

Research on Cultivation of Applied Talents in Automation Major in the Background of New Engineering



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Abstract: With the development of the social economy, the demand for applied talents of automation majors in the background of new engineering shows the trend of diversification, refinement and specificity. And in recent years, domestic universities have made many types of research and reforms in talent training to cope with the demand for talents under the new situation and new development, which to a certain extent alleviates the pressure of talent demand in the industry under the background of new engineering, but there still exists the phenomenon of mismatch between talent training and industry demand. In this paper, we will analyze the current situation of the cultivation of applied talents in automation majors in colleges and universities by combining macro factors such as social and economic development and market demand in China at the present stage, and elaborate on four problems that still exist in the cultivation of talents, such as curing concept, old teaching mode, lack of practical teaching content and platform, and insufficient teachers, etc., and make suggestions from four aspects: updating the cultivation concept, innovating cultivation teaching mode, creating a diversified practical platform, and strengthening We also put forward suggestions in four aspects, such as updating talent cultivation concept, innovating cultivation teaching mode, creating diversified practice platform, and strengthening faculty construction, so as to provide a reference for the cultivation of applied talents of automation majors in China.

Keywords: new engineering; automation profession; talent cultivation

1. Introduction

Since the Ministry of Education actively promoted the construction of "New Engineering", it has formed "Fudan Consensus", "Tianda Action" and "Beijing Guide", and issued a series of documents. Since the Ministry of Education has actively promoted the construction of "New Engineering", it has formed "Fudan Consensus", "Tianda Action" and "Beijing Guide", and issued a series of documents and notices, which have cultivated and created a number of diversified and innovative engineering science and technology talents, including automation professionals. However, with the advent of the era of big data and the development strategies of new industries such as "Made in China 2025", "Internet+" and "Industry 4.0", economic and social progress and industrial development have become increasingly important. With the advent of the era of big data and the new industrial development strategies such as "Made in China 2025", "Internet+" and "Industry 4.0", the demand for applied talents of automation majors is

growing rapidly, and there are higher requirements for the professionalism and comprehensiveness, research ability and practical ability of talents.

2. The current situation and problems of automation professional applied talents training

However, in the context of market changes and industry development, the rigorous curriculum and teaching mode of colleges and universities have many problems while realizing systematic training of talents. Firstly, the concept of talent training is solidified, and the focus of talent training is still limited to scientific research and academic aspects, ignoring the practical ability training for industry application talents. In the four-year study process, universities set a large number of theoretical courses, and theoretical study occupies most of the time, squeezing the time for students' practical study. This leads to the lack of students' drawing reading ability, practical problem-solving ability and engineering practice ability, resulting in the disconnection between the knowledge students learn and industry needs (Zhang et al., 2020).

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Secondly, the teaching mode is old and still adopts the single teaching method of filling duck and duck, and the classroom teaching content is difficult to mobilize students' learning enthusiasm and initiative; at the same time, the content of teaching is updated slowly, so that the knowledge students learn lacks advanced and practicality, which leads to the weak practical operation ability and engineering innovation ability of students (Su et al., 2021). Thirdly, there is a lack of practical teaching content and platform, which continues the previous mode of classroom teaching as the main mode and practical teaching as the supplement, and there are fewer practical teaching platforms. Some colleges and universities have carried out the integration cooperation of industry-university-research, and at the same time, they do not fully use the practical bases, but still carry out practical teaching work superficially. Fourth, the lack of teachers, while vigorously introducing academic teachers, ignore the introduction of professional talents with rich industry experience, coupled with the lack of attention to the re-training and re-learning of teachers, so that the teaching ability is not systematically trained and improved (Gu, 2020). These problems have, to a certain extent, led to the discrepancy between the content of college teaching and the ability of market demand, and the professional knowledge and practical ability acquired by students in school study cannot be well adapted to the market and industry needs. In the long run, on the one hand, it will bring obstacles to the employment of talents, which is not conducive to the realization of their personal values and even affects the harmony and stability of society; on the other hand, it also leads to the unmet demand for talents in the market and the existence of a large number of talent vacancies in the industry, which further hinders the innovative development of the industry technology and the cultivation of new growth points in the market economy.

3. Exploring the path of training talents for automation professional application

3.1 Update the concept of talent training

In the era of big data, all industries, including automation applications, are in a period of technology, industry and mode innovation and development, and under the rapid development of the Internet industry, the automation application industry, which used to rely on traditional industry, is also being updated iteratively (Lin, 2020). Therefore, the concept of big data development should be adhered to in the training of automation professional application talents, and the historical development process, technical pulse and future development expectations of the big data era should be combined to clarify the characteristics of automation professional application talents required by the market in the big data era, the market industry distribution and the scale of demand, etc., so as to cultivate automation professional application talents more suitable for the market demand. At the same time, in the process of talent training, we should also have economic awareness, closely linked with the development of regional economy, industry

economy and national economy, accurately analyze the current development situation and future development trend of the industry, deepen the understanding of the changes in the demand for talents, scientifically formulate the plan of talent training, and carry out the reform and research of curriculum and teaching content (Liu & Gu, 2021).

