

# Practical Research on the Construction of Industrial Workers under the Background of High-Level Professional Group Construction

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## Abstract

The construction of workers in the construction industry in the new era is the key link to promoting the transformation from “migrant workers” to “industrial workers” and promoting the transformation of industrial workers from “workers” to “craftsmen”. In view of the present situation and problems of industrial workers’ skill quality improvement, under the background of high-level specialty group construction, Guangzhou City Construction College explored a set of ‘double representative’ vocational education modes. Professional groups set up a special training team, to explore vocational education more closely with the construction industry workers’ professional practice, for the society to cultivate professional skills, and skilled, excellent quality of construction industry worker’s practice research. Through the analysis of the questionnaire results of 312 construction workers’ training visits, the ways and methods of industrial workers’ team reform are put forward from the perspective of vocational training. It is suggested that the training of industrial workers in the new era needs the coordination of the government, industry, enterprises, schools, and individuals. The training process can adopt the ‘double belt table’ mode, and pay attention to the improvement of workers’ practical skills, and the online and offline training methods are the most appropriate.

**Keywords:** Industrial workers, Professional group, Training base

## 1. Introduction

China's modern construction industry has the characteristics of significant economies of scale, knowledge, and technology-intensive, strong industrial correlation, a high growth rate of production and sales, and a large income elasticity coefficient. The construction industry is also a pillar industry of China's national economy. The basic position and role of China's modern construction industry in social production and life are irreplaceable. However, compared with developed countries such as Europe and the United States, China's construction industrialization started late. Based on the analysis of the number of employees, the development of construction industrialization will have a long period of time. According to the data of the National Bureau of Statistics of China, by the end of 2021, the number of employees in the construction industry was 52.8294 million, which was 83.98 million less than 53.6692 million at the end of 2020, with an annual growth rate of -1.56 %. At this point, the number of employees in the construction industry has been decreasing for three consecutive years, so it brings unfavorable factors to the industrialization development of China's construction industry.

Guangbin et al. (2021) analyzed the current situation of labor demand and supply in the construction industry. Based on the historical data of the labor force in the construction industry, this paper makes a multi-scenario prediction of labor supply and demand in the construction industry from 2021 to 2035, including industrialization penetration rate, digital penetration rate, industrial training rate, and labor participation rate. It is expected that the gap between labor supply and demand in China's construction industry with migrant workers as the main body will reach 10.97 million people by 2035 under the natural scenario. Lang et al. (2021) proposed that the current Chinese construction industry workforce still has problems such as disorderly mobility, prominent aging, low skill quality, and inadequate protection of rights and interests, which are the main factors restricting the sustainable and healthy development of the construction industry.

The scale of industrialization in the world is rapidly expanding. What are the reasons for the obvious gap between China's industrialization and other developed countries? The main performances are: first, the overall level of industrial technology is not high, the innovation ability is not strong, and the external dependence is high;

second, some industries have extensive development trends, excessive consumption of resources in exchange for short-term industrial interests, overcapacity; thirdly, the structure of industrial workers is unreasonable, the overall quality of workers' technical skills is not high, and the rights and interests protection system and evaluation system of industrial workers are not perfect enough. There are some difficulties in the construction of industrial workers in the new era. It is of great significance to continue to study the important factors affecting the development of China's industrial workers, (Linlin, 2020).

At present, most of the construction workers are still from rural surplus labor or unemployed citizens, most of them are not have professional education or only simple training. However, at present, China's construction industry is in a critical period of transformation and upgrading, and vocational education should be an important bridge between the training of construction workers and industrial demand. This article is in response to China's "industrial workers in the new period building reform program" As the person in charge of the construction of high-level professional groups, the author studies the current situation of industrial workers in China, based on the essence of vocational education, implements the cultivation mode of "school-enterprise co-education and lesson integration", serves the improvement of the skill quality of industrial workers in the construction industry, accelerates the construction of a modern vocational education system, vigorously carries out vocational skills training, and realizes the two-way empowerment of schools and enterprises.

