Construction Engineering Technology Specialty Group
Construction in Big Data Age

Aimin Wei*
Guangzhou City Construction College, Guangzhou, China

*Corresponding author e-mail: aimin@gzgj.net.com

Abstract. As an important part of higher education, higher vocational colleges play an important role in cultivating talents needed in various industries. In addition to adapting to the local economic development, we should have our own characteristics, attract more students, and thus win the social reputation, which undoubtedly brings challenges to the construction of teachers' team in higher vocational colleges. This paper takes the construction of construction engineering and technology specialty group in a university in our city as an example analysis of the construction of teachers in the construction of professional groups, and analyzes the problems and advantages of professional groups in the construction of teachers. Finally, it provides countermeasures for the team building of professional group teachers. Through analysis, we can see that the age distribution of teachers in this professional group is less than 20 people under 30 years old, accounting for 23.2%. The average education is satisfactory.

Keywords: Construction Engineering Technology, Professional Group Building, Teacher Team Building, Data Analysis

1. Introduction
Higher vocational education is an important branch of China's higher education system, which has the most direct and close relationship with all sectors of society. The construction of teachers' team in higher vocational colleges is the key factor to improve the development of higher vocational education and ensure the quality of higher vocational teaching. It is also the primary condition of the three basic conditions (teachers, teaching materials and educational facilities) for running higher vocational colleges.

Project schedule management is based on the needs of the capital construction process, fully, scientifically and reasonably formulate the construction plan and specific construction cycle, make the best schedule, and then comprehensively coordinate the specific work of each stage in the process of project implementation, and finally complete the construction period on time to achieve the smooth completion of the overall goal. We should adhere to the core concept of "construction cost is the foundation, quality is the guarantee", and take the progress as an important part of the construction project management and control process of Y College Construction Engineering Technology Specialty Group [1, 2]. As the core link, schedule management can effectively ensure the completion of the
project with high standard and quality on time, realize the scientific and reasonable supply of resources, and reduce the project cost. From the perspective of management, this paper analyzes and studies the progress management of the construction project of mechanical and electrical specialty group with empirical evidence as the starting point. The purpose is to improve the experimental and practical training conditions, build a double division team, cultivate high-quality talents and serve the regional development through the integration of resources and sharing of advantageous resources. From this point of view, it is an important guarantee for the healthy development of higher vocational education to actively create a professional environment conducive to the training, cultivation and improvement of higher vocational teachers, strengthen the gradient construction of teachers' team in higher vocational colleges, and improve teachers' incentive policies.

Based on the theory of industrial cluster and resource view, this paper clarifies the essential connotation and significance of specialty group and teaching resource integration of specialty group, that is, to answer the necessity of research on teaching resource integration of specialty group. On this basis, from the perspective of scientific system, this paper makes a systematic analysis of teaching resource integration of specialty group in higher vocational colleges, in order to promote the teaching resource integration of specialty group in higher vocational colleges state and provide new knowledge. Using the method of case study, taking the construction engineering technology specialty group of the National Model School of higher vocational colleges as an example, this paper explores the process and effect of the teaching resource integration of the construction engineering technology specialty group of higher vocational colleges through in-depth interviews and participation.

2. Professional Group

2.1. Credit Bank
"Professional group" refers to a professional group composed of single or multiple strong key majors with high employment rate and multiple related majors [3, 4]. This kind of professional cluster composed of multiple majors mainly corresponds to the related enterprise job cluster, and the majors in the professional cluster must be able to carry out basic practical training and practice teaching in a training system at the same time. The construction of specialty group is mainly to share resources through the integration of specialties, promote the cultivation and construction of teachers, and the innovation and correction of curriculum; through the demonstration function of core specialty, it can drive other related specialties and improve the comprehensive strength of the school, so as to comprehensively improve the service performance of regional economic and social development [5].

2.2. Characteristics of Specialty Group
The characteristics of professional group are reflected in six aspects: first, it is evolved from the same industry, from the social point of view, it is a professional cluster formed by a certain industry, from the school point of view, it is the accumulation of material, cultural and social relations for a long time; second, it is the exchange of curriculum content, that is, there is a common curriculum content, and the professional positions of professional group are similar, it is in the process of development There are common basic contents in theory and technology, which are reflected in the curriculum, that is, many professional groups or basic curriculum platforms have common core courses and experimental training courses; third, there are common experimental facilities, training facilities and equipment, and occupy the corresponding common share, which has a very important impact on higher vocational colleges; fourth, there are common teachers, professional groups It is easy to form a good teaching environment because of the similar industry background, the same theoretical and technical skills, and the similar teachers needed in the experimental training courses; fifthly, the common social communication background, higher vocational colleges need to use social resources and social relations, which is an important aspect of the development of higher vocational colleges, and it is also a kind of educational resources Sixth, based on the school's core majors and industry
background, these majors often have a longer history of running schools among other professional groups, with higher comprehensive quality of teachers and stronger social influence [6].

