Advances in Vocational and Technical Education (2023)
Clausius Scientific Press, Canada

DOI: 10.23977/avte.2023.050702
ISSN 2523-5834 Vol. 5 Num. 7

Research on the Precise Employment and Education Training Mode of Engineering Colleges under the Internet Big Data

Rui Li

College of River and Ocean Engineering, Chongqing Jiaotong University, Chongqing, 400074, China
lirui400074@163.com

Keywords: Big data; Engineering colleges; Accurate employment; Educate and cultivate people

Abstract: The mode of employment education in colleges and universities has always been the focus of employment work in colleges and universities in China, but there are some problems in the construction of employment education mode in colleges and universities at present. Taking engineering colleges as an example, this paper explores the mode of employment education in colleges and universities under the big data of the Internet, analyzes the factors affecting its development, and puts forward solutions to the existing problems. By constructing the dual-subject education mode of "major+employment", students' training is combined with career planning. Guided by industry demand and centered on the improvement of students' ability, a set of dual-subject education system of "major+employment" and dual-subject education mode of "career planning+enterprise demand" are constructed, which combines students' personal development with career planning to achieve the purpose of improving students' employability and enhancing their professional competitiveness.

1. Introduction

At present, the employment situation of college students in China is more severe, which is mainly reflected in the increasing number of college graduates year by year, the oversupply of the job market, and the coexistence of difficulties in employment of college graduates and recruitment by employers. There are many reasons for this problem. On the one hand, the transformation and upgrading of China's economic structure has led to a strong demand for high-quality talents; On the other hand, colleges and universities don't pay enough attention to talent training and don't realize the importance of talent training to improve the competitiveness of talents from a strategic perspective. In this context, how to improve the employment competitiveness of graduates has become a topic for colleges and universities to think and explore. The employment of college graduates has always been a common concern and research issue of the government, colleges and society, and colleges and universities are actively exploring effective ways to improve the employment competitiveness of graduates under the new situation[1-2].

2. The practical significance of "precision" in college employment

Due to the influence of many factors, such as China's economic development, industrial restructuring and upgrading of traditional industries, the problem of "structural contradiction between supply and demand" has become more and more prominent in the employment of college graduates. From the perspective of colleges and universities, there are still some problems in the employment work of colleges and universities in China, such as the single form of employment guidance, unreasonable structure of teachers, insufficient understanding of the employment situation by students, and weak employability of graduates. From the perspective of employers, the demand for graduates in various industries has changed greatly, and the requirements for talents are getting higher and higher. With China's higher education entering the stage of mass development, the scale of higher education is expanding rapidly, and the employment market for college graduates is a complex system. Employers of all levels and types have their own talent demand standards and talent training objectives. This has led to higher and higher requirements of employers for college graduates, and the employment of college graduates is facing great pressure.

In the employment of college graduates, there are "structural contradictions", which are mainly manifested in the following aspects:

First, the employment guidance and service in colleges and universities do not fully cover all graduates, especially those with special needs have not received corresponding employment services; Secondly, the orientation of talents training objectives in colleges and universities is not clear, and talents are not scientifically trained according to social needs; Thirdly, problems such as outdated employment concept, high expectations of job hunting and insufficient employability of college graduates are widespread; Fourthly, the construction of employment guidance and service system in colleges and universities is not perfect, and college students are inaccurate in self-positioning and lack of effective guidance and help; Fifth, the publicity of employment information in colleges and universities is not in place, timely and comprehensive; Sixth, graduates' satisfaction with employment is low[3-4].

Through an in-depth analysis of the problems existing in the employment of college graduates, we can find that the fundamental reasons are as follows: first, the employment guidance and service system in colleges and universities is not perfect enough, and there is a lack of full coverage of employment guidance and services, which makes college students lack necessary guidance in the process of job hunting; Secondly, the orientation of talents training objectives in colleges and universities is not clear, and talents are not scientifically trained according to social needs, resulting in the lack of employment ability of college students; Thirdly, the propaganda of employment information in colleges and universities is not in place, comprehensive and timely, which makes it difficult for college students to fully understand the employment situation and employment information; Finally, college graduates lack their own employability and are unable to meet the needs of society.