## 2. The research status of the construction industry workforce

### *(1) Status quo of the workforce structure of the construction industry*

Xiao (2021) analyzed the proportion of migrant workers over 21 years old and concluded that the reduction of urban-rural differences and the improvement in education level have changed the values of the new generation of migrant workers. However, the direct cause of the aging of construction workers is mainly the high labor intensity and dangerous working environment of migrant workers in the construction industry, the temporary and mobile nature of work, the difficult living conditions, and the imperfect security system. According to the monitoring survey report of China's migrant workers and the data released by the statistical yearbook of the construction industry during the "13th five-year"

period, the present situation of migrant workers in the construction industry is analyzed from the aspects of employment choice, age structure, and income level. Industrial scale and labor intensity are two basic conditions that determine the concentration of migrant workers. So far, China's construction industry and manufacturing industries are still the industries with the highest concentration of migrant workers. The age structure of China's construction workers from 2017 to 2021, as calculated by the National Bureau of Statistics, is shown in Table 1. The proportion of young construction workers in China's new era fell by 8.7 %, the proportion of the most creative migrant workers aged 21-30 fell by 7.7 %, and the proportion of middle-aged and elderly migrant workers aged over 50 increased by 6.0 %.

**Table 1** Age structure of construction workers ( unit : % )

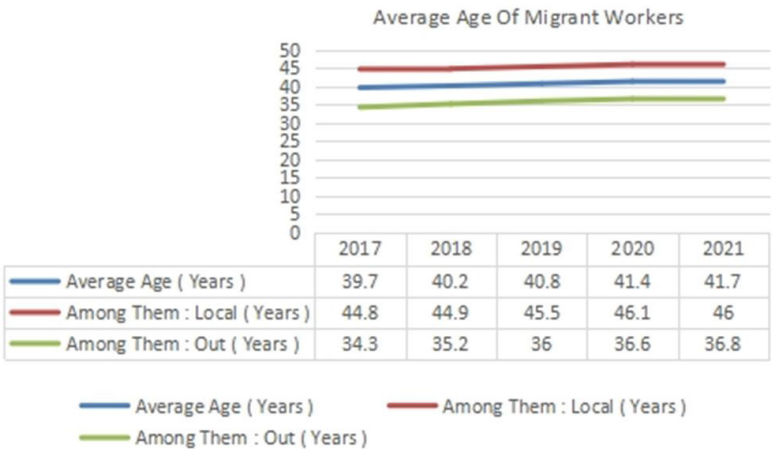
Age group / year	2017	2018	2019	2020	2021
16-20	2.6	2.4	2.0	1.6	1.6
21-30	27.3	25.2	23.1	21.1	19.6
31-40	22.5	24.5	25.5	26.7	27.0
41-50	26.3	25.5	24.8	24.2	24.5
50 or more	21.3	22.4	24.6	26.4	27.3

An analysis of the average age of migrant workers from 2017 to 2021 shows that the average age of migrant workers in 2021 will be 41.7 years, an increase of 2 years over 2017, as shown in Figure 1. From the employment place of migrant workers, the average age of local migrant workers is 46.0 years old, of which 40 years old and below accounted for 32.6 %, over 50 years old accounted for 38.2 % ; the average age of migrant workers was 36.8 years old, of which 65.8 % were 40 years old and below, and 15.2 % were over 50 years old. The average age of both local and migrant workers increased by 1.2 years and 2.5 years respectively. (Figure 1)

The aging trend of migrant workers in China is obvious, which cannot offset the natural attrition of construction workers caused by age growth, and there is a shortage of labor resources. The interruption of labor resources will inevitably affect the healthy development of the entire industry. In view of the aging situation, enterprises have to keep pace with the times. The main approach is to improve the level of mechanized operations, supplement comprehensive high-tech skilled industrial workers, accelerate information management, and rationally optimize labor resources.

