



# Research on the Value Orientation and Path Selection of Artificial Intelligence Talent Training Models in Vocational Colleges

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**Abstract.** Faced with the new characteristics and requirements of the artificial intelligence era, from the perspective of value orientation, vocational colleges should carry out adaptive reforms and targeted innovations in the training mode of artificial intelligence talents in terms of goals, courses, content, and mechanisms. From a practical perspective, it is necessary to take the construction of disciplines and majors as the foundation, the integration of industry and education as the path, the support of scientific and technological innovation system, the guidance of evaluation reform, and the guidance of lifelong education concept to promote the systematic, collaborative, high-level, personalized, and life-long cultivation of artificial intelligence talents.

**Keywords:** Vocational Colleges, Artificial Intelligence Talents, Value Orientation, Promotion Path.

## 1 Introduction

Since the beginning of the new century, artificial intelligence, as a new round of strategic technology, has the characteristics of deep learning, open mass intelligence and independent control, and has a huge impact on economic and social development and national strategic competition in production and life. Vocational education is one of the earliest and most relevant areas affected by AI. In the face of the fierce global competition in science and technology and the irreversible intelligence era, the level of AI talent training determines whether it can seize important opportunities in the international competition of artificial intelligence. According to the 2018 Action Plan of AI Innovation in Colleges and Universities, universities should make use of the comparative advantages of the combination of science and technology, talent and innovation to improve the ability of scientific and technological innovation and the quality of talent training in the field of AI, so as to provide a guide and direction for the training of AI talents in vocational colleges. Therefore, with the rapid development of artificial intelligence technology and the intensive promulgation of national

key policies, vocational colleges urgently need to innovate new modes of AI talent training to meet the demand of economic and social development for talents, which is also an important "yardstick" to evaluate the effectiveness of higher education.

## **2 Artificial Intelligence in Vocational Colleges, and Opportunities and Challenges in Talent Training**

### **2.1 The Important Position of Artificial Intelligence: the Strategic Fulcrum**

Artificial intelligence has become a key area of international competition, scientific and technological revolution and industrial transformation. On the one hand, international organizations quickly issued the AI cooperation plan, and the European AI Alliance jointly issued the AI overall program; the AI cooperation agreement. On the other hand, the sovereign state is also actively promoting the development of artificial intelligence, the United States formulated the National Strategic Plan for Artificial Intelligence Research and Development; the UK issued the Artificial Intelligence Industry in the UK; France issued the Artificial Intelligence Strategy; the Canada launched the "All Canada Artificial Intelligence Strategy"; Japan introduced the "Next Generation Artificial Intelligence Promotion Strategy"; Russia formally actively implemented the national artificial intelligence strategy; the Netherlands issued the Artificial Intelligence Strategy Action Plan; Australia announced the Artificial Intelligence Action Plan[1]. Artificial intelligence field become the global strategic layout and a new round of science and technology competition "key commanding heights", higher education system as the main body of artificial intelligence talent training institutions, in artificial intelligence talent stock increase and quality improvement play an important function, vocational colleges artificial intelligence talent training reform needs to explore a new path.

### **2.2 Basic Attributes of Artificial Intelligence: Autonomous Intelligence**

The basic attribute of AI different from other modern technologies is the ability to learn with "autonomy". At present, the research and application of artificial intelligence has begun to shift from anthropomorphic robots to intelligent autonomous systems, and from a single intelligent subject to distributed group intelligence research in the background of Internet and big data, which can be specifically divided into Artificial Narrow Intelligence (ANI) and Artificial General Intelligence (AGI). ANI, with relatively single work objectives, relatively simple program operation, relatively clear functional boundaries, and relatively simple structure modeling, can complete cognitive tasks in a superhuman way, forming a single-point breakthrough of some intelligent tasks [2]. AGI refers to the application of rational, cognitive, moral and other human intelligence concepts, which can surpass human groups in all operational tasks. But "every coin has two sides", Maoyuan Pan thinks, cultivate natural person and robot will become a new task of the future education, that is to say to cultivate natural person become innovative entrepreneurial talents, and to cultivate the robot

moral thought and legal knowledge, make it wisdom, so these new situation of vocational colleges and artificial intelligence talent training also put forward new requirements.

