Research on the Practice of Talent Cultivation Based on the Improvement of Innovation Ability ——Taking Electrical Engineering Automation Technology As An Example

Jin Jing¹, Chen Yuanyuan²

¹HAI NAN TECHNOLOGY AND BUSINESS COLLEGE, HAI KOU UNIVERSITY OF ECONOMICS, College of Information Engineering, Haikou, Hai Nan, 570203
²HAI NAN TECHNOLOGY AND BUSINESS COLLEGE, HAI KOU UNIVERSITY OF ECONOMICS, College of Network Education, Haikou, Hai Nan, 570203
dengxiangwu2019@gdupt.edu.cn

Abstract: It is in the key period of institutions of higher learning education reform now. For electrical engineering automation students in education and training, in order to further improve their innovation and practice ability, colleges and universities can develop regular way of talent training scheme and cooperation between colleges to cultivate talents. It can improve the level of colleges of electrical engineering automation teaching and promote the employment.

1. Introduction
The fundamental purpose of higher education reform is to improve the innovation and practice ability of talents and promote the employment. The electrical engineering automation major in colleges and universities should develop scientific training programs according to the characteristics of the major and the learning ability of the students. The paper first analyzes the importance of the training of electrical engineering automation talents, and then analyzes the relevant strategies.

2. Analysis on the importance of training electrical engineering automation talents
Electrical engineering automation technology has been developing for decades in China. Its technology is not only one of the important industrial technologies but also a popular major in various higher vocational colleges. The electrical engineering automation major has good practicality with an indirect effect on local economic development. However, as far as the current education of electrical engineering automation is concerned, there are problems such as lack of teaching practice and interest. In order to further improve the teaching and training quality of electrical engineering automation, higher vocational colleges should start with the cultivation of innovative talents and adopt a series of training methods and measures to train talents. In addition, engineering colleges can also improve their teaching through educational reforms and other methods. As shown in table 1, it is a statistical table for employment of electrical engineering automation graduates in certain province in the past five years. From the table, it can be seen that social enterprises have a higher demand for electrical engineering automation graduates.

| Number of | 80 ≥ | 20–80 | 15–20 | 10–15 | 5–10 | 0–5 |
|-----------|------|--------|-------|-------|------|-----|

Table 1 Statistical table of graduates majoring in electrical engineering automation employed by public institutions in a province in recent five years
Effective strategies for the training of electrical engineering automation talents

3.1 Scientifically formulate talent training plan based on the teaching situation of electrical automation

In order to further promote the employment and development of electrical engineering automation talents, relevant higher vocational colleges must first analyze and research the needs of the industrial clusters in the region and their own teaching models, and then formulate corresponding talents in the surrounding industries training plan, and clarify the professional positioning and training goals.

For example, professional engineering enterprises can first conduct research on the surrounding industrial parks, and then define the positions for electrical engineering automation technology based on the actual research. In order to improve the comprehensive qualities of electrical engineering automation students, it needs to promote the students’ art of morality, intelligence and physique in an all around way. Teachers can teach students with some simple industrial base control, power supply technology, such as basic knowledge, the combination of practice + theory to help them understand the operation. In addition to adopting the teaching mode of practice + theory, engineering enterprises can also improve the original teaching management methods, and develop different training majors according to the actual situation of regional development and the employment. For example, engineering majors can subclassify the training direction by investigating the surrounding enterprises. Through analysis, higher vocational colleges can train students according to PLC, SCM control and power supply and distribution.

In order to improve the learning effect of students and the teaching level, within the first two years of enrollment, colleges should first carry out general education courses for students, contact basic general and theoretical courses to consolidate the students’ theoretical foundation literacy. Vocational colleges can adopt methods such as fixed-post and off-campus practice to improve students’ practical ability. In addition, higher vocational colleges can also carry out education together with college-enterprise cooperative units. Higher vocational colleges should always adhere to the concept of cooperative education, education, employment and development, and carry out phased work-study teaching. The specific teaching plan is the following. Within six months or one year after students enter the campus, the college should first make a career plan and educate the students according to the plan.

At the same time, higher vocational colleges can also select students with the following characteristics for training according to their career planning. Firstly, higher vocational colleges should focus on selecting students with innovative consciousness and ability. When students with abilities and consciousness are selected, they can be grouped together and arranged for special teachers to guide and train. In order to effectively improve the enthusiasm of students, higher vocational colleges can also set up creative scholarships and other means to carry out creative training. Secondly, higher vocational colleges should select a group of learning talents which integrates theoretical and practical ability. Thirdly, higher vocational colleges should focus on the selection of a group of good social and sales skills. The teaching quality can be greatly improved and a solid foundation can be laid for the later reform.

3.2 Do a good job in curriculum construction and teacher team construction

The curriculum development and construction and the training of teachers are the core and key of the training of electrical engineering automation talents. In view of the current teaching effect of courses, there are defects such as low teaching quality and too broad teaching content. In order to effectively improve the current situation, higher vocational colleges should start with curriculum construction and improve the teaching quality of courses through the reform of the original curriculum system.
For example, higher vocational colleges can optimize and adjust the original teaching. In the process of conducting theoretical teaching to students, teachers can adopt a modular teaching model. They can group students according to the difficulty of theoretical knowledge and divide the relevant knowledge into the same group of modules. According to statistics, students’ mid-term and final theoretical scores have been greatly improved. In addition, in the process of developing students’ professional ability, project-based teaching model can be adopted to gradually improve students’ practical ability through a series of electrical engineering automation projects. It should be noted that in the process of carrying out practical teaching, teachers should appropriately increase the proportion of project. Under normal circumstances, the proportion of project should be at least about 45% of the total class hours. In addition to optimizing and innovating the courses, higher vocational colleges must also do a good job in the construction of the teaching staff. The electrical engineering automation with higher requirements for practical ability is different from other majors. Teachers in higher vocational colleges must also have a certain strong practical ability. For example, higher vocational colleges can train teachers’ practical ability through off-campus research and off-the-job training. Higher vocational colleges should also do a good job in dual-teacher team.

