Research on the Construction of Artificial Intelligence Technology Application Specialization in the Context of Industrial Upgrading

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Abstract. Under the background of industrial transformation and upgrading, the rapid development of artificial intelligence technology has put forward new requirements for talent cultivation in higher vocational education. This paper will explore the relationship between the transformation and upgrading of regional industries and the professional construction of artificial intelligence technology application in higher vocational colleges and universities from the theoretical and empirical perspectives, analyze the match between the current situation of higher vocational colleges and universities in Hunan Province and the regional industries, and finally put forward relevant countermeasures and suggestions, with a view to providing references for the construction of higher vocational colleges and universities' professions.

Keywords: industrial upgrading, artificial intelligence technology, professional construction.

1 Introduction

With the adjustment of global industrial structure and the continuous emergence of new technologies, industrial transformation and upgrading has become an inevitable choice for the economic development of all countries. Artificial intelligence technology, as an important driving force of the new round of scientific and technological revolution and industrial change, is profoundly changing the development mode of all industries[1]. In this context, higher vocational colleges and universities, as an important base for cultivating high-skilled talents, are facing the urgent needs of professional construction and curriculum system reform.

2 Research Process

Firstly, we find the literature, relevant policy documents and Hunan Provincial Statistical Yearbook to understand the current status of industrial structure, existing problems and the necessity of industrial transformation and upgrading in Hunan Province, and

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put forward the path of professional construction of higher vocational colleges and universities under the industrial transformation and upgrading. Secondly, through data analysis and field research, we mastered the professional cultivation objectives, curriculum and faculty construction of artificial intelligence technology application in higher vocational colleges and universities in Hunan Province. Furthermore, a questionnaire survey is conducted on the students and teachers of this specialty in the province to summarize the problems of artificial intelligence technology application specialty in higher vocational colleges and universities in Hunan province in terms of professional orientation, talent cultivation objectives, curriculum system, practical training system, faculty, and assessment and evaluation system. Finally, specific countermeasures and suggestions to solve the above problems are given.

3 Theoretical Research on the Mutual Development of Regional Industrial Transformation and Upgrading and Professional Construction

3.1 Definition and Connotation of Industrial Transformation and Upgrading

Industrial transformation and upgrading refers to improving the technological level and competitiveness of industries by means of technological innovation, management innovation and institutional innovation, and realizing the transformation from low value added and low-technology-content industries to high-value-added and high technology-content industries. Its connotation includes the optimization and adjustment of industrial structure, the extension and upgrading of industrial chain, the modernization of production mode and the deep integration of industry and information technology. The aim is to realize the unity of economic, social and ecological benefits and to improve the overall competitiveness and sustainable development of the industry[2].

3.2 Dynamic Mechanism of Regional Industrial Transformation and Upgrading

The power mechanism of regional industrial transformation and upgrading mainly includes technological innovation drive, market demand pull, policy support promotion and industrial cluster effect. Technological innovation is the core driving force of transformation and upgrading, and industrial competitiveness is enhanced through the research and development of new technologies and new processes. These power mechanisms interact with each other and jointly promote the continuous upgrading and optimization of regional industries.

3.3 Requirements and Impact of Industrial Transformation and Upgrading on the Construction of Higher Vocational Education Specializations

Industrial transformation and upgrading has put forward higher requirements for the professional construction of higher vocational education[3], which is mainly reflected

in the personnel training objectives, curriculum system, teaching mode and school-enterprise cooperation. First of all, talent training objectives need to pay more attention to cultivating high-skilled, high-quality composite talents to meet the needs of industrial upgrading for high-end skills and innovation ability. Secondly, the curriculum system should be updated in time, increase the teaching content of new technology and new process, and strengthen the practical teaching link. The teaching mode needs to be more flexible, adopting project-based and case-based teaching to enhance students' practical operation ability and innovative thinking. Finally, school-enterprise cooperation should be deepened to enhance students' employment competitiveness and job adaptability through the integration of industry and education and order-based training.

