Labor Education Curriculum Implementation in the Perspective of Artificial Intelligence: Dilemmas and Optimization Paths

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Abstract: The continuous development and sustained progress of artificial intelligence has made it an important driving force for future educational change. Labor education, as an important part of China's education policy, must focus on the deep integration with artificial intelligence, and the key to the development of labor education lies in the construction and implementation of the labor education curriculum. Based on the labor education curriculum standard, a labor education curriculum system integrating "general theory courses, public practice courses and literacy development courses" has been constructed. Through the perspective of artificial intelligence, the implementation of labor education curriculum faces the practical dilemmas of lagging curriculum awareness, one-sided curriculum setting, scarcity of curriculum resources, and single curriculum evaluation. Starting from the realistic dilemma, the optimization path of labor education curriculum implementation in the field of artificial intelligence is proposed in order to promote the deep integration of labor education curriculum and artificial intelligence, and carry out useful exploration for realizing the modernization of education and helping diversified talents cultivation.

Keywords: Artificial Intelligence; Labor Education Curriculum; Curriculum Implementation.

1. Introduction

Artificial Intelligence (AI) is the wind vane leading the world's future development in the field of science and technology and lifestyle transformation in the 21st century. People have long used AI technology in every aspect of their daily lives, such as personalized recommendation systems for online shopping, face recognition access control, AI medical imaging, AI navigation systems, AI voice assistants and so on. Education as the main way to educate people, the Party and the government have also attached great importance to the application of artificial intelligence technology in the field of education implementation and management in the new era. In 2017, the State Council issued the "New Generation of Artificial Intelligence Development Plan", which pointed out that it is necessary to use intelligent technology to accelerate the promotion of the reform of talent cultivation mode and teaching methods, and to open up a brand-new chapter of educational change in the era of artificial intelligence[1]. In 2018, the Ministry of Education in the Education Informatization 2.0 Action Plan made clear the importance of the depth of AI technology throughout the entire process of integrated education[2]. In 2019, the State Council promulgated China Education Modernization 2035, further emphasizing that AI-enabled intelligent and informatized education is an inevitable requirement for the realization of a modernized education governance system[3].

As an important part of China's education policy, the change of labor education must take the deep integration with artificial intelligence as a focus point in order to further promote the modernization of education. Therefore, based on the connotation and advantages of artificial intelligence, this study takes the construction of the structure of the labor education curriculum system as the entry point to explore the realistic dilemmas and optimization path of the implementation of the labor education curriculum under the perspective of artificial intelligence, with a view to promoting the in-depth fusion of the labor education curriculum and artificial intelligence, realizing the construction of education modernization, assisting in the cultivation of diversified and highly sophisticated talents, and improving China's international competitiveness.

2. Connotation and Advantages of Artificial Intelligence

2.1. Connotation of Artificial Intelligence

Artificial intelligence, first proposed by Dartmouth in 1956[4], is a new technical science that researches and develops the theories, methods, technologies and application systems for simulating, extending and expanding human intelligence. On this basis, Saier divided artificial intelligence into two categories according to whether it has human thinking consciousness: weak artificial intelligence and strong artificial intelligence[5]. Among them, weak artificial intelligence refers to artificial intelligence that does not have human consciousness, and can only perform the corresponding tasks according to the established procedures, which can be regarded as a convenient tool to simplify the work of human beings. Strong AI, on the other hand, is an AI with human consciousness, which can think like a human and make decisions on its own. In fact, the current research on artificial intelligence is still mainly focused on the stage of weak artificial intelligence, such as pattern recognition, data mining and intelligent algorithms and other technologies in a large number of applications. Machine learning technology, on the other hand, is a major breakthrough towards strong artificial intelligence, mainly studying how computers can simulate or implement human learning behaviors in order to acquire new knowledge or skills[6], such as Alpha Dog defeating the Go champion is a successful example of computer deep learning. Overall, the arrival of the era of
artificial intelligence will certainly lead the reform of education informatization, how to systematically and scientifically integrate artificial intelligence technology and education, and the construction of a modern education system, has significant practical value.