### **2.3 The Development Orientation of Artificial Intelligence: Interdisciplinary Disciplines**

The foundation of the development of artificial intelligence comes from the knowledge innovation points formed by interdisciplinary disciplines, so digging into the interdisciplinary points is a rational choice to construct the basic theory and applied knowledge of artificial intelligence. The cross-integration of disciplines and the reconstruction of knowledge system can combine the horizontal cross and vertical deep dig knowledge generation path, which is also an important direction of the content innovation of AI talent training course[3]. In general, the basic theory, application development and practical technology of artificial intelligence not only depend on the integration of computer, mathematics, quantum and neuroscience, but also need the help of the deep intersection of basic disciplines such as psychology and sociology. According to the data, 346 universities in China have AI undergraduate majors, more than 30 universities have AI interdisciplinary disciplines, 520 higher vocational colleges have AI technology services and AI technology application majors, and a large number of universities have set up research institutes and research centers directly related to AI. Therefore, vocational colleges need to make simultaneous efforts in exploring the development of AI discipline and the process of talent training, so as to provide beneficial experience for exploring the training mode of compound AI talents.

### **2.4 Governance Guidelines of Artificial Intelligence: Intelligent Ethics**

AI ethics is not only related to the use of users in social reality scenarios, but also related to the safe construction of a community with a shared future for mankind. ANI programs generally do not exceed the established functional limits of the development phase; for AGI, with humanized intelligence, AGI will be a limited predictability [4]. This has also caused the human attention to the framework of AI ethics and its governance guidelines. The International Association of Electrical and Electronics Engineers (IEEE) has issued the Code of Ethics for Artificial Intelligence Design, focusing on 13 aspects such as classic ethical issues, and clarifying that ethical issues should be given priority in the development process of intelligent systems[5]; In China, it issued the New Generation of AI Governance Principles — Responsible AI Development, which provides a governance framework and action guide for the development of AI, and also provides basic guidelines for the social and scientific and technological ethical issues that may occur in vocational colleges, AI, and talent training.

### **3 Value Orientation of the AI talent Training Mode in Vocational Colleges**

#### **3.1 Talent Training Objectives: Creativity and Integration**

The goal of talent training in vocational colleges is the inherent requirements of the specific specifications of the trained talents in terms of morality, knowledge and ability according to the requirements of The Times and the needs of economic and social development. According to the University of Oxford, 47 percent of all jobs in the US will be replaced by smart machines in the next 20 years. On the one hand, the training of AI talents in vocational colleges cannot completely follow the traditional exam-oriented education leading model [6], Emphasis should be placed on students' innovative thinking, programming computing thinking, digital learning and the cultivation of the core literacy of information social responsibility, which are exactly one of the basic abilities that AI learners need to master [7]. On the other hand, the training of AI talents in vocational colleges should not completely copy the professional-oriented education model, but should focus on the comprehensive and sustainable development of students. Therefore, the training of artificial intelligence talents in vocational colleges needs to reflect the creative and comprehensive value orientation [8].

#### **3.2 Talent Training Courses: Openness and Precision**

The construction of artificial intelligence curriculum system in vocational colleges is an important carrier of talent training. The interdisciplinary orientation of the development of artificial intelligence determines the openness and precision of the curriculum system construction. On the one hand, from the perspective of the openness of the curriculum system, the development of artificial intelligence curriculum system in vocational colleges involves multi-disciplinary and interdisciplinary characteristics, which needs to integrate massive fragmented knowledge, improve the integrated curriculum system of science and reality, and increase the transfer ability of artificial intelligence curriculum learning. On the other hand, from the perspective of the accuracy of the curriculum system, the development of artificial intelligence courses in vocational colleges needs to make the help of artificial intelligence technology to reflect the remarkable characteristics of course customization. The curriculum system develops and uses big data technology, based on the learners' individual knowledge reserve, cognitive structure, learning, ability and other learning characteristics, can properly arrange and timely adjust the course teaching plan, and accurately meet the students' diversified and personalized learning needs.