2.3. Connotation Interpretation of Teaching Resources Integration of Specialty Group in Higher Vocational Colleges

Based on the understanding of the cluster theory, the professional group refers to the education field from the "industrial cluster" in the economic field. However, two concepts of "specialty group" and "specialty cluster" have emerged at the same time. To study the connotation of teaching resource integration of specialty group in higher vocational colleges, we should first differentiate specialty group and specialty cluster, and then further analyze them through the principles and objectives of specialty group construction [7]. In order to better grasp the connotation of "professional group" and its relationship with resource integration through the comparison with "industrial cluster". Combined with the understanding of professional group in the review, this paper makes a comparative analysis of the two concepts of "professional group" and "professional cluster" from the aspects of research extension, focus, purpose and essence.

To sum up, there are differences between the two research paths. The research on professional clusters focuses on the management research at the regional level, which is a top-down research; the research path of professional clusters is more about how to realize the self-organization development of professional clusters through management, which is a practical research. However, although there are many differences between "professional group" and "professional cluster", they all have the common characteristics of "group" development, and embody the concept of intensive and large-scale development. At the same time, the competitiveness of the cluster comes from the absorption and utilization of resources by the cluster organization, that is, the "integration" of resources. Therefore, both of them can be understood as the organization of resource integration [8]. As a gerund, "group" can be expressed not only as people or things gathered together, but also as the dynamic process of "grouping". The construction of specialty cluster is the foundation of the construction of specialty cluster of vocational education; the development and construction of specialty cluster of vocational education at regional level must be based on the current situation of specialty structure layout and University layout of Vocational Colleges in the region. Therefore, "professional group" and "professional cluster" are not only different, but also interrelated and promoted intensive development mode [9].

As the main carrier of school resource transformation, specialty cluster intensive construction can significantly improve the efficiency of resource transformation and school running efficiency of higher vocational colleges. Therefore, specialty group is essentially the "entity organization" of internal resource use and talent output, and it is an important means to improve the degree of resource transformation. Its core is to achieve the overall planning of human, financial and material resources in the school, and it is a resource integration activity aimed at improving the level of professional construction. Therefore, the essence of the organizational competitiveness of professional groups is to enhance the ability of resource integration [10].

2.4. Big Data Mining

Data mining is simply to extract valuable and hidden information from a large number of data through analysis technology, establish corresponding model, and use this model to help people make correct decisions. Extracting valuable information is the key of data mining, but the valuable information is relative, and different fields need different information. Data mining is not the ability of simple knowledge mining, it can visualize the analysis, through some charts or shapes, such as decision tree technology, by drawing a very easy to understand tree diagram, the bifurcation of each branch represents a situation, which is the most intuitive analysis method for analysts, and the most convenient for decision makers can watch the results of the analysis, and you can inspire the decision-makers to make the best decisions through the visual impact.

Pearson correlation analysis
4. The growth of culture and training

3.2. Operation of Professional Group

It is necessary to have a clear training idea, as Table team development mode, a more practical training content, a more mature operation mechanism and a more effective management system. With this idea, the team organizers constantly improve, precipitate and solidify these "comparisons" through practice, so as to spiral them into a part of the school's new teacher professional training. This kind of culture will lay a solid foundation for the continuous training of new teachers in the future, pave the way of training, and make young teachers take the first step to be good teachers and take the road of growth. The management group should strengthen the organization and planning, standardize the use of funds, skillfully and reasonably use time and space to carry out activities. The person in charge of the studio regularly reports relevant work to the leaders, and arranges and coordinates various works.

4. Research and Analysis of Specialty Group Construction

4.1. Age Structure Tends to Be Younger

Table 1. Age structure of professional group teachers

| Age   | Value | Percentage | Number of professors | Number of associate professors |
|-------|-------|------------|----------------------|--------------------------------|
| <30   | 20    | 23.2       | 0                    | 5                              |
| 31-35 | 19    | 22.1       |                      |                                |
| 36-40 | 22    | 25.6       |                      |                                |
| 41-45 | 12    | 13.8       | 1                    | 10                             |
| 46-50 | 5     | 5.7        |                      |                                |
| 51-55 | 4     | 4.6        | 3                    | 5                              |
| 56-60 | 4     | 4.6        |                      |                                |
| Average age | 36.3 | 49.0 | 45.2 |
According to Table 1, there are 20 teachers under 30 years old, accounting for 23.2%; 19 teachers between 31 and 35 years old, accounting for 22.1%; 22 teachers between 36 and 40 years old, accounting for 25.6%. The specific situation is shown in the Table below. This paper will not repeat it. Generally speaking, the age of teachers is gradually younger, which is of great benefit to team building and professional group building in the future.

4.2. Educational Level is Satisfactory

![Fig 1. Statistical Table on the academic structure of full-time teachers in professional groups](image)

According to figure 1, 84.9% of all the teachers in the construction of professional group have master's degree. It can be seen from the figure that the proportion of highly educated teachers is increasing year by year, and the proportion of graduate students is 35%.