## (2) Construction industry workers' professional quality status

The skill quality of construction workers is the key factor to realize the industrialization of the construction industry. In order to explore the challenges faced by Chinese construction workers in the process of improving their professional ability and the implementation path of improving their ability. Dawei et al. (2021) investigated the structure and professional ability of Chinese construction workers and built a professional ability evaluation model for construction workers in the situation of high-quality construction. Zhongfu et al. (2021) identified the relevant constraints from the background of construction industrialization and



**Figure 1** Average age of migrant workers

constructed the ISM-MICMAC model. The analysis showed that the main constraints to promoting the industrial industrialization of migrant workers under the background of construction industrialization were the imperfect professional qualification system of construction workers, the relatively slow promotion of supporting technologies for industrialization, the imperfect or ineffective implementation of labor laws and regulations, the lack of service supervision mechanism for construction industry workers, and the insufficient or unimplemented incentive policies for the process of industrial industrialization. Finally, countermeasures and suggestions were put forward to provide a reference for promoting the industrial industrialization of migrant workers under the background of construction industrialization.

Shanghai's eighth staff status survey shows that "80", "90" have become the backbone of the workplace. In the sample survey of the trade union system, employees aged 35 and below accounted for 57.7 %, much higher than 45.7 % in 2012. In the social volume sample survey, the proportion of workers aged 35 and below was also as high as 57.0 %. Yan and Si (2019) carried out an in-depth comparison and research analysis of the new generation of industrial workers from three aspects: professional experience, professional evaluation, and professional identity. From the survey data, it can be seen that in terms of professional experience, it is generally believed that the new generation of industrial workers not only have high labor intensity, and strong job mobility, but also have unclear career development goals. In terms of occupational evaluation, the new generation of industrial workers is less satisfied with their existing jobs. They are in the "grassroots" class of society, with almost zero sense of acceptance by the city, on the edge of the industry, urban and rural areas, and the system. They are still the lowest-level workers in society and no longer want their descendants to become workers. Obviously, income, career development, labor intensity, self-evaluation, and professionalism are the main factors affecting professional values. The key to solving the above problems lies in the subjective idea of workers, and it is also universal, which must be paid attention to by relevant departments and enterprises and put forward reform measures from the aspects of policy and system.

At present, in China, the overall cultural quality of industrial workers is low. Most of them have only received junior high school, senior high school education, or only primary school education. According to the survey report of migrant workers in 2021, among all

migrant workers, 0.8 % have not attended school, 13.7 % have a primary school education, 56.0 % have a junior high school education, 17.0 % have a senior high school education, and 12.6 % have a junior college education and above. Most workers below high school education have not received formal vocational education, nor have they experienced formal pre-service technical training. Early industrial workers began to engage in labor work as apprentices and slowly grew up. With the industrial transformation and upgrading, labor-intensive enterprises are gradually transforming into knowledge-intensive enterprises. Industrial workers who understand the principle of technology will be the leaders of the industry, so the technical skills and quality of industrial workers are increasingly a concern. So the cultural level of construction workers in the end what kind of level, of the construction industry to take the road of industrialization, industrialization, and the existing construction of migrant workers where to go, is community must pay attention. Yongjie (2017) did a survey in 2017 and found that workers in the construction industry generally have low academic qualifications. The proportion of workers with junior high school and below is 60.3 %, and the proportion of workers receiving technical skills training in the industry is less than 1 / 3. Therefore, some scholars suggest that in order to solve these problems, adhere to the government policy guidance, the construction enterprise industry as the main body, colleges and universities, and social cultivation institutions to actively participate in the construction industry workers' training policy. The training of industrial workers should break through the traditional apprenticeship system and school training system, and the technical skills training of industrial workers should be borne by the professional training structure of society. The cost should be paid by the government, and the role of guidance and supervision should be played to ensure the guarantee mechanism of industrial workers ' training, so as to cultivate technical, skilled, and qualified industrial workers in the new, (Mingxu et al., 2020; Guomin & Fei, 2018).

