ISSN 2616-7433 Vol. 4, Issue 10: 1-5, DOI: 10.25236/FSST.2022.041001

Research and Practice on Big Data Talent Cultivation Based on Craftsman Workshop

Yalin Wu[1,*], Taizhi Lv[1]

[1]School of Information Technology, Jiangsu Maritime Institute, Nanjing, Jiangsu, 211170, China
**Corresponding author: 542009943@163.com*

Abstract: *The national vocational education reform implementation plan proposes that vocational education should cultivate and inherit the spirit of craftsmanship. The craftsmanship workshop is a talent cultivation base with the double tutors, enterprise tutors and college tutors. It is a new modern apprenticeship implementation with Chinese characteristics. The big data technology major takes the craftsmanship workshop as the carrier which is jointly taught by teachers and enterprise masters. According to the modern apprenticeship talent cultivation mode, big data technology skilled talents with craftsmanship spirit and exquisite skills is cultivated. Through the construction of workshops, it is conducive to the supply side reform of big data technology in vocational education, and helps higher vocational colleges to explore the training methods of vocational skilled talents that meet the enterprise requirements.*

Keywords: *Big data technology, Craftsmanship workshop, Modern apprenticeship, Craftsmanship spirit, Higher vocational colleges*

1. Introduction

With the development of the new generation of information technology, the amount of data is growing exponentially [1]. Big data technology has become an important way for China to enhance international competitiveness, safeguard national security, transform the mode of economic development, and drive the growth of emerging economies. It is also an important means for regions to promote the transformation and upgrading of industrial structure and accelerate the transformation of the mode of economic development [2-3]. The vigorous development of big data industry has created a strong demand for talents. In terms of big data talent training, the country puts forward an overall requirement to establish a talent training and evaluation mechanism that meets the needs of big data development. To meet the needs of the big data industry, students are required to develop all aspects of quality in a coordinated and comprehensive way, systematically master the basic theory and methods of big data technology, obtain the necessary knowledge system structure and basic skills for big data engineers, and have patriotism, innovation awareness, practical ability and a certain international perspective. As the main position of technical and skilled personnel training, the big data technology major of higher vocational education should actively respond to a new round of scientific and technological revolution and industrial reform, carefully arrange around new technologies, new industries, new business types and new models, and concentrate on refining the engineering and technical personnel training system. The specialty should infiltrate the craftsman spirit into the professional teaching and education, interprets the craftsman spirit with rich teaching practice and strict professional standards, stimulates the enthusiasm of teachers and students for learning skills, strives to cultivate comprehensive talents with high quality, high technology, and craftsman spirit, and comprehensively improves the education quality.

Craftsman workshop is a product of school enterprise production and education integration based on modern apprenticeship which is based on project task driven system [4]. The core concept of craftsmanship workshop is to take workshop as the carrier, introduce real work scenarios, real engineering cases, real work processes and real commercial projects into the classroom, which is an extension of enterprise production and development institutions [5]. In accordance with the modern apprenticeship talent training mode, skilled talents with craftsmanship spirit and exquisite skills are cultivated. In order to improve the training quality of big data talents, the big data technology specialty of Jiangsu Maritime Institute cooperates with enterprises to create a big data craftsmanship workshop. Relying on the workshop as the carrier and by the joint teaching of teachers and enterprise masters, students are mainly trained in skills according to the modern apprenticeship talent training mode. At the

ISSN 2616-7433 Vol. 4, Issue 10: 1-5, DOI: 10.25236/FSST.2022.041001

same time, the enterprise introduces real work scenarios, real project cases, real work processes and real commercial projects into the workshop, so as to realize the connection between professional settings and industrial needs, and cultivate compound and innovative talents to meet the needs of enterprise development.