3. Problems in the training of water conservancy and water transport professionals in local engineering colleges

3.1 Training objectives and programs have no characteristics

At present, there is a common phenomenon that the training objectives and training programs are "the same" in local engineering colleges, and the curriculum and teaching content are "one thousand people". At present, the curriculum of water conservancy and water transport major in local engineering colleges basically follows the curriculum system of ordinary undergraduate colleges, and still focuses on computer application practice, engineering management and water conservancy

and water transport, lacking its own characteristics. The teaching mode, teaching methods and means are "the same". Mainly manifested in the single teaching methods and means, the backwardness and lag of teaching methods, and the traditional teaching mode is still dominant. The cultivation of students' practical ability is similar. It is mainly manifested in the lack of practical ability training for students in the talent training plan of water conservancy and water transport major, which leads to the lack of practical ability for students after graduation.

3.2 Curriculum system features are not clear and the content is lagging behind

Through investigation, it is found that the curriculum of water conservancy and water transport major in most local engineering colleges is relatively backward, and it is impossible to establish a distinctive curriculum system of water conservancy and water transport major according to market demand, talent demand and social development needs. Specific performance in the following two aspects:

First, the courses are not set according to the needs of enterprise water conservancy and water transport. There is a common problem in engineering colleges, that is, water conservancy and water transport theory is the main line, which is divorced from enterprise financial practice. In the process of production and operation, enterprises should not only master water conservancy and water transport theory, but more importantly, master advanced production management and operation management methods, and be able to combine these knowledge with their specific practice. The water conservancy and water transport major in engineering colleges lacks this link in the curriculum system and does not integrate this knowledge into the specific teaching practice.

Second, the courses are not set according to the needs of enterprise water conservancy and water transport. Although engineering colleges also offer courses such as Accounting, Statistics and water conservancy and water transport, these courses are too basic, lack of close contact with enterprise water conservancy and water transport, and do not reflect the requirements of enterprise water conservancy and water transport. In undergraduate teaching, many engineering colleges only offer computerized accounting as an elective course, and the course content is limited to simple accounting and bookkeeping. Therefore, the students trained in this case can not meet the social demand for water conservancy and water transport talents. Judging from the curriculum system, the water conservancy and water transport major has not adjusted its curriculum system according to the market demand and the actual situation of enterprises, which has caused the students' knowledge after graduation to be unable to combine with the social reality[5-8].

4. Analysis of the advantages of training water conservancy and water transport professionals in local engineering colleges

4.1 Engineering colleges and universities water conservancy and water transport personnel training objectives and advantages

In order to meet the needs of enterprises, the training goal of water conservancy and water transport talents in engineering colleges needs to train students into compound talents with engineering background, management ability and financial knowledge. In the teaching process, engineering colleges pay attention to "thick foundation and wide caliber". Students should not only learn the basic theory and knowledge of their major, but also pay attention to the knowledge learning of accounting, management, finance and law, and pay attention to the cultivation of practical ability. In the process of personnel training, engineering colleges should make full use of modern information technology, break the boundaries of disciplines, innovate the training mode of water conservancy and water transport professionals, and promote the new mode of water conservancy and water transport personnel training with informationization. According to the

development trend of economic and social development and water conservancy and water transport and the change of enterprise's demand for talents, the curriculum system, teaching content and teaching methods are optimized.

Focusing on improving students' practical ability, we attach importance to the cultivation of students' innovative thinking and practical ability, so that students can have strong professional and professional abilities and better adapt to the needs of future social development. In the course setting, we should focus on strengthening the course contents of innovation and entrepreneurship education, enterprise water conservancy and water transport, international water conservancy and water transport and so on, guided by market demand; Employment-oriented, combined with students' career development needs and future career development direction, constantly adjust and optimize the professional curriculum, highlighting the training direction of applied and compound talents; In teaching methods, we actively adopt various forms such as case teaching, situational teaching and experiential teaching. Pay attention to giving full play to students' dominant position in the teaching process, and actively mobilize students' learning enthusiasm and initiative.