#### **3.3 Content of Talent Training: Knowledge and Ability**

In vocational colleges, AI teaching content needs to shift from knowledge teaching to knowledge-based ability improvement. On the one hand, the artificial intelligence knowledge system should be included in the talent training program of vocational colleges. Artificial intelligence is not only a simple subject knowledge, but also pro-

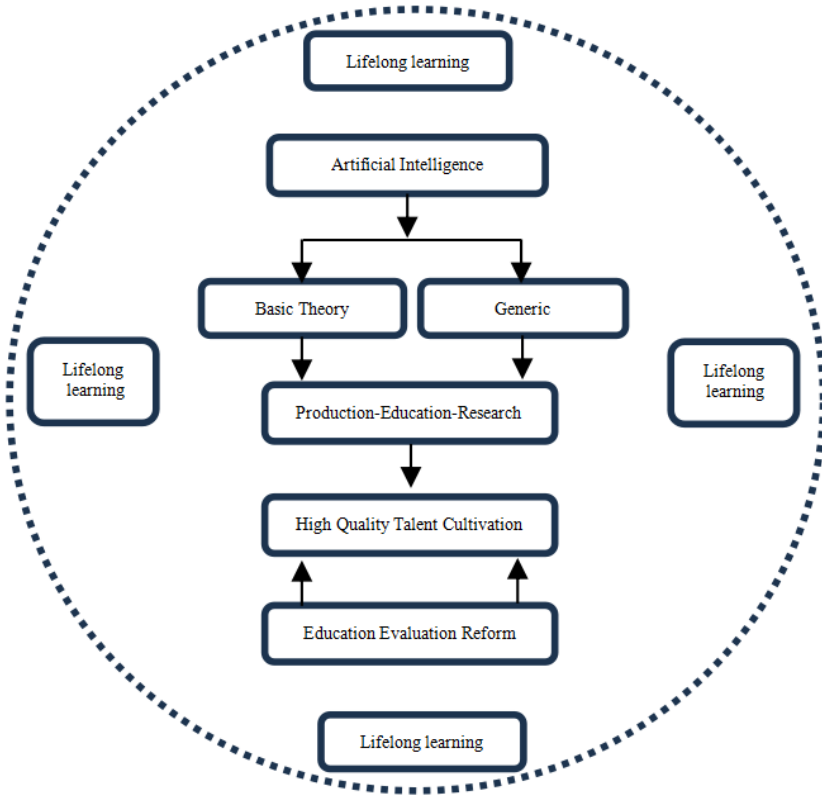
vides learners of intelligence science and technology, robot engineering, computer vision and other artificial intelligence related disciplines. Instead, it should take artificial intelligence as a compulsory course for general education and become a solid foundation for all students to adapt to their future careers. On the other hand, in the era of artificial intelligence, vocational colleges need to reconstruct the existing fragmented AI teaching content to ensure that the teaching content meets the career development needs of AI learners. In addition, AI teaching methods should also actively use more online and offline mixed teaching mode to promote students to achieve knowledge-based ability development.

### **3.4 Talent Training Mechanism: Flat Management System**

Optimizing the education and teaching management mechanism is the key way to realize the AI talent training in vocational colleges. At present, the pyramid centralized management is still the organization mode of education and teaching management in most vocational colleges in China. This mode emphasizes the basis of hierarchical system, which is easy to form disciplinary barriers for the cultivation of interdisciplinary talents in artificial intelligence. Flat management is different from the traditional linear organization structure "hierarchical" management mode, with the concept of flat management mode, can give vocational colleges, grass-roots teaching organization "vitality", expand and implement the secondary college (department, department) autonomy, play the active role of secondary unit education main body. Vocational colleges can carry out matrix, team, network and other organizational structure reform and exploration, and provide flexible and diverse education and teaching management organizations for vocational colleges and AI talent training.

## **4 The Promotion Path of the AI Talent Training Mode in Vocational Colleges**

Vocational colleges, artificial intelligence field talent training should adapt to and serve the national development strategy, with strategic foresight to make up for the lack of higher education hysteresis, combined with the theory of vocational colleges talent training logic and artificial intelligence talent training complexity, from the perspective of ecological system, explore the feasibility of talent cultivation in the field of artificial intelligence path (Figure 1).