4 Study on the Current Situation of Artificial Intelligence Industry Development and the Construction of Artificial Intelligence Technology Application Specialties in Higher Vocational Colleges and Universities

4.1 Development Status and Trends of the Artificial Intelligence Industry

The artificial intelligence industry has developed rapidly in recent years, mainly characterized by the rapid advancement of technology research and development and application. Various regions have established AI industrial parks and innovation bases, attracting a large number of high-tech enterprises and R&D organizations. The government has introduced a series of supportive policies, such as capital subsidies and tax incentives, to promote the widespread application of AI technology in manufacturing, healthcare, transportation and other fields. In the future, the development trend of the AI industry will focus on technological innovation, application scene expansion and industry chain improvement. In particular, breakthroughs in core technologies such as deep learning and natural language processing will further promote the penetration and integration of AI in various industries and promote the high-quality development of the regional economy[4].

4.2 The Current Situation and Challenges of the Construction of Artificial Intelligence Technology Application Specialties in Higher Vocational Colleges and Universities

At present, the construction of artificial intelligence technology application specialization in higher vocational colleges and universities has made some progress, but still faces many challenges. Some higher ocational colleges and universities have already set up relevant specialties, with courses covering machine learning, data analysis, robotics and other fields, and gradually improving teacher strength and teaching equipment. However, difficulties and challenges still exist: first, insufficient faculty, professional teachers lack of real-world experience and cutting-edge knowledge; second, the curriculum is out of touch with industrial demand, and the practical teaching link is

weak; third, the depth of school-enterprise cooperation is insufficient, and the internship and employment channels for students are limited.

5 Study on the Matchability of Artificial Intelligence Technology Application Specialization Construction and Regional Industries in Hunan Higher Vocational Colleges and Universities

5.1 Characteristics and Needs of Artificial Intelligence Industry Development in Hunan Province

The development of AI industry in Hunan Province has significant characteristics and special needs. First of all, relying on its location advantage in the central and southern regions and rich educational resources, Hunan Province has formed a relatively complete AI industry chain, with strong strength from basic research to application development. Changsha, as the capital of the province, gathers a large number of high-tech enterprises and scientific research institutions, and is the core area for the development of AI industry. Secondly, the Hunan provincial government attaches great importance to the development of the AI industry, and has issued a series of policy documents aimed at promoting the deep integration of AI and traditional industries, and promoting the construction of intelligent manufacturing, smart cities and other fields. In addition, Hunan Province has made significant progress in the fields of intelligent manufacturing, driverless and medical imaging, forming a number of influential enterprises and projects[5]. However, with the rapid development of the industry, the demand for high-end technical talents in Hunan Province has increased dramatically, especially the application-oriented talents with practical operation ability and innovative spirit. Therefore, higher vocational colleges and universities need to closely match the industrial demand in the construction of AI technology application specialties, and cultivate talents adapted to the market demand.

5.2 The Current Situation and Characteristics of Artificial Intelligence Technology Application Specialties in Higher Vocational Colleges and Universities in Hunan Province

Higher vocational colleges and universities in Hunan Province have made certain achievements in the construction of artificial intelligence technology application specialties, such as Changsha Aviation Vocational and Technical College and Hunan Electronic Science and Technology Vocational College, etc. The curricula of these colleges and universities cover the core areas of machine learning, data analysis, robotics and so on. At the same time, the schools actively introduce and cultivate teachers with practical experience, and gradually improve the construction of laboratories and practice bases. Combined with the characteristics of local industries, some institutions have carried out teaching practices with local characteristics, such as cooperating with local enterprises to carry out project practices and organizing students to participate in problem solving

in the actual production process. In addition, the mode of school-enterprise cooperation has gradually diversified, expanding from the traditional order-based training to a variety of forms, such as the integration of production and education, and the combination of work and learning, with the aim of enhancing students' practical ability and competitiveness in employment.

5.3 Analysis of the Matching Degree between the Professional Construction of Artificial Intelligence Technology Application in Higher Vocational Colleges and Regional Industries in Hunan Province

The matching degree between the professional construction of artificial intelligence technology application in higher vocational colleges and regional industries in Hunan Province shows a trend of gradual improvement on the whole. First of all, from the perspective of professional settings and course contents, higher vocational colleges and universities have gradually adjusted and optimized their curriculum systems, and increased the number of course modules related to the AI industry, such as deep learning and computer vision, in order to adapt to the actual needs of enterprises. However, due to the rapid development of emerging industries, the speed of curriculum updating still needs to be accelerated. Secondly, in terms of faculty and practical teaching, some higher vocational colleges and universities have improved the quality of teaching through the introduction of enterprise experts and the strengthening of teacher training, but the overall level of faculty still needs to be improved. In practical teaching, although school enterprise cooperation has been strengthened, the number and quality of internship positions still need to be improved. Finally, in terms of the match between student employment and industrial demand, the employment rate of graduates of higher vocational colleges and universities in AI-related positions is high, but their competitiveness in high-end technical positions still needs to be improved. Therefore, higher vocational colleges and universities should further deepen the cooperation with enterprises, continuously update the teaching content and mode, improve students' practical operation ability and innovation ability, and ensure that the professional construction and industrial development realize seamless connection.