4.3. "Double Qualification" of Teachers Needs to Be Improved

After the reform and transformation of Higher Vocational Colleges in recent years, the number of "double qualified" teachers has a direct impact on the quality of teaching and practical teaching. In the talent training plan of higher vocational colleges, the construction of "double qualified" teachers is included in the key training objectives. Our school has taken a variety of measures in the construction of double teachers. However, we should also see that compared with ordinary higher education, the training mechanism of "double qualified" teachers team in our university still needs to be improved.

4.4. The Source of Teachers is Single

| Source of teachers | Job assignment on graduation | Other colleges and universities | Transfer of scientific research institutions | Corporate transfers | Other transfers |
|--------------------|------------------------------|---------------------------------|---------------------------------------------|--------------------|----------------|
|                    | 55%                          | 16%                             | 10%                                         | 15%                | 4%             |

According to Table 2, 55% of new teachers come from graduation allocation, 16% from other universities, 10% from scientific research institutions, 15% from enterprises and 4% from other units. According to the data in this Table, this case cannot meet the special requirements of cultivating high skilled talents in construction engineering technology.

4.5. The Proportion of External Teachers is Low

Due to a variety of reasons, the proportion of external teachers in most higher vocational colleges is low, and many external teachers are from fresh graduates or some intermediate technical management talents. This is not conducive to the long-term development of teacher team building (in Figure 2).
Fig 2. Statistical Tables of external and full-time teachers

4.6. Countermeasures for the Construction of Teacher Team in Specialty Group Construction Project

(1) Giving full play to teachers’ subjective consciousness

The realization of the goal of efficient team cooperation is based on the individual subjectivity of the team members. Only when each member of the teacher professional team is spontaneous, autonomous and active, can the teacher professional team cooperation be possible.

(2) Building a good talent evaluation system

Talent evaluation mechanism is to quantify, specify and detail the content of talent value and the expected results of use value, so as to achieve the full display of talent value content and the best combination with practice, and produce the maximum benefits.

(3) Promoting the management mechanism of industry university research cooperation

The development of higher vocational education is inseparable from the efforts of the teacher team, and the brand professional group project needs professional teachers with “double teacher” quality. At present, our province has a higher vocational education teacher training center, but it cannot meet the growing needs of the development of Higher Vocational Education in our province.

5. Conclusions

Based on the construction of construction engineering technology specialty group in the era of big data, this paper focuses on the construction of teachers in the specialty group. The construction of teachers' team needs a step-by-step process, experiencing the process of finding, improving and solving problems. Under the background of project management, it is an arduous task for higher vocational colleges to build a team with profound knowledge, good quality and excellent practical ability. Only by improving the quality of teacher team building can we attract more students, effectively enhance the core competitiveness of the school, and create a new pattern of higher vocational development.

Acknowledgements
This article is supported by Guangdong education science planning leading group office (project number: 2018GXJK345), Educational reform project of guangdong provincial department of education (project number: GDJG2019252), Guangzhou City Construction College Key Project. (Grant No. JGXXZD202001)

References

[1] Selig, Marion. 3rd Meeting of the DVG-Professional Group "Environmental and Animal Hygiene". Tierarztliche Praxis, Ausgabe G. Großtiere, 2018, 46(2):131-131.

[2] Hoffmann, Petra, B. Excursion of the Professional Group for "Fuel Supply, Fuel Elements and Core Components". ATW: Internationale Zeitschrift fuer Kernenergie, 2016, 61(8/9):556-557.

[3] Professional positioning and professional group construction exploration on application-oriented undergraduate IoT. 2019, 010(001):98-99.

[4] Sophie, Divay, Lucile, et al. [Compiling a socio-history of the nursing professional group by looking at the training of nurses and senior nurses]. Recherche en soins infirmiers, 2019(139):64-83.

[5] Foisy M M, Tseng A . Development of a collaborative professional group for HIV pharmacists: experience from the Canadian HIV/AIDS Pharmacists Network. Int J Pharm Pract, 2015, 23(3):232-233.

[6] Winiowska D , Duda S , Kulik A , et al. Measuring muscle forges with hand dynamometer in the nurse professional group before and after load physical work. Nursing and Public Health, 2019, 9(4):1-6.

[7] Poltorakov O , Shchygol I . Historical-Social Establishment Specifics of Ukrainian Writers as a Social-Professional Group (end of 19th century – beginning of 20th century). Intercultural Communication, 2019, 1(6):36-36.

[8] Herbez V . First General Assembly and Foundation Act of the Professional Group Life Science. Schweizerische technische zeitschrift, 2019, 116(1-2):36-36.

[9] Belén Galletero-Campos, María José Ufarte Ruiz, Ana María López-Cepeda, et al. Analysis of gender asymmetries in the professional group of journalists in Castilla-La Mancha. Observatorio, 2019, 13(3):01-19.

[10] Shmantsar M . Characteristics Of Socio-Professional Group Of University Teachers In Conditions Of Changes In The System Of Higher Education. Vestnik Universiteta, 2018(3):149-152.