2.2. Advantages of Artificial Intelligence to Help Education Development

2.2.1. Artificial Intelligence Technology Can Tailor Students' Learning Plans and Meet Their Individual Needs

With the continuous expansion of the size of the student body and the increasing daily workload, it is difficult for teachers to devote enough attention to each student, and the traditional teaching mode is difficult to meet the personalized needs of students, while artificial intelligence can fully automate the simulation of the tutor's behavior, diagnose the characteristics of each student, judge the degree of mastery of each student's knowledge in different curricular areas, and personalize the homework for the students to push the homework, and adjust the difficulty and form of the assignments according to the student's completion situation to adjust the difficulty and form of homework, so that students can more accurately grasp their own deficiencies. At the same time, artificial intelligence can also achieve both scale and personalized homework feedback, and realize the intelligent evaluation of students' homework.

2.2.2. Artificial Intelligence Technology Can Assist Teachers to Complete Their Daily Work and Promote Deep-Level Communication between Teachers and Students

At present, in schools, teachers spend most of their time dealing with monotonous and repetitive work, and are unable to devote more time and energy to face-to-face communication with students. However, monotonous and repetitive work is exactly what AI technology is good at. As long as the evaluation indexes are formulated, AI technology can quickly help teachers deal with similar things, thus freeing teachers from complicated daily affairs, so that teachers can have more time and energy to invest in more in-depth communication for students and help them solve their problems with the support of data analysis.

2.2.3. Artificial Intelligence Technology Can Make Education Management More Scientific and Efficient, Helping to Flexibly Respond to Emergencies

When certain data, paradigms, and conditions are input into the AI system, AI can make predictions about its results. The object of prediction includes, in addition to the results, many factors related to the management plan, such as the prerequisite factors of the teaching program, the difficulties that may be encountered, feasible solutions and so on [7]. Therefore, AI's powerful big data analysis and processing capabilities, complex program analysis, visual image simulation, feasibility probability estimation and other functions will make education management more scientific and efficient, more forward-looking, which is not only conducive to nip possible hidden dangers in education in the bud, but also helps to respond to emergencies more flexibly.

3. Construction of Labor Education Curriculum System

The theoretical framework and hierarchical structure of the design of the labor education curriculum system is an important reference index for the implementation of the labor education curriculum, and the implementation of the labor education curriculum tends to produce corresponding changes according to the differences in its system. At present, different scholars have proposed the corresponding framework of labor education curriculum system from different theoretical perspectives, such as Xiong Qing's two-way shaping structure of labor education curriculum in the new era based on the holographic concept [8], and Lu Xiaodong's framework of labor education curriculum in the university, which focuses on the importance of implicit curriculum [9], and Li Qun and other scholars' core literacy-oriented innovative structure of the labor education curriculum [10] etc. Since the labor education curriculum system is too subjective and broad, this paper constructs a labor education curriculum system integrating "general theory courses, public practice courses and literacy development courses" based on the labor education curriculum standard, based on the two curriculum forms of disciplines and practitioners, and based on the boundaries of the two activity spaces of on-campus and off-campus.

3.1. General Labor Education Theory Courses

The general labor education theory course is the labor education knowledge that every student should have, which mainly includes the overview of labor, the relationship between labor and individuals, and the relationship between labor and society, etc. The overview of labor can be subdivided into the essence of labor, the meaning and value of labor, the elements of labor, and the contents and methods of labor. The main purpose of the general labor education course is to enhance students' knowledge of labor education, correct students' labor concepts and labor attitudes, and cultivate students' love for labor and the character of inheriting the good virtues of the Chinese nation. Labor education courses should start from a young age, and with the increase of grades, spiral and reasonable arrangement of general theory courses, without violating the rules and characteristics of students' physical and mental development, educate students the importance of labor from the shallow to the deep, and help students to become independent and self-improving strugglers and successors in the new era, not to be afraid of hardship. For college students, the curriculum of general labor education should focus on deeper rational thinking, for example, through the teaching of labor education topics and sharing with students, to strengthen students' systematic, discursive and reflective knowledge of labor education, and then better lead them to work in real life practice.

