. Zhang Hui. Research on the Promotion Mechanism of Higher Vocational Labor Education in the Context of Digital Transformation of Education. Education and Career,2023, (14):65-70.