The automation profession is a comprehensive discipline covering a wide range of knowledge, therefore, it should also have the concept of multidisciplinary intersection in the training of automation professionals. In addition to strengthening students' teaching and training about professional knowledge, they should also integrate the contents of other related disciplines in the teaching content, strengthen multidisciplinary cross-learning, expand the teaching content, improve the teaching quality, and cultivate multi-disciplinary and multi-skilled composite talents (Zhao et al., 2019). Finally, the concept of updating and iteration should also be available in the training of automation professional application talents. We should keep pace with the development of the industry and economic development, focus on the front end of the market and industry, update the curriculum content and teaching mode in a timely and proactive manner, solve the current problem that the school teaching innovation lags behind the market demand, cultivate talents suitable for the development of the market and industry, and promote the solution of the market talent vacancy problem.

3.2 Innovative training and teaching mode

Teaching is one of the most direct and effective ways to cultivate automation professional application talents. In view of the new standards and requirements of the industry for automation professional application talents, the traditional teaching mode needs to be innovated and changed urgently. First of all, more and richer and more vivid classroom teaching modes should be innovated. This requires that in the teaching process, teachers should abandon the old classroom teaching mode of reading from a book and explore new teaching methods such as the case method. By citing multiple market cases in classroom teaching, the boring and difficult professional knowledge should be taught in a spoken and vivid form to reduce the difficulty of students to understand and master the knowledge points and deepen students' understanding of the current situation of the industry market. Furthermore, we should make full use of the power of high technology to explore the teaching mode. Make full use of teaching methods such as cloud classroom and Tencent conference to hire industry experts from all over the country to teach students and provide them with cross-regional and cross-temporal teaching content; meanwhile, 5G, VR, AR and other technologies should be applied to teaching to enhance students' experience of production scenes and improve their practical ability.

Second, schools should also encourage teachers to explore new practical teaching modes. For example, the types of course experiments should be enriched, basic experiments and comprehensive experiments, verification

experiments and design comprehensive experiments should be unified, students should be taught according to their learning effects, and students with a poor foundation should be allowed to conduct more basic experiments or verification experiments, while students with a good foundation and strong practical ability should be allowed to conduct more comprehensive experiments or design experiments. Students with good foundations and strong practical abilities can be allowed to conduct more comprehensive experiments or design experiments. Through the reasonable use of various teaching modes, every student can feel the charm of the profession in the experimental process, build their confidence in learning the profession and deepen their love for the profession.

3.3 Create a diversified practice platform

While strengthening the teaching of course knowledge content, colleges and universities can organize and set up many kinds of specialized interest groups and school-level competitions, actively release and publicize various off-campus competition information, so that students can get more competition information in time and encourage them to actively participate in order to improve their practical ability. At the same time, industry experts and academic experts are organized to judge students' participation projects to help students find out the shortcomings of their professional abilities in the competitions and check the gaps, so as to promote students' professional knowledge accumulation and practical ability improvement, enhance their self-confidence, and also add highlights to their personal resumes and improve their employment competitiveness.

On the other hand, universities can also cooperate with high-quality enterprises in the industry to carry out school-enterprise cooperation. Relying on the market platform provided by enterprises to establish teaching practice bases not only provides students with more practice opportunities, but also allows students to deepen their understanding of the industry and the market, and also promotes the close integration of teachers' teaching and research directions with the industry development. In addition, enterprises can also get the support of scientific research power of colleges and universities in this process to promote their own technical progress and achieve a multi-win situation. The training of automation professional application talents under school-enterprise cooperation promotes the combination of students' own theoretical knowledge and practical ability while expanding their future employment paths (Chen, 2021).

3.4 Strengthening the construction of teachers

At present, most university teachers have the problem of strong academic ability but insufficient industry experience, which is a double-edged sword for automation majors oriented to market demand and social and economic development. On the one hand, it can well cultivate students' academic ability in research, but on the other hand, it will lead to students' inability to cultivate professional practical ability. Therefore, while introducing young academic talents, the school should hire some

industry experts and practical experts to offer a series of practical courses in school and have regular communication and exchange with teachers in school to improve the practical teaching effect in the teaching process. It is also possible to employ retired senior teachers to communicate with young teachers on a regular basis, so as to improve the practical ability of academic teachers and improve the practical teaching ability of young teachers and academic teachers and create a "double-teacher" teaching team with both virtues and abilities. At the same time, we should give full play to the role of teaching practice base, not only let students study and practice in the practice base, but also let teachers, especially young teachers, participate in engineering practice in the base so that teachers can understand more clearly the requirements of production reality for students' theoretical and practical abilities (Liu et al., 2019). Finally, the school should change from the original single tutor system to a dual tutor system, where academic tutors are responsible for teaching theoretical knowledge courses and cultivating students' academic research ability, and vocational tutors are responsible for improving students' hands-on practical ability, and the dual tutor system combining academic and vocational is conducive to the comprehensive cultivation of automation professional application talents.

4. Conclusion

Along with the characteristics of the current domestic and international economic development, a large number of automation professional application talents are still needed in the future, both from the market perspective and from the academic research perspective, and at the same time, the market will put forward a new high standard evaluation system for the comprehensive quality ability and professional skills ability of automation professional application talents. Therefore, colleges and universities should conform to the development of the times in the cultivation of automation professional application talents, reform their talent cultivation mode at the right time, and cultivate application talents with high quality and strong practical ability by updating talent cultivation concept, innovating cultivation teaching mode, creating diversified practice platform and strengthening the construction of teachers. This can not only improve the teaching level of colleges and universities but also promote the development of the social economy and promote the rapid development of new engineering construction.

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Conflict of Interest

The authors declare that they have no conflicts of interest to this work.

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