2. The significance of big data craftsmanship workshop construction

On the one hand, the big data craftsmanship workshop is set up to cultivate high technical and skilled talents in the industry field, and on the other hand, it serves as a support platform for the joint development of engineering projects and innovation projects between schools and enterprises. The college is responsible for the daily use and operation of the craftsmanship workshop. The enterprise engineers provide regular on-site services. The teachers and students in the workshop form a team to complete the planned teaching tasks and project development tasks.

2.1. An important means for educational supply-front reform

Vocational education also needs supply side reform to solve the current development dilemma and improve the quality of education. Making efforts on the supply side means that higher vocational big data education should improve the quality, link, and effectiveness of education. The effective integration of craftsmanship spirit into the training of big data skilled talents in higher vocational colleges is an effective means of supply side reform. Through the cultivation of craftsmanship spirit, it can strengthen the quality management of education, improve employability, enhance the overall image of higher vocational education, and effectively promote the development of higher vocational big data vocational education from the supply side [6].

2.2. An important carrier for integration between industry and education

Through the joint construction of craftsmanship workshops in schools and enterprises, an innovative education model that combines work with learning and integrates production with learning is created [7]. The workshop takes specific projects as the carrier, takes work tasks as the driving force, organically combines theory with practice, so that students can master knowledge and skills in the process of completing tasks; At the same time, the workshop also gives full play to the talents and discipline advantages of colleges and universities. As a project incubator in the college, it actively opens professional industries, closely combines industry with teaching, and realizes the active integration of colleges and universities into local economy and local construction.

2.3. An important channel for cooperation between schools and enterprises

Through special technical cooperation and innovation and entrepreneurship project research, enterprises and universities have established in-depth scientific research cooperation, carried out research on big data cutting-edge technology and joint development of scientific research projects, and explored the way of industry university research innovation cooperation.

2.4. An important platform for social services

Serving the society and promoting the development of local economy and culture is not only one of the social functions that colleges and universities must perform, but also the internal requirement for colleges and universities to survive and develop. Building a public service platform in the Internet era is a necessary means and the only way for colleges and universities to communicate with foreign countries, share information, promote achievements, and provide social services. Through the joint efforts of schools and enterprises, we will build a big data craftsmanship workshop that can provide services to the society, form a work platform that connects industries, combines production with learning, and combines work with learning, realize the integration of education and research, innovative application development, product operation, entrepreneurship and promotion and other social public service applications, and strengthen professional social service capabilities.

ISSN 2616-7433 Vol. 4, Issue 10: 1-5, DOI: 10.25236/FSST.2022.041001

3. The practice of big data craftsmanship workshop construction

3.1. Construction ideas

The school and the enterprise jointly build workshops. Through the introduction of enterprise technical backbone, the construction of project-based curriculum resources, the introduction of real business projects, the school enterprise scientific research cooperation and other ways, the school builds a workshop team composed of enterprise engineers, teachers, and students to jointly complete the innovation of enterprise technical services and participate in the research and development of horizontal projects in foreign industries. Through the accumulation of project experience, teachers' professional skills, scientific research ability and social service ability have been improved, and students' professional and technical skills have been improved.

3.2. Construction path

The school and enterprise cooperate to build a modern apprenticeship based talent training project for the big data technology major. In terms of curriculum, real business project cases and real business project tasks are integrated into the curriculum content. The teaching process is completed by the real project development process. The integrated modular teaching is adopted to enable students' professional skills to receive phased training through each module. The whole teaching process is connected with the production process. The theory and practice are closely combined. The talent training is seamlessly connected with the needs of professional posts to improve the quality and pertinence of talent training.In terms of teaching mode, school and enterprise sports personnel are employed to build teacher + engineer double tutors for workshop students while students are as apprentice + student. The college selects excellent teachers for each workshop as full-time teachers in the workshop to engage in teaching and management of the workshop. At the same time, technical engineers are introduced from enterprises as part-time teachers to guide workshop students to complete production, teaching, scientific research, and other related tasks.

