

# *On the Training and Path of Artificial Intelligence Talents in Vocational Colleges*

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**Abstract:** Vocational education reform has entered a critical period, and the impact of artificial intelligence on vocational education is also deepening. This paper mainly studies the training and path analysis of artificial intelligence talents in vocational colleges. This paper first analyzes the current situation of talent training in Vocational Colleges under the background of artificial intelligence education, mainly as follows: lack of diversity, lack of foresight, neglect of subjectivity, neglect of process. Then, this paper investigates the artificial intelligence talent training of vocational college students through questionnaire survey. Through the results of the questionnaire survey, we can know that students are satisfied with the current situation of artificial intelligence talent training and construction, but there is still room for improvement, and we expect to continue to improve the quality and level of undergraduate construction. Based on the results of the questionnaire survey, this paper puts forward the reform mode of artificial intelligence talent training path.

## **1. Introduction**

China has always attached importance to the progress of science and technology. Under the background of made in China, we should try our best to play the prominent role of artificial intelligence in the promotion of production factors and industrial transformation and upgrading [1]. Push the construction of automation and informatization to intellectualization in an all-round way, overtake in the world AI competition, occupy the advantage of economic development, grasp the strategic opportunity of AI development, and build the upper hand of AI development in China. The country has raised the development of artificial intelligence to an important position, which provides macro policy basis and background support for our research on artificial intelligence talent training [2]. Talent construction and knowledge innovation are the twin engines of AI development, and the construction and cultivation of high-end talents are the most important in the era of AI. To develop artificial intelligence, talent training is fundamental. We must fully absorb all subjects to participate in the talent training of the development of artificial intelligence industry, continue to improve the proportion of national artificial intelligence talents, and improve China's ability to develop artificial intelligence industry [3].

At the Dartmouth conference, the organization of the American computer association proposed the connotation of "artificial intelligence" (AI) [4]. This historic gathering is recognized as the symbol of the official birth of artificial intelligence. In terms of the requirements and implementation path of artificial intelligence for talent training, some scholars have proposed that artificial intelligence requires that in talent training, first, we should focus on cultivating talents' innovative ability, second, we should introduce interdisciplinary concepts, and third, we should pay attention to the teaching and instruction of artificial intelligence knowledge, and build a comprehensive education community that closely combines school education and social education [5]. A scholar pointed out that AI has repositioned talent training, which specifically includes: from mass production to personalized education, from professional orientation to cross domain learning, and from inculcating knowledge to cultivating innovation ability [6]. Other scholars pointed out that the training of AI and new engineering talents should be realized by creating a cooperation platform between schools and related enterprises, building a research and training base in schools, and strengthening the construction of AI professional teachers and teaching staff [7].

Based on the impact of the development of AI industry on talent training objectives and talent training in vocational colleges, this paper will analyze the inevitability of the construction of the multi-agent collaborative training mechanism of AI talents from the background and requirements of the multi-agent collaboration, the different aims of the multi-agent role and the natural choice of the multi-agent collaboration, so as to build the multi-agent collaborative training mechanism of AI talents, Explore the safeguard measures of multi-agent collaborative training of artificial intelligence talents, and provide suggestions for training artificial intelligence talents and promoting the development of artificial intelligence industry and economic society in China.

## **2. Current Situation of Artificial Intelligence Talent Training in Vocational Colleges under the Background of Intelligent Education**

### **2.1 Lack of Diversity**

With the progress of technology, the way of knowledge acquisition is becoming more and more convenient, and the standard of talents has changed from simply mastering knowledge in the past to comprehensive development ability. In the context of intelligence education, it is emphasized to cultivate people with different and diversified development according to the structure of individual intelligence. At the same time, with the progress of technology, it can also provide a richer environment and guidance for education and fully explore individual potential [8]. But in reality, there is a lack of diversity in educational ideas.

### **2.2 Lack of Foresight**

The development of science and technology has changed people's way of life, ideas and thinking. People have been used to dealing with electronic products and using digital technology to collect and manage information. With the development of artificial intelligence technology and information technology, people with only a single knowledge and skills will be eliminated [9]. On the contrary, with the rise and development of intelligent education, intelligent talents with good value orientation and high thinking quality and strong thinking ability will be more and more favored.