4.2 The advantages of water conservancy and water transport curriculum system in engineering colleges

The curriculum system of water conservancy and water transport major in engineering colleges takes "thick foundation, wide caliber, strong ability and heavy application" as the guiding ideology, and on this basis, it aims at cultivating applied and compound talents, strengthening "thick foundation" and "wide caliber" in knowledge structure, and paying attention to "strong ability" and "heavy application" in professional courses. In the curriculum system, it fully embodies the characteristics of combining theory with practice, combining school education with social practice, and emphasizes the mastery of basic theory and professional knowledge in the professional compulsory curriculum, and highlights the cultivation of professional skills and comprehensive quality; In the elective courses, the cultivation of students' autonomous learning ability and innovative spirit is highlighted, and students can apply what they have learned to their work practice, thus improving their comprehensive quality.

Through the curriculum system, on the one hand, it highlights the cultivation of students' professional knowledge and improves their comprehensive quality; On the other hand, it highlights students' practical ability, innovative ability and teamwork ability. In the curriculum system, the cultivation of students' autonomous learning ability and innovative spirit is highlighted, so that students can flexibly apply what they have learned to their work practice. Through the curriculum system, students not only master theoretical knowledge and professional skills, but also have strong adaptability to work.

4.3 Advantages of engineering and economy practice platform and teacher teaching in engineering colleges

First of all, engineering colleges can cultivate students' practical ability and innovative spirit by building an "engineering+economy" practice platform. In the era of Internet big data, engineering practice is far more than theoretical study and laboratory operation, but also requires students to be closely integrated with industry to solve practical problems. Therefore, the construction of "engineering+economy" practice platform can provide more opportunities for students to cooperate with enterprises, let students participate in the development and implementation of real projects, and cultivate their practical ability and teamwork ability. In addition, through cooperation with enterprises, students can better understand the industry demand and market dynamics and adapt to the job market in advance.

Secondly, optimizing teachers' teaching methods and means is an important way to improve students' accurate employment ability. Teachers are an important force in cultivating students, and

their teaching methods and means directly affect students' learning effect and ability training. In the era of Internet big data, teachers should make full use of the Internet and big data technology to carry out personalized teaching and precise counseling. Through the sharing of online education platform and teaching resources, teachers can better meet students' personalized learning needs and provide targeted guidance and counseling. In addition, teachers can also analyze students' learning situation and employment tendency through Internet big data, adjust teaching contents and methods in time, and help students improve their employment competitiveness[9-12].

In short, the era of Internet big data provides opportunities and challenges for the development of engineering colleges. By building an "engineering+economy" practice platform and optimizing teachers' teaching methods, engineering colleges can better cultivate students' practical ability and comprehensive quality, and improve their precise employment ability. The exploration and practice of this model is of great significance to the development of engineering colleges and the employment prospects of students.

5. Exploring the training mode of water conservancy and water transport professionals in local engineering colleges

5.1 Combining the characteristics of colleges and universities, accurately positioning the personnel training objectives

Local engineering colleges should combine their own school-running characteristics, base themselves on serving local economic and social development, and make clear the talent training objectives under the premise of fully considering the demand of talent market, students' employment positions and development space. In terms of personnel training objectives, local engineering colleges should actively explore the training mode of employment and education according to the demand of social development for talents and the school's own positioning and characteristics, with market demand as the guide, with the core of improving students' core competitiveness as the core, and with students' employment as the guide. In terms of curriculum system, the curriculum of water conservancy and water transport specialty should be divided into two levels: the first level is general courses (including humanities and social sciences and natural sciences) and professional basic courses; The second level is specialized courses (including water conservancy and water transport specialty and water conservancy and water transport specialty direction).