3.2. Public Labor Education Practice Courses

Labor, as a unique social practice activity of human beings that is different from animals, is inseparable from specific real-life situations such as actual life, work and study. Therefore, labor education courses should not only focus on the teaching of theoretical knowledge, but also allow students to carry out real labor activities in their daily lives, gain correct labor values in labor creation, and sharpen their will to face difficulties, so as to give full play to the value of the potential curriculum of labor education. For primary and secondary school students, schools can carry out special labor practice activities in combination with local or campus characteristics, such as teachers and students planting and
enjoying vegetables, making simple dishes, handmade jewelry production, campus cleaning, etc., so that students can experience the difficulty of the labor process and the joy of harvesting the fruits of labor, which will help them to correct the concept of labor education and cultivate students' love of labor and good qualities. Colleges and universities on the cultivation of college students' labor education, on the basis of separate labor education courses, but also to enhance the integration of labor education and professional education, in the students' professional practice activities permeated with the factors of labor education, such as education teacher training students on-site observation and experience of primary and secondary school teaching classroom teaching, law students into the courtroom scene and campus simulation of the court hearing, agricultural students to observe planting greenhouses and their own The students majoring in agriculture observe the planting greenhouses and research and develop new varieties by themselves. This can not only enrich the content and form of professional practice activities in colleges and universities, but also exercise students' professional ability, conducive to students' professional growth.

3.3. Labor Education Literacy Development Courses

Labor Education Literacy Expansion Courses refer to the courses that students voluntarily participate in based on their own situation to improve their knowledge and ability and better adapt to future learning and daily life. Primary and secondary schools can set up different tasks for expanding labor education literacy according to the characteristics of students in different grades, such as using weekends or winter and summer vacations to hit the red museum, playground visitor management volunteers, community service volunteers, etc., fully respecting the students' right of independent choice, so that students can better experience the joy of labor and social responsibility driven by their own interests. Similarly, colleges and universities can also set up labor education topics in compulsory or elective courses, so that students can obtain credits and improve their comprehensive quality and professional ability by independently choosing and completing different labor education topics, such as education, economic management, cultural communication, and urban community volunteer service. In addition, colleges and universities can combine labor education with the activities of major associations, which can meet the cultural and recreational needs of students while also improving their organizational management and teamwork skills.


The construction and implementation of the labor education curriculum is, to a certain extent, an important way to ensure the implementation of the fundamental task of moral education, and an effective magic weapon to play the function of curriculum education and meet the needs of students' comprehensive development. The arrival of artificial intelligence has created a new vision of reform and glory for the implementation of labor education curriculum. Only by correctly grasping the problems existing in the implementation of the current labor education curriculum can we better realize the perfect fit between the labor education curriculum and artificial intelligence, and maximize the nurturing function of the labor education curriculum.

4.1. Lagging Labor Education Curriculum Awareness

The implementation of labor education curriculum includes two main subjects: students and teachers, but at present, both students and teachers have different degrees of lagging awareness of labor education curriculum, which to a certain extent affects the effect of the specific implementation of labor education curriculum. On the one hand, not enough attention to labor education courses. From the school's point of view, if the school only focuses on the teaching of the main subjects, focuses on the test results, and ignores the implementation of labor education courses, it will cause the teachers to belittle the labor education courses, the dilution of the students' labor education awareness, and then contrary to the original intention of the labor education courses. From the teachers' point of view, many teachers pay more attention to the teaching quality of professional courses and neglect the effect of labor education courses, which leads to the implementation of labor education courses often according to the book, lack of novel curriculum design, and can not cause students to resonate in their hearts. On the other hand, there is a lack of correct understanding of the nature of labor education. 2020, the State Council's "Opinions on Comprehensively Strengthening Labor Education in Universities, Colleges and Primary Schools in the New Era" clearly pointed out the connotation of "labor" in the new era of labor education curriculum, namely, living labor, production labor and service labor [11]. However, in fact, many college teachers have cognitive bias on the nature of labor education, narrowing it to the means of obtaining economic remuneration skills; many students simply understand labor education as physical activities as opposed to mental activities, unwilling to participate in, or even despise, labor activities, and fail to correctly understand the value of labor.