The talent training mode of vocational colleges still focuses on the traditional public basic courses and professional skills courses, and does not offer courses that cultivate interdisciplinary and pay attention to scientific and technological literacy and ability. Although some schools will also arrange students to contact some courses with more advanced concepts during the process of visiting and internship, they can only take a rough look at the situation of other teachers taking such

courses, the selection and arrangement of specific course contents. There is not much contact with the organization of teaching activities, and schools rarely choose such course content, let alone set up similar courses.

### 2.3 Ignoring Subjectivity

The development of technology has brought about the innovation of learning methods. Infrastructure (IAAs), software platform (PAAS), application software (SaaS) and other resources are integrated through cloud computing and other technologies. Through the use of networks, big data, mobile intelligent terminal devices, learners' learning can not only occur in a fragmented space-time, but can be carried out at all times, anytime and anywhere. In the "Ubiquitous Learning" environment, Students seem to have become the main body of learning activities. In this environment, the initiative and spontaneity of students' learning are most easily activated, and the learning efficiency is also improved [10]. Returning to the real classroom of vocational colleges, teachers usually use intelligent electronic screens to present the content needed for teaching on the screen in the form of PPT, and occasionally play relevant videos to students when necessary. Teachers present more knowledge, and there is relatively less interaction between teachers and students, and the most important thing is that the enthusiasm of students' participation needs to be improved. More often, teachers have to adopt the fastest "indoctrination method" in order to complete the teaching tasks specified by the school. The most important factor for students to cooperate with teachers to complete teaching tasks is "students' excitement about discovery". Only when students occupy a dominant position in the teaching and learning process and actively participate in it, can they trigger their excitement and successfully complete the learning tasks.

### 2.4 Ignoring Processibility

Mechanism is the operation mode that coordinates the structural relationship between various elements, so as to play a better role. The evaluation mechanism is to coordinate the internal and external elements such as the evaluation subject, dimension, link and method, so as to make the evaluation play the best role. In the teaching process, if the evaluation effect wants to better promote the improvement of teaching quality, it should be based on multi-level, multi-dimensional and the whole process, and comprehensively use the various factors of evaluation. The greatest benefit of the development of technology to education is the reform of the traditional education and teaching evaluation, including the change of ideas and methods. "Speaking by data" is a significant sign that smart education is different from traditional education. The development of Internet of things, big data and other technologies has provided technical conditions for education evaluation, making it possible to "from empirical evaluation" to "data oriented evaluation".

At present, the teaching evaluation of the school mainly includes two parts: classroom teaching evaluation and fixed position practice evaluation. Although the classroom learning achievement evaluation is divided into two parts: process evaluation and result evaluation, the process evaluation here mainly includes attendance, classroom performance and homework completion, and attendance accounts for the most points.

The result evaluation is mainly the mid-term and final examination results, and its assessment form still adopts the mode of "usual performance + final examination". The usual performance includes students' classroom performance, after-school homework and attendance. Teachers calculate these scores manually. The final examination form is that students memorize the usual class content before the examination, and students generally pass as long as they spend some time memorizing it; The evaluation of post practice is mainly in the form of submitting internship reports. For the final summative evaluation, the theoretical course still takes the examination results as the

final assessment basis, and the practical part of the evaluation is based on the students' attendance, internship summary and practice report as the main content of the evaluation, which can reflect some students' learning status and partial results to a certain extent, but because it is impossible to confirm the actual performance of students one by one, it is difficult to make an accurate evaluation of their practice process.

### 3. Artificial Intelligence Talent Training Questionnaire Survey

#### 3.1 Questionnaire Design

Survey purpose: To investigate and understand students' demands and suggestions for AI to promote the reform of talent training mode in vocational colleges. The questionnaire involves two parts: the first part is the basic cognition of students on the construction of Vocational Colleges and the application of artificial intelligence education; The second part investigates the recognition and strategic suggestions of using artificial intelligence to promote the reform of talent training mode in vocational colleges.

#### 3.2 Questionnaire Distribution

Respondents: in terms of the selection of the subjects of the questionnaire, two vocational colleges in the province, one is school A and the other is school B, with students from two vocational colleges as the main respondents. The reason for choosing students as the main survey object is that students, as one of the direct participants and practical subjects of education, have the most profound experience in their satisfaction with the current situation of vocational college construction and the links and fields expected to change. Their views and suggestions reflect "public opinion" to a certain extent, and can provide a certain basis for promoting the strategy of deep integration of artificial intelligence and vocational college education. The respondents mainly involve students from grade one to grade three.