### **(3)Status of workforce composition in the construction industry**

Industrial workers are the representative of advanced productive forces in China, the source of social progress and development, and the foundation of industrial transformation and development. In the new era, China's industrial workers are mainly engaged in agriculture, industry, and commerce, with wage income as the source of life. Nowadays, the labor force of agricultural households has more choices to find

a job. They can work in rural areas or in urban areas. With the full implementation of the rural revitalization strategy, the advancement of agricultural modernization, industrialization, and urbanization, more than 30 percent of the rural labor force has now been transferred to non-agricultural industries. After the reform and opening up, China's economy has an unprecedentedly rapid development, especially in Guangdong's economic take-off, accelerated the flow of population, into the rural labor force into the urban labor tide, and began to close the process of industrial workers. The construction industry workers in the new era are the key links to realize the transformation of China's construction industry from labor-intensive to technology intensive. During the new urbanization period, the workers in various industries mainly come from three aspects: one is the existing construction labor workers, the other is the recruitment from rural areas, and the third is the graduates of construction vocational colleges and technical schools, (Yuanli, 2017). The construction industry needs to shift from labor-intensive to technology-intensive, requiring new construction workers to have a professional training background, either from vocational colleges or through professional training.

### 3. The Necessity of Building an Industrial Worker Team

The construction industry is the pillar industry of China's national economy, and relying solely on 'a low-tech, low-cost' labor-intensive model to promote the development of the construction industry has been difficult to meet the needs. The original technical worker training is mainly to stay in the simple theoretical knowledge training, such as only 3-5 days, to the incoming workers to teach the theory, and even some practices are based on technical disclosure and teachers to bring apprentices. With the advent of the era of digital and intelligent building, the construction industry will take the lead in the development of green, integration, and informatization. Therefore, the Chinese government should accelerate the transformation and development of the construction industry, transfer the surplus rural labor force, promote the transformation of "migrant workers" to "industrial workers", promote the transformation of industrial workers from "workers" to "craftsmen", and realize the transformation of the quantitative demographic dividend to quality talent dividend. From the perspective of government management, it is necessary to strengthen the vocational skills training of construction workers and establish a variety of institutional systems to protect the rights and interests of new industrial workers,

stimulate the inherent potential of industrial workers, so that the majority of construction workers have more room for development and more job security. From the perspective of employment in the construction industry, social training institutions should establish a training base for industrial workers, set up teaching and training teams, and promote the construction of construction workers.

Based on the prefabrication compared with traditional construction methods, it has special advantages in energy saving, emission reduction, and improvement of labor production efficiency. At the Chinese government level, it vigorously promotes the green transformation of the traditional construction industry and the industrialization of buildings. According to the "Guiding Opinions on Vigorously Developing Prefabricated Buildings", it is pointed out that by 2025, prefabricated buildings will account for more than 30% of new buildings. The total output value of the construction industry ranks among the best in the country. With the gradual advancement of the country's new urbanization construction, and the overall strategic goal of "Happy Guangdong, Beautiful Guangdong" formulated by the Guangdong Provincial Government. In addition, the Central Committee of the Communist Party of China and the State Council issued the "Outline of the Development Plan for the Guangdong-Hong Kong-Macao Greater Bay Area" in February 2019, which proposed "improving the urban agglomeration and urban development system", "accelerating infrastructure interconnection", and the country's new urbanization and socialism. New rural construction, etc., has brought unprecedented vast space for the construction and development of the construction industry's workforce.

However, one of the main factors restricting the development of modern architecture is the shortage of professional and technical personnel, which provides a new round of development opportunities for the construction and personnel training of architectural specialty groups in vocational education. In 2021, Peizhen et al. (2021) used questionnaires and interviews to investigate and study the current situation of employees in the prefabricated construction industry in Suzhou. It was also found that in the face of new prefabricated construction technology, the industrial workers engaged in construction are too old, lack skills and the training effect is not ideal. Reasonable suggestions are given to promote the development of the prefabricated construction industry and optimize the training content and improve the training methods.



To sum up, whether it is the traditional construction industry, or the digital, intelligent, mechanized new modern construction industry, China's construction industry workers are still an outstanding aging phenomenon, low educational level, lack of skills training, and other issues, seriously restricting the sustained and healthy development of the construction industry. Therefore, transforming the traditional migrant workers in the construction industry into new construction industry workers and cultivating many high-level builders are conducive to optimizing the labor structure of the construction industry, accelerating industry reform, and promoting industrial upgrading.