4.2. One-sided Curriculum for Labor Education

The Opinions on Comprehensively Strengthening Labor Education in Universities, Middle Schools and Primary Schools in the New Era clearly points out that labor education courses will be integrated into the whole process of talent cultivation, and that universities, middle schools and elementary school must take labor education courses as compulsory courses and arrange at least one class hour a week [11]. However, due to the lack of clear knowledge of the labor education curriculum in schools and the lack of hierarchical design of the curriculum content, the labor education curriculum is formal, too one-sided and simplistic. The main manifestations are as follows: Firstly, there is no compulsory labor education course, or the time arrangement of the compulsory labor education course is insufficient. Some schools have tried to offer labor education courses, but due to the lack of clarity and specificity in the syllabus, teaching methods and contents of labor education courses, as well as limited school funds and other problems, they could not continue to promote the courses, and thus gradually became marginalized. Second, the scope and selection of practical labor education courses are too mechanical. Although many
schools carry out different forms of labor education activities such as labor week, labor month, winter and summer vacation social practice, these activities are often too compulsory and single, simply instilling students with labor knowledge and ignoring their subjective consciousness and sense of labor experience, which is not conducive to the acquisition of a sense of belief in labor and a sense of achievement. Thirdly, the labor education curriculum lacks in-depth integration with other compulsory and elective courses. At present, the implementation of the labor education curriculum in most schools still remains on the surface, and has not been integrated with other subjects, which not only fails to play its function of moral education, but also may increase the academic burden of students.

4.3. Scarcity of Labor Education Curriculum Resources

The implementation of the labor education curriculum aims to improve students' knowledge of labor, help students form correct labor values, and deliver socialist builders and successors with all-round development of morality, intelligence, physicality, aesthetics and labor for the country and society. The labor education curriculum system mainly consists of general theoretical courses, public practice courses and quality development courses, so the two major resources, the theoretical course textbook library and the practice place of labor education courses, are the key if we want to get good educational results. In the age of information technology, the teaching materials of labor education courses can be obtained quickly through the data search function, but the quality of a large number of online resources varies, so teachers need to reasonably screen and deploy the optimal teaching plan according to the characteristics of the school campus and the physical and mental level of students. The practice place of labor education is a major problem in the promotion of labor education at present. Because of the reasons such as the area of the school site, the campus construction, the activity funds, the local community management system and so on, there is often a big gap between different schools in the scope of the choice of the practice place of labor education, and the labor class is basically indoors in some schools, which is not to mention the stimulation of the students' interest in labor and improvement of the comprehensive quality of the students. How to balance educational resources, so that students can participate in meaningful and diversified labor practices to experience the value of labor is a problem that continues to be solved.