Survey and research methods: the questionnaire was distributed through the questionnaire star platform, and the collection method was to fill in through network links and scanning QR codes. The software spss25.0 is used to analyze the collected data.

#### 3.3 Reliability Test of Questionnaire

In this paper, the reliability test of spssu is used to test the validity of the questionnaire survey results. The test formula is as follows:

$$r_{xx} = \frac{2r_{hh}}{1 + r_{hh}} \quad (1)$$

$$r = 1 - \frac{S_d^2}{S_x^2} \quad (2)$$

(1) Where  $R_{XX}$  is the reliability value and  $r_{HH}$  is the correlation coefficient of the two half test scores; (2) Where,  $R$  is the reliability value,  $S_x$  is the variance of the difference between the two half test scores, and  $S_x$  is the variance of the total test score.

Through the formula test, we can know that the questionnaire designed in this paper has strong reliability and significant correlation between indicators, which is suitable for further research and analysis.

## 4. Statistics and Analysis of Questionnaire Survey Results

### 4.1 Questionnaire Results

Table1: Artificial intelligence construction understanding

	Know very well	General understanding	Little understanding	Don't understand
Number of people	9	48	42	51
Proportion	6%	32%	28%	34%

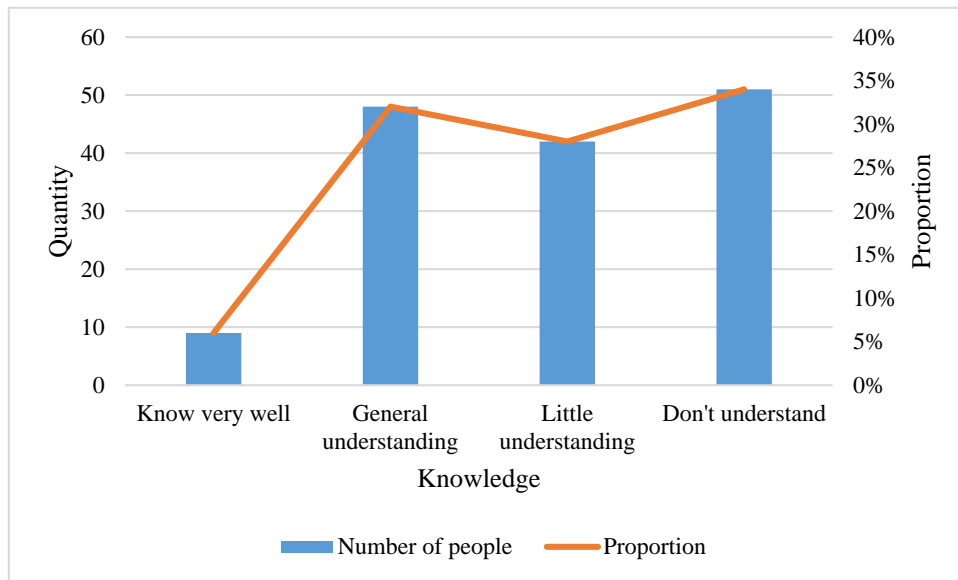


Figure1: Vocational college students' understanding of artificial intelligence

As shown in Table 1 and figure 1, vocational college students generally do not understand the policies and plans of AI talents: the very understanding rate is only 6%, the general understanding rate is 32%, the slight understanding rate is 28%, and 34% of students say they do not understand.