As shown in Figure 1, the major adopts the mode of school enterprise cooperation and collaborative training, adhere to the educational concept of internal training and external introduction, give full play to the respective advantages of higher vocational colleges and excellent front-line enterprises.

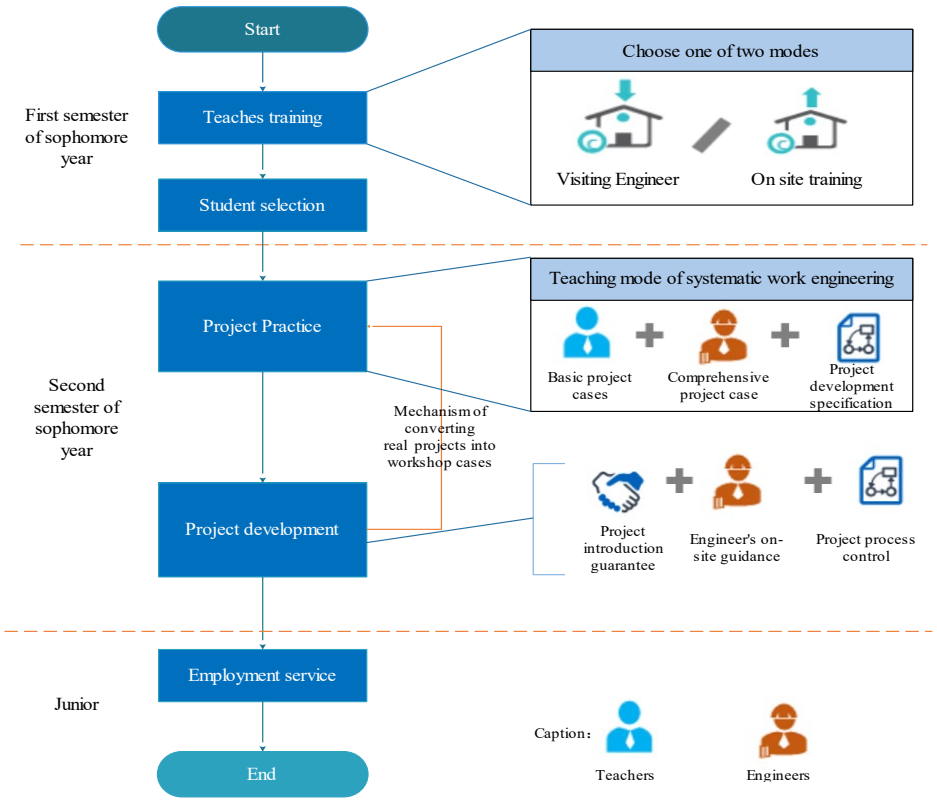

Figure 1: Construction Path of Big Data Craftsman Workshop.

ISSN 2616-7433 Vol. 4, Issue 10: 1-5, DOI: 10.25236/FSST.2022.041001

4. The effect of big data craftsmanship workshop construction

4.1. Establish a talent training system that meets the needs of the industry

The enterprise uses its own industry advantages to establish a talent training system that meets the needs of cloud computing and public cloud enterprises with the college. In the process of formulating the talent training plan, the enterprise cooperates with the college to conduct professional research, sort out the core positions and professional abilities of the enterprise, and formulate and demonstrate a reasonable talent training plan. At the plan implementation level, the enterprise undertakes the implementation of core professional courses and training, and workshops can introduce enterprise professional quality training. Through the construction of big data workshop, the major has won the first prize twice in big data technology and application of the national vocational college skills competition.

4.2. Innovate project type talent training mode

With the basic idea of systematizing the working process, the vocational education curriculum reform is carried out. The teaching is integrated into the real project cases and project practice in the industry, and students' learning tasks are completed step by step through the project realization process. This model can deepen the reform of the school running system and mechanism of colleges and universities, stimulate the vitality of teachers in running schools, and serve the regional economic development; At the same time, it can stimulate students' interest, cultivate students' comprehensive professional ability, and adapt to social development. The workshop has absorbed the employment of outstanding graduates, effectively expanded the employment channels for graduates, and improved the employment quality of graduates.