4.4. Single Evaluation of Labor Education Courses

The evaluation system of labor education curriculum is an important indicator to measure the implementation effect of labor education curriculum. However, the current evaluation system of labor education courses has not yet been perfected, which is mainly manifested in the following three aspects: firstly, the evaluation subject of labor education courses is single, which is mainly the lecturing teachers of labor education courses, and the evaluation is too subjective, which makes it difficult to avoid the evaluation errors caused by the teachers' personal loves and hates; secondly, the evaluation method of labor education courses is single, which is mainly still the same as that of the other mandatory courses and elective courses, i.e. Secondly, the evaluation method of labor education course is single, mainly following the evaluation method of other compulsory courses and elective courses, i.e., students' attendance scores, test scores and practical activity scores, which fails to reflect the essential characteristics of the labor education course, i.e., the cultivation of the concept of labor, the ability to practice labor and the spirit of labor, and focuses on the enhancement of the core qualities; thirdly, the results of the evaluation of the labor education course focus on the result-oriented and selective evaluation, and do not pay attention to the process-oriented and developmental evaluation. Due to the unclear positioning of the labor education curriculum, some schools take it for granted that the labor education curriculum is equal to other compulsory courses, and when evaluating students, they only pay attention to the grades that the students ultimately obtain, without paying attention to the continuity of the students' changes and the degree of their growth during the whole learning process, which leads to one-sided and irrational evaluations.

5. The Optimization Path of Labor Education Curriculum Implementation in the Perspective of Artificial Intelligence

The application of artificial intelligence in labor education requires the joint efforts of the state, schools, teachers, students and other personnel at multiple levels. For the state, it is necessary to improve the labor education curriculum standards and specific implementation requirements; for schools, it is necessary to face up to the mandatory status of the labor education curriculum, and courageously develop special teaching content based on the national labor education curriculum standards; for teachers, it is necessary to set a positive attitude and For teachers, they need to set the right attitude, innovate the teaching mode and broaden the teaching resources; for students, they need to participate independently and actively, and improve their labor education literacy in the labor practice. Only in this way can we build a good artificial intelligence education environment, maximize the educational function of labor education courses under the support of artificial intelligence technology, and help the construction of China's modern education system.

5.1. Improving Labor Education Curriculum Awareness: Strengthen the Professionalism of the Teacher Team and Correct Students' Labor Education Cognition

Improving the awareness of labor education curriculum is the prerequisite guarantee for the implementation of labor education curriculum. The implementation of the labor education curriculum cannot be separated from the main participation of schools, teachers and students, and the key to the effectiveness of the implementation lies in whether the understanding of the essence of labor education is sufficient and accurate. First of all, the school should follow the national policy, pay attention to the compulsory status of labor education courses, fully penetrate the role of labor education, use the new era of information technology's fast, efficient, high coverage, etc., vigorously publicize the positive role of labor education courses among teachers and students, correct the attitude of teachers and students towards labor education courses, and inspire them to actively create and participate in the construction of the school's special labor education
courses. As far as teachers are concerned, it is necessary to strictly control the construction of the teacher team, increase the proportion of teachers specializing in labor education courses [12], and at the same time, strengthen the professional knowledge and skills of teachers of labor education courses through offline or online expert lectures, reports, conferences, etc., so as to facilitate them to better teach the labor education courses and give full play to the value of labor education education in educating people. As for students, we can organize offline lectures by labor models or watch films on craftsmanship to deepen students' understanding of labor education and raise their awareness of independent labor.

5.2. Optimizing the Curriculum of Labor Education: Insisting on the Status of Compulsory Courses and Promoting the Construction of Labor Education Infiltration Courses

The curriculum of labor education is not only about the teaching of theoretical knowledge, but also about the cultivation of students' labor skills and labor spirit in the practical courses. Therefore, based on the essential connotation of the labor education curriculum, professional characteristics, as well as the differences in students' school years, physical and mental development patterns, personality traits and other factors, we must set up an overall and orderly hierarchical advancement of the curriculum content, to maximize the improvement of the labor literacy of each student, and to promote the all-round development of the students. First of all, schools should follow the education policy, independently build compulsory labor education courses, formulate implementation plans according to the labor education curriculum standards, and set reasonable class time arrangements. Second, schools should strengthen the in-depth integration of the labor education curriculum with other courses, such as using the big data capture function to capture the intersection between the educational content of the labor education curriculum and other courses, and infiltrate the factors of the labor education curriculum into other courses to deepen students' understanding of the labor education curriculum. Finally, schools should combine the local or campus characteristics of the school, maximize the limited resources, and carry out social labor practice activities in an orderly manner, so that students can experience the bitterness and sweetness of the labor process in their independent participation, and form the correct concept of labor and inherit the excellent craftsmanship.