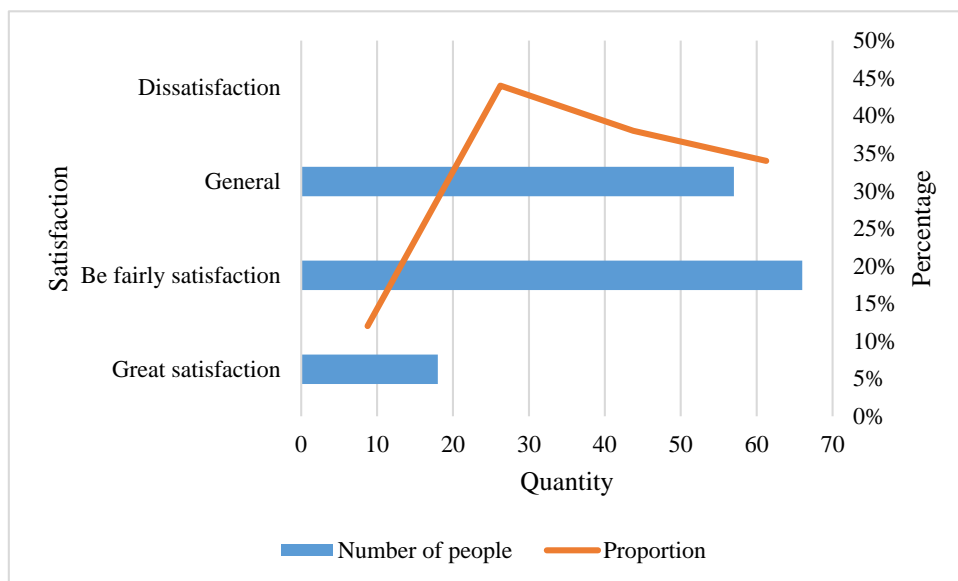


Figure 2: Students' recognition of AI talent cultivation

As shown in Figure 2, based on the observation and experience of teachers, disciplines, infrastructure, scientific research construction and student quality, the satisfaction rate of vocational college students with the current AI talent training status is 12%, the satisfaction rate is 44%, the general satisfaction rate is 438%, and the dissatisfaction rate is only 6%. Students are satisfied with the current situation of artificial intelligence talent training and construction, but there is still room for improvement, and they expect to continue to improve the quality and level of undergraduate construction.

## 4.2 Reform of Artificial Intelligence Talent Training Path in Vocational Colleges

### (1) Major setting reform

"Specialty setting is the interface between education and economy, the concrete embodiment of vocational education serving economic development, and the key link for vocational schools to meet social needs and ensure that talent training is" marketable ". Specialty setting affects not only the labor structure, but also the industrial structure and technical structure. Marx once pointed out that machines themselves do not bring wealth to mankind. Only human beings who have mastered how to use machine technology can bring great wealth to the whole society. Therefore, the first essence of understanding development. To establish the training objectives of vocational education, we must be clear about the demand of China's current industrial structure for talents.

The setting of professional industry is not only related to the structure of labor and employment, but also related to the physical and mental development level of the educated. Although the era of artificial intelligence is a scientific and intelligent era, the physical and mental development level of students in secondary vocational schools still has great potential and development space. Therefore, if we only focus on the current social needs of a profession, we will ignore the psychological development level of the educated, Will not be conducive to the future development of students. In addition, vocational schools should integrate local educational resources to set up majors. Setting a major should fully consider whether the local has corresponding educational resources. Once the major is determined, it needs to match the corresponding teachers, equipment and various educational resources.

Based on the above, vocational schools should fully consider external and internal conditions when setting up majors, adhere to the principle of combining long-term needs with current urgent needs, and pay more attention to scientific overall planning and reasonable layout.

### (2) Curriculum reform

After the specialty is determined, the supporting courses should be set up. The courses are the embodiment of the purpose and value of knowledge dissemination. In the course setting, the development level of secondary vocational school students and the teaching level of teachers should be fully considered. Therefore, the course setting should be more flexible.

First of all, the curriculum objectives should be cohesive. The educational objectives in the educational process can be divided into educational objectives in the cognitive field, educational objectives in the emotional field and educational objectives in the motor skill field. However, from the specific content, we can see the cohesion of the three objectives. Therefore, when setting curriculum goals, we should fully and specifically connect these educational goals through the curriculum.

The speed of development in the era of artificial intelligence is unimaginable. Therefore, some stereotypes should be overturned, and the future development direction of secondary vocational education should be reconsidered with a new perspective, so as to flexibly complete curriculum development. In addition, secondary vocational schools should have flexible adaptability to the development of regional economy and the needs of local labor market, and develop characteristic

school-based courses in combination with local cultural characteristics. Only in this way can such vocational education courses have vitality, and the talents trained in the later stage can truly serve the regional economy.

The biggest advantage of the comprehensive practicality of the curriculum objectives is to cultivate students' ability to "do things", and the ability to "do things" is not only a large accumulation of knowledge, but also the integration and application of a large amount of knowledge, so as to truly apply what they have learned. Therefore, vocational schools should give full consideration to educational resources, curriculum implementation conditions and environment, give full play to the comprehensiveness of the curriculum, and try their best to arrange students to engage in courses consistent with real life, so as to increase secondary vocational students' knowledge, skills and ability to solve practical problems in this field.