6 Countermeasures Suggestions for the Construction of Artificial Intelligence Technology Application Specialties in Hunan Higher Vocational Colleges and Universities

6.1 Optimize the Curriculum System and Enhance the Practicality and Forward-looking Nature of the Teaching Content

Higher vocational colleges and universities should regularly update and optimize the curriculum system according to the development trend of the artificial intelligence industry and the needs of enterprises. The curriculum should cover core technologies such as machine learning, deep learning, natural language processing, computer vision, etc., and combine them with practical application scenarios, such as intelligent

manufacturing, intelligent medical care, and unmanned driving. At the same time, cutting-edge technologies and the latest research results are introduced to ensure that the teaching content is forward-looking. In addition, practical teaching should be increased, focusing on the cultivation of students' hands-on ability and practical problem solving ability, shortening the gap between theory and practice, and enhancing students' employment competitiveness.

6.2 Strengthening of the Teaching Staff and Upgrading of Teachers' Professionalism and Practical Skills

Teaching staff is an important guarantee for the teaching quality of higher vocational colleges and universities. For this reason, schools should strengthen the training of existing teachers and encourage them to participate in industry seminars, technical exchanges and other activities to understand the latest development of artificial intelligence technology. In addition, enterprise experts and researchers with rich practical experience should be introduced to enrich the faculty. Through school-enterprise cooperation and school visits and exchanges, the practical ability and teaching level of teachers can be improved so that they can better guide students' learning and practice.

6.3 Deepening School-enterprise Cooperation and Building a Training Model that Integrates Industry and Education

School-enterprise cooperation is an important way for higher vocational colleges to cultivate applied talents. Schools should establish close cooperative relationships with AI related enterprises, jointly formulate talent training programs, and carry out joint schooling. The actual needs and technical requirements of enterprises are integrated into the teaching process through order-based training, directed internships, project cooperation and other forms. Enterprises can provide schools with internship bases, experimental equipment and technical support, and schools can deliver high-quality talents to enterprises, forming a mutually beneficial and win-win situation[6]. In addition, schools should encourage students to participate in research projects and actual projects of enterprises to improve students' practical ability and innovative thinking.

6.4 Improve the Construction of Training Bases and Provide a Real Practice Environment

The practical training base is an important place for practical teaching in higher vocational colleges and universities. Schools should increase investment in training bases, build a number of high-level artificial intelligence training rooms and laboratories, and equip them with advanced experimental equipment and tools. The practical training base should simulate the real enterprise working environment, covering data processing, model training, system development and other links, so that students can master the actual operation skills in practice. At the same time, schools should cooperate with enterprises to build and share practical training bases to improve the efficiency of resource utilization and provide students with more practical opportunities.

6.5 Strengthening Vocational Skills Training to Enhance the Overall Quality of Students

Higher vocational colleges and universities should focus on the cultivation of students' vocational skills, and carry out various forms of skills training and competition activities in combination with the characteristics of artificial intelligence technology. Through skill competitions, innovation and entrepreneurship competitions and other forms, students' enthusiasm for learning and innovative consciousness are stimulated. In addition, the school should strengthen the education of students' vocational literacy, cultivate their teamwork spirit, communication skills and professional ethics, and lay a solid foundation for their career development. Schools should also provide career guidance and career planning services to help students clarify their career direction and enhance their employment competitiveness.

7 Conclusion

By optimizing the curriculum system, strengthening the construction of faculty, deepening school-enterprise cooperation, improving training bases, and strengthening vocational skills training, higher vocational colleges and universities in Hunan Province can better build the specialty of AI technology application, cultivate high-quality applied talents in line with the needs of the regional industry, and promote the high-quality development of the regional economy.

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