5.3. Constructing Intelligent Labor Education Curriculum Resources: Combining Virtual and Real, Creating Dynamic Learning Resources

Labor education curriculum resources are an important cornerstone for the implementation of the labor education curriculum, and high-quality educational resources are a necessary prerequisite for the success of curriculum teaching. The powerful function of artificial intelligence technology will strongly assist the construction of intelligent labor education curriculum resource base. First, the rich online teaching resources are a powerful aid for teachers and students to learn independently, and teachers can screen high-quality resources for students to check and fill in gaps or expand their knowledge outside the classroom. Second, the online smart platform can track and record the dynamic changes in the whole learning process of students, tailor-made learning plans for students according to the data, and push personalized curriculum resources, which is conducive to the emergence of students' interest in labor. Third, the combination of virtual and real labor practice scenarios opens up students' horizons and deepens their experience of labor practice activities. Real practical experience is most conducive to the improvement of students' labor skills, such as personally planting wheat in the farmland. However, due to the limited conditions and facilities, insufficient funds for education and other reasons, some of the content of the labor education curriculum can not be realized, which requires the help of virtual equipment, such as VR experience from ancient times to the present day the evolution of farming culture, and so on. In addition, students can also share their knowledge or works independently on the online platform, stimulate new ideas in mutual reviews, and promote the improvement of labor education through the heart.

5.4. Perfecting the Evaluation System of the Labor Education Curriculum: Automatic Generation of Knowledge Visualization and Multiple Evaluations for Common Development

The evaluation system of the labor education curriculum is an important reference index for judging the implementation effect of the labor education curriculum. The purpose of labor education courses is to let students master labor knowledge, improve labor skills and enhance labor education literacy through labor education courses. Therefore, the evaluation system of labor education courses should focus on what students have learned, i.e., process evaluation and developmental evaluation, rather than result-based and achievement-based. Knowledge visualization technology in the information age can effectively control the effective data generated in the process of students' learning, and generate individual learning reports through machine analysis and collation. Teachers can not only assess students' learning in labor education courses based on this report, but also carry out personalized after-school teaching counseling, which can more effectively promote the improvement of students' academic performance. In addition, the school should also set up a unified labor education course evaluation index and strictly and accurately transmitted to the subject teachers, in the evaluation content should not only include the students' learning effect, but also should include the teachers' own teaching situation, and will be included in the teachers' title evaluation. Finally, the state should set up a labor education supervision system [13] to guide schools to regulate the labor education curriculum in accordance with the law, and to lead schools to fully explore, play and create the characteristics and advantages of school labor education, so as to lay a solid foundation for the formation and development of students' labor literacy.

6. Conclusion

As an important part of China's education policy, labor education must take the deep integration with artificial intelligence as the focus of its change, and the key to the development of labor education lies in the construction and implementation of labor education curriculum. Based on the standard of labor education curriculum, this paper firstly
constructs a labor education curriculum system integrating "general theory courses, public practice courses and literacy development courses". Then, through the perspective of artificial intelligence, it is found that the implementation of the current labor education curriculum is faced with the real dilemmas of lagging curriculum awareness, one-sided curriculum setting, scarcity of curriculum resources, and single curriculum evaluation. Finally, the optimization path of labor education curriculum implementation in the field of artificial intelligence is proposed from the realistic dilemma, which is to improve the awareness of labor education curriculum, optimize the curriculum setting of labor education, construct intelligent labor education curriculum resources and perfect the evaluation system of labor education curriculum. It is hoped that this will promote the deep integration of labor education curriculum and artificial intelligence, and help the modernization of education.

References