**Fig. 1.** The Practice Path of Artificial Intelligence Talent Training Model in Vocational Colleges

**4.1 Based on the Construction of Disciplines and Majors, Leading the Systematization of Talent Training**

The training of AI talents in vocational colleges should actively seek development space in disciplines. China institute of artificial intelligence joint colleges and universities, research institutes and enterprises released "intelligent science and technology" level discipline demonstration report, that the current artificial intelligence subject professional education of vocational colleges of artificial intelligence talent training reality "obstruction", the construction of artificial intelligence level discipline embodies the time demand and objective needs. Therefore, on the one hand, it is urgent to strengthen the training of AI professional talents in vocational colleges. By promoting the construction and development of artificial intelligence in vocational colleges, build the professional artificial intelligence of "cultural literacy + technical skills", realize the multi-dimensional value transmission and virtuous cycle of theory, technology and talents, and cultivate advanced specialized professional talents. On the

other hand, it is urgent to strengthen the training of AI general intelligence professionals. Vocational colleges need to strengthen the training of technical and skilled AI talents, build a talent training mode of "artificial intelligence + X" talent training mode, and achieve the goal of thick foundation, cross-major, wide caliber and strong application talent training.

#### **4.2 Promote the Coordination of Talent Training Through the Integrated Development of Industry and Education**

The integration of industry and education is the biggest development advantage of the high-quality development of colleges and universities. Teaching collaborative innovation practice long-term surface, however, overall vocational colleges conversion rate is not high, collaborative innovation ability is insufficient, reflects the industry and education "two skin" phenomenon is still outstanding, thus teaching fusion mechanism impeded and collaborative innovation mode become restricted, vocational colleges, the key factors of artificial intelligence talent training. Vocational colleges can learn from the industry-university-research collaborative innovation model of "strategy-knowledge-organization"[9].On the basis of strategic coordination, promote the construction of strategic partnership between vocational colleges, scientific research institutions, industries and enterprises; build knowledge alliance through cooperative research and development, technology transfer, etc. improve the speed and efficiency of innovation of vocational colleges, scientific research institutions, industries and enterprises, promote the integration of industry and education, and science and education, and enhance the research and development ability and professional ability of artificial intelligence talents.

#### **4.3 Guided by the Concept of Lifelong Education, to Realize the Lifelong Talent Training**

Vocational colleges and artificial intelligence technology innovation system complement each other. The training of high-end AI talents in vocational colleges is relatively short, so we should play an important supporting role of scientific and technological innovation system in talent training. The construction of artificial intelligence science and technology innovation system mainly has two aspects, namely, carrying out basic theoretical research and promoting the development of key generic technologies. On the one hand, vocational colleges should optimize the construction of scientific and technological innovation system in the field of artificial intelligence, keep up with the development trend of science and technology, carry out the research and application of the new generation of artificial intelligence technology, and guide students to deeply participate in cutting-edge scientific research and exploration. At the same time, precise education supply is provided, and the reform of AI talent training mode can be carried out systematically through intelligent education. On the other hand, vocational colleges make use of their existing advantages and practical training conditions to actively carry out research on applied basic and key generic technologies, use the scientific and technological innovation system to promote the internal

development of vocational education, and help the training of compound artificial intelligence talents.

#### **4.4 Promote the Personalized Training of Talents, Guided by the Reform of Education Evaluation**

Personalization, de-standardization and customization will become the leading direction of ai talent training and evaluation. The traditional cognitive knowledge assessment focuses on the final evaluation [10], while the AI talent training mode should pay more attention to the formative evaluation with big data and the whole process as the core, and pay attention to the joint construction of stakeholders in the evaluation process. In vocational colleges, artificial intelligence and talent training should reform the classroom teaching mode, give full play to the role of student cooperative learning group; promote the combination of online and offline, advocate the project-based inquiry learning, realize substitution and upgrading and learning promotion; comprehensively utilize information technology, reform the education evaluation method, pay attention to the combination of final and formative evaluation, and improve the quality of talent training.