5.2 Optimize the curriculum system to reflect the management characteristics of " economy +technology"

First of all, engineering colleges can adjust the curriculum and add courses related to engineering practice and economic management according to the characteristics of the Internet big data era. For example, courses such as data analysis, cloud computing and artificial intelligence can be added to cultivate students' understanding and application ability of big data on the Internet. At the same time, courses in economic management, such as project management, innovation and entrepreneurship, and marketing, can be added to help students master the knowledge and skills of enterprise management and market operation.

Secondly, engineering colleges can adopt various teaching methods to improve students' practical ability and innovative spirit. Traditional classroom teaching can combine practical cases and project training, so that students can learn and apply knowledge in practical operation. At the same time, teamwork and interdisciplinary teaching methods can be introduced to cultivate students' teamwork ability and comprehensive quality. In addition, with the help of the Internet and online education platform, more learning resources and online courses can be provided to help students learn and practice independently.

In addition, engineering colleges can also cooperate with enterprises to carry out school-enterprise cooperation projects and introduce practical problems into the teaching process. Through cooperation with enterprises, students can directly contact with real engineering projects and economic management cases, deeply understand the actual needs of engineering practice and economic management, and improve their ability and experience in practice.

To sum up, by optimizing the curriculum system and teaching methods, engineering colleges can embody the management characteristics of "engineering+economy" and cultivate students' practical ability and economic management ability. This precise employment and education training mode will enable students to better adapt to the needs of the Internet big data era and improve their employment competitiveness and comprehensive quality. This is of great significance to the development of engineering colleges and the employment prospects of students.

5.3 Training construction: combining online and offline

First of all, online training is an indispensable training mode in the era of Internet big data. Through the construction of online education platform and virtual laboratory, students can study and practice anytime and anywhere. Online education platform can provide rich learning resources, including teaching videos, e-books, online courses, etc., to help students systematically learn relevant knowledge and skills. Virtual laboratory can simulate the real engineering practice environment, let students carry out virtual experiments and simulation projects, and cultivate their practical ability and innovative thinking. In addition, online training can also promote communication and cooperation among students through online discussion and interactive platform, and enhance learning effect.

Secondly, offline training is also an important part of the accurate employment and education training model. Although online training provides flexible learning methods, some practical skills and teamwork ability still need offline training to be cultivated. Engineering colleges can organize practical courses, engineering training, field visits and other forms, so that students can personally participate in engineering projects and feel the challenges and opportunities in the practice process. In addition, by carrying out team cooperation projects and competitions, students can exercise their team cooperation ability and problem-solving ability.

On the whole, it is very important for engineering colleges to combine online and offline in the precise employment and education training mode in the era of Internet big data. Online training provides students with opportunities for autonomous learning and flexible learning, while offline training can provide practical environment and opportunities for teamwork, and cultivate students' practical ability and comprehensive quality. By reasonably combining online and offline training, engineering colleges can better meet the needs of students, improve their employment competitiveness, and enable them to smoothly adapt to the requirements of the Internet big data era.

5.4 Diversified teaching methods

In terms of diversified teaching methods, first of all, the school can encourage teachers to innovate teaching methods, introduce the "flip classroom" teaching method into the course teaching of water conservancy and water transport specialty, and supervise in the process of implementation to ensure classroom order; Secondly, the school can carry out the teaching methods of "online+offline" and "offline+online". For example, in the classroom of water conservancy and water transport, teachers can use the advanced technologies such as online platform teaching platform and Internet big data to combine the knowledge points and cases mentioned in the classroom to carry out online and offline mixed teaching for students; Thirdly, schools can carry out practical teaching methods based on the combination of big data and water conservancy and water transport in water conservancy and water transport courses, such as combining case teaching method and practical project teaching method to study the courses.