4.3. Realizing the role transformation of teachers and students

The teaching mode of craftsmanship workshop has an open atmosphere, clear teaching objectives and flexible teaching forms, which can well promote the exchange and sharing of professional knowledge among students, and is an important realization form and teaching carrier for cultivating students' craftsmanship spirit. The workshop teaching mode based on craftsman spirit takes cultivating students' craftsman spirit as the ultimate goal. By closely combining practice and giving play to students' main role as the support and means, through cooperation and team learning, the traditional dominant position of teachers is shifted to the counseling position, while students are passive to the initiative. The teaching form is shifted from individual learning to group learning, and the performance assessment form is shifted from the traditional focus on results to both process and results, Finally, the role of teachers and students will be changed and the classroom model will be changed.

5. Conclusion

With the expansion and development of higher education, vocational education has achieved a leap in scale, but the rapid development of higher vocational education has not received sufficient social recognition, and the overall level of vocational students is still poor. The contradiction between the rapid development of information technology and the level of vocational college students leads to the lack of autonomy and initiative of vocational IT students, the lack of the spirit of hard study and excellence, and the lack of career goals and ideals. Therefore, it is more necessary to reform and innovate the big data talent training model in vocational colleges.

The big data technology major takes school enterprise cooperation as the main line, project research as the entry point, craftsmanship workshops as the bridge, around the cultivation and training of students' professional practical ability and innovation and entrepreneurship quality, under the premise of improving the overall teaching quality, it establishes a scientific skills training system and normal training mechanism, and organically combines skills competition with teaching reform, school enterprise cooperation, and high skilled personnel training. The construction of big data craftsmanship workshop will help to continuously improve the quality of talent training and the ability of professional service industry, and enhance professional core competitiveness

ISSN 2616-7433 Vol. 4, Issue 10: 1-5, DOI: 10.25236/FSST.2022.041001

Acknowledgements

This work was financially supported by the funding of the Fundamental Computer Education Teaching Research Project (2021-AFCEC-285) of the Association of Fundamental Computing Education in Chinese Universities, the Party Building Research Project of Jiangsu Maritime Institute (Y2021015), the Young Academic Leaders for QingLan Project of the Jiangsu Higher Education Institutions of China.

References

[1] Al-Sai, Zaher Ali, and Laith Mohammad Abualigah. "Big data and E-government: A review." in Procedding of the 2017 8th international conference on information technology (ICIT). IEEE, 2017: 580-587.

[2] Li, Jingran, et al. "Big data in product lifecycle management." The International Journal of Advanced Manufacturing Technology 81.1 (2015): 667-684.

[3] Zhang Tao, et al. "Enterprise digital transformation and production efficiency: Mechanism analysis and empirical research." Economic Research-Ekonomska Istraživanja 35.1 (2022): 2781-2792.

[4] Xianwei Xue, et al. "Design of cloud learning work order system for software workshop application." in Procedding of the 2021 4th International Conference on Advanced Electronic Materials, Computers and Software Engineering (AEMCSE). IEEE, 2021.

[5] Kim, Insook. "Exploring changes to a teacher's teaching practices and student learning through a volleyball content knowledge workshop." European Physical Education Review 22.2 (2016): 225-242.

[6] Zhang, Kate-Yue, and Jean-Luc Cerdin. "The Chinese Apprenticeship Model: The Spirit of Craftsmanship." The Success of Apprenticeships: Views of Stakeholders on Training and Learning 3(2020): 187-192.

[7] Lv, Jing. "Research and Practices of Scientific Research Services of Local Higher Vocational Colleges." 4th International Symposium on Social Science (ISSS 2018). Atlantis Press, 2018: 685-688.