#### **4.5 Guided by the Concept of Lifelong Education, to Realize the Lifelong Talent Training**

In vocational colleges, the training of AI talents needs to establish the concept of lifelong education and build a lifelong learning ecosystem, which meets the continuous learning needs of AI students and graduates. On the one hand, with the further stimulation and integration of "Internet + education", the curriculum teaching resources show a blowout and exponential increase, providing a "fertile soil" for the lifelong learning of artificial intelligence and learners. The natural "practical" advantages of vocational colleges should provide lifelong learning system support for artificial intelligence and talent training by building a three-dimensional learning field that breaks time and space. On the other hand, the role positioning of continuing education institutions in vocational colleges will change again, highlighting the education mode of deep intersection and integration of disciplines. It is not only a professional education institution that provides academic background improvement, but also a learning organization that provides knowledge, ability and skills in professional fields.

## **5 Conclusions**

To sum up, vocational colleges of artificial intelligence talent training on the one hand, through the intervention of iterative artificial intelligence technology, artificial intelligence technology into vocational education, improve the efficiency and quality of education teaching, on the other hand, the comprehensive consideration of vocational colleges training employment orientation and the complexity of artificial intelligence talent training, through the optimization of vocational education base, is bene-



ficial to promote the development of vocational education concept, vocational education mode change and vocational education system, enhance the level of vocational schools. Objectively speaking, in the face of turbulent and disruptive era of artificial intelligence, vocational colleges should actively change from the perspective of artificial intelligence talent training process, to clear cultivation "cultural literacy + technical skills" talent training value orientation, and to actively adapt to the new era of education comprehensive reform requirements, provide intellectual support for high quality education development.

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## References

1. NATIONAL AND INTERNATIONAL AI STRATEGIES.2020. Retrieved June 10, 2023 from <https://futureoflife.org/national-international-ai-strategies/?cn-reloaded=1&cn-rel oa ded=1>.
2. Tan Tiniu. History. 2019.present, and future of AI. Retrieved June 20, 2023 from. [http://www.qstheory.cn/dukan/qs/2019-02/16/c\\_1124114625.htm](http://www.qstheory.cn/dukan/qs/2019-02/16/c_1124114625.htm).
3. Huaihong He. 2018. Pole approaching: Gospel or Bad News——The biggest challenge that AI may pose. *Exploration and contention*. pp. 50-59+117, November 2018. DOI: CNKI: SUN: TSZM.0.2018-11-006.
4. Liu Jin, Wenjing Lu. 2019. Artificial Intelligence innovation and China's Higher Education Response (Part ii). *Research in Higher Engineering Education*. pp. 62-72, February 2019.DOI: CNKI: SUN: TJZD.0.2019-01-035.
5. Lijie Li. 2009. "Multidisciplinary research" in American research universities from an organizational perspective. *Higher Education Research in China*. pp. 44-46, May 2009, DOI: CNKI: SUN: ZGGJ.0.2009-05-017.
6. Mingyuan Gu, Zongmo Cai, Haisheng Zhang. 2019. Exclusive interview with Mingyuan Gu——Yesterday, Today and Tomorrow of China's Education Reform and Development. *Research on Higher Education in Chongqing*. pp. 5-11, February 2019.DOI: 10.15998/j.Cnki.issn1673-8012.2019.02.001.
7. Haisheng Zhang. 2020. How the higher education in the era of AI will exist. *Jiangsu Higher Education*. pp. 23-29, February 2020, DOI: 10.13236/j.cnki.jshe.2020.02.004.
8. OECD. 2017. *Preparing Teachers and Developing School Leaders for the 21st Century*. Retrieved June 25, 2023 from [https://www.oecd-ilibrary.org/education/preparing-teachers-and-developing-school-leaders-for-the-21st-century\\_9789264174559-en](https://www.oecd-ilibrary.org/education/preparing-teachers-and-developing-school-leaders-for-the-21st-century_9789264174559-en).
9. Yuping He. 2012. The theoretical model of industry-university-research collaborative innovation. *Scientific Research*. pp. 165-174, February 2012.DOI: CNKI: SUN: KXYJ. 0. 2012-02-003.
10. Yongxin Zhu, Ziwang Xu, Lu Bai, Junhao Chu, Ge Guang Pu, Zou Hao, Xiaoru Wu. Talk on "Artificial Intelligence and future education"[ J ] . *Journal of East China Normal University Science*. pp: 15-30, April 2017. DOI:CNKI:SUN:HDXX.0.2017-04-022.

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