### (3) Reform of teaching mode

With the development of artificial intelligence era, education is also imperceptibly changing. Students can not only rely on a single book and teacher's explanation for learning. Smart education makes learning more interesting, which can not only meet the learning needs of students, but also increase the interest of learning. Therefore, in the classroom, teachers can use intelligent resources with students through project-based teaching method to complete the learning of a certain problem or a certain machine operation. After class, teachers can also use task driven method to let students complete tasks in groups, so as to improve students' problem-solving ability. In the process of classroom teaching, the guiding teaching method used by teachers can not only take students as the main body and find students' problems in time, but also stimulate students' innovation ability and exploration ability. Situational teaching according to different teaching situations can help students remember knowledge deeply, and can exercise students' emotional expression ability in situational dialogue through students' performance and expression in different situations.

### (4) Teacher reform

In the era of artificial intelligence, teachers in secondary vocational schools are required to have AIQ thinking first. In the era of artificial intelligence, only when teachers have AI thinking first, students will be silently influenced by AIQ and gradually cultivate AIQ thinking. Second, teachers need to have a reasonable knowledge structure, which includes not only solid professional knowledge, but also broad scientific and cultural knowledge. Third, secondary vocational school teachers in the new era need to have the necessary ability requirements, which is why the country has been advocating the important starting point of "double qualified" teachers. Practical teaching directly reflects the ability-based, which puts forward advertising requirements for secondary vocational school teachers' skill level, scientific research ability, social activity participation ability and many other aspects.

## 5. Conclusions

With the wide application of artificial intelligence technology, using intelligent technology to change the talent training mode of vocational colleges is not only the trend of the times, but also the internal demand of the development of vocational colleges. Under the dual driving forces of the development of key AI technologies and the national AI development strategy, the deep integration of AI and vocational education and teaching has become an inevitable trend. Through the questionnaire survey of students, the results of the questionnaire are analyzed by using the data analysis method to investigate and understand the demands and suggestions of academic students for "artificial intelligence to promote the reform of professional talent training mode", so as to understand the "public opinion" for the mode construction and development strategy formulation, concentrate the "public intelligence", and provide a certain practical basis for research.

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## References

- [1] Kim H W, Lee J S. Results of development and application of convergence talent training (STEAM) programs using Artificial Intelligence (AI) and Big Data [J]. *Journal of Korean Society for the Study of Physical Education*, 2021, 26(2):37-51.
- [2] Blau J. Europe's Budding Artificial Intelligence Scene [J]. *Research Technology Management*, 2017, 60(6):2-4.
- [3] Marc J, Aline R, Charlotte G, et al. ASAS-NANP symposium: mathematical modeling in animal nutrition: limitations and potential next steps for modeling and modelers in the animal sciences [J]. *Journal of Animal Science*, 2022(6):6.
- [4] Takhi S, Gosain M, Singh V. Reinforce The Talent Acquisition Using Kaizen and Artificial Intelligence [J]. *International Journal of Scientific and Research Publications (IJSRP)*, 2020, 10(5):233-242.
- [5] Mhatre G, Dhole V. Trends In HRM: Innovative Technology for Higher Productivity of Employees and the Organizations"[J]. *International Journal of Scientific and Engineering Research*, 2018, 9(9):1984-1990.
- [6] Haseeb M, Sasmoko S, Mihardjo L, et al. Economic Impact of Artificial Intelligence: New Look for the Macroeconomic Assessment in Asia-Pacific Region [J]. *International Journal of Computational Intelligence Systems*, 2019, 12(2):1295-1310.
- [7] Panova E, Oparina N, Bondareva L. Talent Management: Challenges and Challenges for a Digital Tomorrow [J]. *Management of the personnel and intellectual resources in Russia*, 2021, 10(3):49-55.
- [8] Higgs C. AI Can Transform Recruitment If Algorithms Are Tuned Correctly [J]. *Database and network journal*, 2018, 48(5):6-6.
- [9] Allal-Chérif, AY Aránega, RC Sánchez. Intelligent recruitment: How to identify, select, and retain talents from around the world using artificial intelligence [J]. *Technological Forecasting and Social Change*, 2021, 169(5):120822.
- [10] Lee D S, Kim M H, Na I K, et al. Artificial intelligence based career matching [J]. *Journal of Intelligent and Fuzzy Systems*, 2018, 35(6):1-10.