#### 4. Industrial worker team building practices

For the construction enterprise industry, the most direct and effective way to transform the construction of the construction industry workers is to retrain the existing migrant workers and revitalize the existing migrant workers. Hongyu (2020) and Aihua and Youkui (2021) suggested that China's vocational schools should strengthen school-enterprise cooperation and comprehensively promote vocational schools to serve the transformation and upgrading of the construction industry and the training of industrial workers. In 2017, the Chinese government issued the "Opinions of the General Office of the State Council on Promoting the Sustainable and Healthy Development of the Construction Industry", in particular, it proposed to speed up the training of construction talents and reform the construction employment system, requiring that by 2025, the number of construction workers above the skill level of intermediate workers in the construction industry will reach 10 million. In order to promote the realization of the ambitious goal of transformation and upgrading and high-quality development of the construction industry and accelerate the development of the construction industry, Guangzhou City Construction College, where the author is located, is a school with architectural majors as the trump major, pays special attention to the needs of industry talents, pays attention to the cultivation of talent quality, strengthens school-enterprise cooperation, and actively explores and responds to various problems in the construction process of industrial workers in the new era.

##### *(1) Create a high-level professional group and cultivate high-level training teachers*

Based on the current situation of aging construction workers and an insufficient young labor force in China, various vocational colleges are facing new development

opportunities. By creating high-level professional groups, cultivating high-level vocational education innovation teams, and cultivating comprehensive technical and skilled talents for society. And based on the sustainable development in the field of 'quality design, green construction and smart city', and in line with the transformation and upgrading of the construction industry and the green construction industry chain, a high-level professional group of construction engineering technology in Guangdong Province has been established around the integration of "design-construction-decoration-municipal". This professional group takes construction engineering technology as the core and integrates characteristic specialties such as construction equipment engineering technology, building decoration engineering technology, surveying and mapping geographic information technology, municipal engineering technology, etc. The specialties are closely related, mutually supporting, and complementary to each other, and jointly cultivate "one skill and multi-ability" compound, innovative and developmental talents of modern construction technology.

"The soldiers did not move, the grass first". The cultivation of high-level teachers is one of the goals of the construction of the architectural engineering technology specialty groups. Zhanying (2018) suggested that the main elements of professional innovation to achieve innovation and mutual benefit, are knowledge sharing, optimal allocation of resources to achieve optimal synchronization of actions, and high-level system matching. In order to improve the theoretical level and skill level of industrial workers in the construction industry of Guangdong Province under the new situation, through the establishment of an open and shared teacher pool, a group of high-quality teachers is selected at different levels, unified management, and dynamic adjustment, and a team of industrial workers training teachers with various types, complete levels, and good functions is established. Make good use of social resources and enrich the teaching staff. Absorb industry development, grounded excellent students, and technical experts, they invited to the rostrum, to create a practical teaching staff. By the end of 2021, there were 47 industrial workers training teachers in the professional group, which established a "talent pool" for industrial workers training.

According to the characteristics of the work process curriculum development, the professional group training team studies the work object, work task, work process and professional post of the construction project,

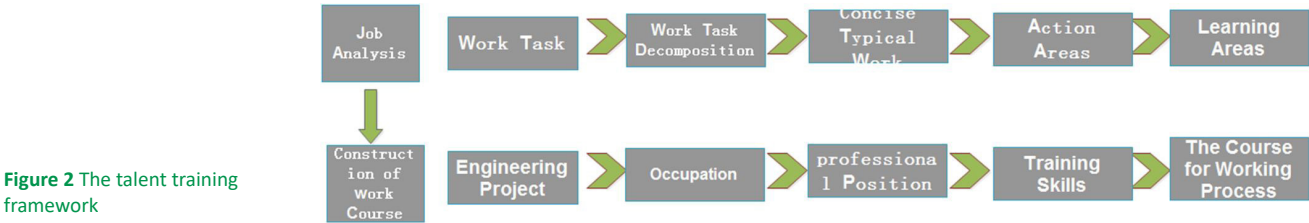


Figure 2 The talent training framework



Figure 3 The shared Modern Building Vocational Skills Public Training Center



Figure 4 Construction industry worker's skills improvement

decomposes the work task, refines the typical work task, determines the action field and learning field, designs the teaching situation, and constructs the training framework from simple to complex, from special knowledge talents, (Lai & Liew, 2021) and (Vyas & Butakhieo, 2021), as shown in the figure 2.