6. Conclusion

With the rapid development of Internet and information technology, the employment situation of college graduates is becoming more and more severe. How to use emerging technologies such as big data to help college graduates stand out among many graduates and improve their employment competitiveness is a new topic facing every college. Based on the major of water conservancy and water transport in local engineering colleges, this paper is employment-oriented, and starts with the employment guidance curriculum system, classroom teaching system and school-enterprise cooperation system, and constructs a multi-dimensional curriculum system including employment education, career planning, mental health education, employment and entrepreneurship guidance, etc. Through the "internet plus" technology, students are given personalized career planning guidance and career planning education to help students realize "self-realization", thus improving the employment competitiveness of graduates and delivering more for local economic development.

Acknowledgements

This paper is a research project of the 14th Five-Year Plan for Education and Scientific Research of the Chinese Society of Education. The title of the project is to explore the training mode of precision employment and education in local colleges and universities under the major strategic needs of the country. The project number is JYXH1023304451.

References

[1] Luo Y, Wan J, She S. The Construction and Research of the Platform of Intelligent Sharing Laboratory Based on Big Data[C]//International conference on Big Data Analytics for Cyber-Physical-Systems. Springer, Singapore, 2022. DOI: 10.1007/978-981-16-7466-2_65.

[2] Chen Z, Liang W, Gao X, et al. Research on the Accurate Recommendation Management System for Employment of College Graduates on Hadoop [C]//2019 5th International Conference on Big Data and Information Analytics (BigDIA). 2019. DOI:10.1109/BigDIA. 2019.8802855.

[3] Xuexin Z. A Study on the Integration of Statistics and Computer Science in Big Data Engineering Education [J]. Journal of Xinjiang Normal University (Natural Sciences Edition), 2019.

[4] Hongmei G. Strengthen Moral Education and Cultivate People, Medical Colleges Set up the Modern Education Ideas [J]. Education Modernization, 2018.

[5] Meng-De C. Research on the Talents Training Mode of "Internet +" Innovative Education Under the Background of Big Data[J]. Management & Technology of SME, 2019.

[6] Johns B, Abdi E, Arashpour M. Dynamical modelling of boom tower crane rigging systems: model selection for construction [J]. Archives of Civil and Mechanical Engineering, 2023, 23(3). DOI:10.1007/s43452-023-00702-x.

[7] Haghbin N, Bakhshipour A, Zareiforoush H, et al. Non-destructive pre-symptomatic detection of gray mold infection in kiwifruit using hyperspectral data and chemometrics [J]. Plant Methods, 2023, 19(1). DOI: 10. 1186/ s13007-023-01032-y.

[8] Angira M. Accurate dynamic response expressions for electrostatically actuated RF-MEMS switches with damping effect [J]. International Journal of Information Technology, 2023, 15(4): 2133-2137. DOI: 10. 1007/ s41870-023 -01276-w.

[9] Jeong G H, Lee H W, Yoon T Y, et al. Model predictive current control with modified discrete space vector modulation for three-leg two-phase VSI [J]. Journal of Power Electronics, 2023, 23(6): 881-891. DOI: 10. 1007/ s43236-023-00636-w.

[10] Xuehua L, Yongmei L. Research on online and offline mixed teaching mode—Taking the teaching of single chip microcomputer course of Internet of things engineering as an example [C]//International Conference on Big Data and Informatization Education. IEEE, 2021. DOI:10.1109/ICBDIE52740. 2021.00011.

[11] Stewart C A, Costa C M, Wernert J A, et al. Use of accounting concepts to study research: return on investment in XSEDE, a US cyberinfrastructure service [J]. Scientometrics, 2023, 128(6): 3225-3255. DOI: 10.1007/ s11192 -022-04539-8.

[12] Tian R. Dynamic Adjustment Mechanism of Specialty Setting in Application Oriented Universities Under the Background of Big Data [J]. Journal of Physics: Conference Series, 2021, 1744(4):042136 (7pp). DOI: 10. 1088/ 1742-6596/1744/4/042136.