3.3 Do a good job in the construction of training bases inside and outside

In order to further improve the teaching of electrical engineering automation, higher vocational colleges should do a good job in the construction of practical training bases inside and outside the college. The practical training base inside and outside is not only a training platform for talents but also one of the important contents of the specialty reform. In the past construction of practical training base, many colleges and universities only attach importance to the construction of campus practical training base but ignore some inherent disadvantages of campus practical training base. As for the single on-campus practical training base, although it can greatly improve students’ comprehensive practical ability, there are some differences between it and the real practice site after all. Higher vocational colleges should make joint efforts with colleges and enterprises to develop two-way campus training base.

For example, in the process of building the campus training base, the college should focus on theory consolidation. Students can deepen their understanding of electrification through on-campus practical learning, thus laying a solid foundation for later off-campus enterprise practice. During the construction of off-campus training venues, practical ability should be promoted as the focus. For example, the enterprise should take the lead to introduce the real machinery and equipment and operation into the interior of the training base, and then carry out practical education for students in strict accordance with various implementation standards of the enterprise. For example, campus enterprises can incorporate the current popular 7S management norms into students’ practice. The so-called 7S management specification requires seven goals such as Seiri, Seiton, Seiso, Seiketsu, Shitsuke, Safety and Save to be achieved in the actual production. Seiri means to distinguish between useful and useless things. Seiton means to categorize and identify the materials and tools in the work situation. Seiso means to clean the working environment on time, maintain the work area clean and tidy. Seiketsu means regular cleaning and finishing of work. Shitsuke means to form good working habits and abide by the rules and regulations formulated by the enterprise. Safety means to improve safety awareness, develop good working habits and avoid safety analysis. Save means one of the important factors of enterprise development. In such a practical environment, on the one hand, it can improve students’ practical employment ability, on the other hand, it can also create favorable conditions to select suitable talents. As shown in table 2, it is an analysis of the nature and ability of electrical engineering automation graduates in the past five years. It can be seen from the table that the demand of enterprises for electrical engineering automation talents is on the rise and the demand for high-end applied talents is growing rapidly.
Table 2 A list of the nature of work and ability performance analysis of electrical engineering automation graduates

| Nature        | Proportion/% | Working ability |
|---------------|--------------|-----------------|
|               |              | Strongest/% | Stronger/% | General/% |
| Research      | 24.6         | 34.5       | 49.6      | 15.9      |
| Management    | 7.7          | 33.6       | 56.8      | 9.6       |
| Marketing     | 25.3         | 15.4       | 67.2      | 17.4      |
| Production    | 29.1         | 30.6       | 54.1      | 15.3      |
| After service | 13.3         | 52.5       | 37.5      | 10.1      |

3.4 Establish the guarantee and evaluation mechanism of teaching operation

In addition to training students’ practical ability, higher vocational colleges should adopt diversified means to improve the original teaching operation guarantee and evaluation mechanism. For example, in the process of improving the teaching operation mechanism, the college can first improve the original teaching quality evaluation system. Under normal circumstances, the teaching quality standards involve professional construction, training base construction, curriculum construction, textbook construction, classroom teaching, practical teaching, examination assessment, graduation design and quality, etc. Based on this, the college should periodically evaluate the teaching quality of and then evaluate the teaching ability and teaching, and effectively solve the series of problems in the process. For example, higher vocational colleges can organize students to evaluate teachers within half a year or one year. In order to ensure the correctness and fairness of the evaluation results, an online evaluation and teaching system can be developed by using network information technology. Students can evaluate teachers with the help of mobile phones or computer systems. In addition, the educational administration group organizes special personnel to collect the evaluation results, and then analyzes the teaching level according to the actual evaluation results. Higher vocational colleges can also incorporate the final evaluation into the teachers’ year-end assessment.

4. Conclusion

In summary, in order to better promote the employment of electrical engineering automation students, the relevant higher vocational colleges should analyze a series of problems in the current teaching stage, and formulate corresponding training programs and plan to better promote the employment of students.

Acknowledgement

The project supported by Research Project of Education And Teaching Reform in Colleges And Universities in Hainan.

References:

[1] Zhao Shuhong, Ma Qing. 2019. Research on the practice of talent training based on the improvement of innovation ability——taking the electrical engineering automation technology major of Jiangyin Vocational and Technical College as an example [J]. Education Modernization, (81).

[2] Jing Xinyu. 2016. Promote the linking of secondary and high vocational education to cultivate modern team leader talents——taking electrical engineering automation technology as an example [J]. Journal of Jilin Teachers College of Engineering and Technology, 032 (007): 4-7.

[3] Liu Shukai, Yang Huali. 2018. Exploration and research on the construction of a coherent secondary and higher vocational curriculum system——taking electrical engineering automation technology as an example [J]. Journal of Shandong Institute of Commerce and Technology, 018 (006): 40-43.