## (2) Supporting necessary facilities and equipment to train construction professionals and technical talents

Based on the new need of “integration of learning and training”, Guangzhou Urban Construction Vocational College has built the “public training center of modern architectural vocational skills” with the largest scale, the most advanced equipment, and the most complete function in China. The center integrates the professional teaching conditions of “training teaching, skill identification, technology research and development, and staff training” to achieve “leading in the industry and advanced at home and abroad”, as shown in figure 3. The school has established a special management organization responsible for the management training center, so that the organization not only inherits the education and teaching system, but also restores the real jobs and tasks of enterprise projects, and the management organization is not subject to the constraints of the education evaluation system and does not need to undertake the operation and management of enterprises (Xiaoyun, 2021). The main function of the center is to realize the integration of theory and practice, and the integration of practice and experience,

including the virtual simulation training center of construction engineering, the construction culture experience area, the construction safety experience area, the construction quality experience area, the green construction demonstration area, the operation skill training area, the operation skill evaluation area, etc., which can accommodate 1000 people to carry out training at the same time. The center is open to all kinds of vocational colleges, social training institutions and enterprises throughout the country, focusing on vocational skill training, green construction and prefabricated building experimental research, and cultivating urgently needed technical and skilled talents for regional construction industry, industry and enterprises. The ultimate goal is to provide diversified training such as theoretical learning, practical training and professional quality training for the construction specialty to cultivate talents with knowledge, technology and literacy.

Modern architectural vocational skills public training center based in Guangdong, facing the whole country, radiation at home and abroad, in addition, to meet the professional “course full coverage” practice teaching, become a service construction industry enterprises, colleges and society comprehensive teaching, training, service, research and innovation platform. In recent years, the public training center of modern architectural vocational skills has carried out skills training for industrial workers for the Guangzhou Municipal Housing and Construction Bureau and other societies and carried out science and technology lectures for technical managers of construction industry enterprises such as Country Garden. The average annual number of trainees reached 10,000. According to the requirements of the construction industry certificate, trained industrial workers must accept the government departments, industry associations, evaluation and certification, pass rate of 98.36 %, the center construction industry talent training base construction of the “Guangdong model”.

In September 2021, a random return visit was conducted on the effect of the training. A questionnaire survey was conducted on the industrial workers and engineers who had been trained at the base. Among them, the options of the questionnaire “your satisfaction with the current job” are divided into five levels and assigned 1 to 5 points from completely dislike ( hope ) to very like ( hope ). The higher the value, the higher the professional loyalty. Through the feedback on the situation of industrial workers in the construction industry after training, a return visit questionnaire was issued, and the collected data were analyzed as follows:

Table 2 Statistical analysis of occupational satisfaction of construction industry workers

	Number Of Cases	Average	Standard Deviation	Average Standard Error
Satisfaction with current work	312	4.08	0.776	0.051

Table 3 Analysis of re-education needs of construction industry workers

What kind of help would you like to get ( optional )			
options	questionnaire contents	frequency	ratio/%
A	practical operation	212	67.95
B	vocational skills competition	98	31.41
C	Professional theory learning	106	33.97
D	educational promotion	189	60.58
E	Title promotion	45	14.42
This topic effectively fill in the number of people		312	100

Table 4 Survey on learning styles of construction workers

How do you want to participate in learning ?			
options	questionnaire contents	frequency	ratio/%
A	online learning	44	14.10
B	Classroom Theory Learning	31	9.94
C	practical operation	79	25.32
D	The above three blended learning	136	43.59
E	It doesn 't matter	22	7.05
This topic effectively fill in the number of people		312	100



From Table 2, it can be seen that the average preference of trained construction industry workers for current jobs is 4.08 points, which is 3 points higher than the median value. It can be seen that construction industry workers are satisfied with their jobs.

At the same time, the re-education needs and learning methods of industrial workers in the construction industry were investigated and analyzed, as shown in tables 3 and 4.

It can be seen from Table 3 that among the 312 trained construction workers surveyed, the proportion of practical operation needs is 67.95 %, the proportion of vocational skills competition is 31.43 %, the proportion of theoretical learning is 33.97 %, the proportion of hope to improve education is 60.58 %, and the proportion of hope to improve professional titles is 14.42 %.

It can be seen from Table 4 that among the 312 trained construction workers surveyed, the proportion of those who want to participate in online learning is 14.1 %, the proportion of those who want to participate in classroom theoretical learning is 9.94 %, the proportion of those who want to practice is 25.32 %, the proportion of those who want to combine online education with classroom theoretical learning and practical operation is 43.59 %, and the proportion of those who do not care about learning prevention is 7.05 %.

## 5. Suggestions for the construction of the industrial worker team

The Construction and Upgrading of Industrial Worker's Skill Formation System involves politics, economy, education, and other fields. In the future, the construction industry will take green, integrated, and information technology as the guide and take the lead in the development. The construction of the construction industry workers in the new era is to promote the transformation of "migrant workers" to "industrial workers" and promote the transformation of industrial workers from "workers" to "craftsmen". The key link is that the comprehensive transformation and upgrading of the construction industry needs the impetus of new construction industrialization and the support of skilled talents - new construction industry workers.

(1) The construction and upgrading of the skill formation system of industrial workers involve politics, economy, education, and other fields, which also pose great challenges to the construction and upgrading of

the skill formation system. Therefore, it is first necessary to remove the professional-colored glasses for industrial workers in the ideology, promote the integrated construction of pre-employment and post-employment from the system, innovate the skill supply system from the mechanism, reform the training model of skilled talents from the model, and establish from the guarantee. Multiple input mechanism.

(2) The formation and upgrading of the skills of industrial workers need to coordinate the roles of multiple stakeholders such as the government, industry, enterprises, schools, and individuals, and the specific system selection and matching need to be adjusted in time according to changes in the external environment. Only by coordinating the interests of all parties can the role of the skill formation system be maximized.

(3) Migrant workers in migrant workers in the construction industry tend to be aging, with high mobility. Whether it is the level of technical skills or the level of cultural quality, they need to be trained and improved, and they are uneven. It is still a long time to go to realize the transformation of "migrant workers" to "industrial workers" and promote the transformation of industrial workers from "workers" to "craftsmen". It has been proved that the vocational education mode of the training management department that does not represent enterprises or schools is the best way to cultivate them.

(4) The development of prefabricated buildings in my country is still in its infancy, and there are still many gaps in the transformation of migrant workers. Therefore, the training market for prefabricated construction industrial workers is broad, and vocational education in prefabricated construction engineering technology is promising. For the training of technical personnel in the reform industry, a training base for construction industry workers should be built. Therefore, the training bases built by listed construction authorities or large-scale construction enterprises at various levels are mainly used for the closed training of technical workers in the construction industry. The training method of the base integrates theory and practice, as well as practice and experience, covering the key and key tasks of the construction industry and the urgently needed types of construction industrialization.

To sum up the investigation and analysis, the training of industrial workers in the construction industry should pay attention to the improvement of their technical skills. In terms of resource construction, it is suggested that the government or training institutions should design practical operation projects for the training process of industrial

workers in the construction industry, such as shooting standard operation videos and establishing project case bases. In terms of teaching and training methods, it is suggested to supplement theoretical knowledge to industrial workers in time, guide practice with theory, improve workers' professional quality, and adopt online and offline teaching and training methods to facilitate workers' production work and timely and effective learning.

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