

# Exploring the Path of "Dual-teacher" Faculty Construction in the Context of School-enterprise Cooperation

## -- Take the Data Science and Big Data Technology Program as an Example

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### Abstract

In today's society, big data technology is booming and there is a huge talent shortage in the big data industry, which puts forward new requirements for the training of talents in data science and big data technology. The construction of faculty team of big data majors is facing unprecedented challenges. In the background of school-enterprise cooperation, the problems of "dual-teacher" team construction of big data majors are analyzed. The advantages of both schools and enterprises are fully utilized, and the path and strategy of "dual-teacher" team construction of big data majors are proposed, which is of guiding significance to the teacher team construction of big data majors. It has the significance of guidance.

### Keywords

School-enterprise Cooperation; Faculty Development; Dual-teacher.

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## 1. Introduction

At present, with the exponential growth of network data, data science is growing fast. With the rapid growth of the data industry, human society has entered the era of big data. Big data is changing people's lives and ways of thinking. In the year of 2014, big data was written into the government work report for the first time. The State Council issued the "Action Plan for Promoting the Development of Big Data" in 2015. In 2016, the Ministry of Education established the undergraduate major of "Data Science and Big Data Technology" for the first time. With the development in recent years, China's big data industry has entered the fast lane of development, and there is an explosive growth trend for talent training and industry demand [1]. For colleges and universities, the major of data science and big data technology is both an interdisciplinary and emerging major, which faces the problems of weak faculty, insufficient resources for big data experiments and practice, little practical experience of teachers in big data enterprises, lack of data volume for teaching experiments and practice, insufficient industry knowledge, and fewer senior and mature big data enterprises. Therefore, how to build a "double-teacher" teacher team with high quality and a knowledge structure close to the industry needs is a problem that needs to be solved urgently in university education.

## 2. The Role of School-enterprise Cooperation in the Cultivation of Talents in Data Science and Big Data Technology

School-enterprise cooperation is an important way to cultivate applied talents in colleges and universities, and it is also an important means for schools to understand the demand of talents in the industry, and an effective way for enterprises to obtain talents. First of all, school-enterprise

cooperation in collaborative education can enable universities to give full play to their advantages in general education and basic theory education, lay a solid theoretical foundation and quality foundation for students, and cultivate students' professionalism in multiple directions [2]. University-enterprise cooperation can enable enterprises to play the advantages of rich practical experience in big data technology and being at the forefront of technology. Secondly, by participating in the formulation of talent training programs of colleges and universities, enterprises can make the talent training objectives and curriculum settings of colleges and universities more reasonable, so that the talents cultivated by colleges and universities can better meet the needs of enterprises. In addition, engineering experts from enterprises can make up for the shortage of "strong theory and weak practice" of teachers in colleges and universities and help them to understand cutting-edge technology. Cooperation between universities and enterprises in student internship and employment can not only help students improve their practical skills, but also make up for the talent gap of enterprises.

In the training of talents in data science and big data technology, professional technology is changing rapidly. Enterprise technology is more advanced than the school. The school-enterprise cooperation mode plays an important role to keep in line with the society. Through school-enterprise cooperation, schools can greatly enhance the "dual-teacher" training, which is conducive to promoting the updating of teachers' knowledge structure and knowledge reserves, helping to improve teachers' practical hands-on ability, as well as allowing teachers to fully combine theory and practice, and improve the quality of teachers' teaching. In turn, enterprises can speed up their technological renewal, improve production capacity and promote effective economic growth through university-enterprise cooperation. To sum up, the cooperation between campus and enterprises in teacher training for college teachers through school-enterprise cooperation is mutually beneficial and of great importance to both schools and enterprises.

### **3. The Current Situation of "Dual-teacher" Faculty Construction in Data Science and Big Data Technology**

#### **(1) Lack of faculty with both theoretical and practical engineering application skills**

At present, teachers specializing in data science and big data technology generally have higher education, and teachers have the certain academic ability. However, the professional practical knowledge and engineering practice experience are relatively lacking, and they are not particularly well versed in market demand and industry norms. There are fewer "dual-teacher" and "dual-competent" teachers. Some teachers are from one school to another and do not have mature data processing and data mining experience, so they often teach practical courses on paper and cannot deeply analyze and explain the difficulties in practical applications, which cannot meet the needs of big data technology personnel training. The teachers who are experienced in working in enterprises are often lacking in theoretical foundation and teaching level.

#### **(2) Lack of management mechanism of "dual-teacher" training and planning of training system**

Many applied colleges and universities do not pay attention to the improvement of training mechanism and training system when training "dual-teacher". The teacher development management center of the school does not pay attention to the training mechanism of "dual-teacher" so that the teacher training activities are biased to the training of teaching methods in terms of content. As a result, the content of teacher training activities is focused on the training of teaching methods, and there are situations such as poor practical relevance of training contents, overlapping and repetitive training contents, random design of training modules, and disconnection between training instructors and enterprise practice [3]. In the form of training activities, there are also monotonous forms, no comprehensive understanding of teachers to design training activities, and no targeted training activities for teachers at different levels, resulting in a lack of scientific rationality. These are not conducive to the cultivation of "dual-teacher" and the cultivation of teachers' practical ability and practical teaching literacy. In the teaching activities, the practical teaching cannot be well integrated

into the theoretical teaching, which leads to the failure to achieve the goal of cultivating applied undergraduate talents.

(3) Teachers do not have a deep understanding of the "dual-teacher" faculty

Teachers are recognized as "dual-teacher" when they hold a teaching certificate and a professional qualification certificate, and this misunderstanding of the connotation of "dual-teacher" is extremely detrimental to the cultivation of teachers' practical teaching ability [4]. The fact that a teacher holds a professional qualification does not mean that he or she has a strong practical ability, and it does not mean that he or she has a high level of guiding students in practical activities. If a teacher obtains the software designer qualification through the examination, but does not engage in software design and development, nor has considerable project experience, and still stays in the mastery of theory, such a "dual-teacher" is not worthy of the name. Therefore, a "dual-teacher" should have both the certificate as a face and the practical ability as a base.

#### **4. The Construction Path of "Dual-teacher" Team in Data Science and Big Data Technology in the Context of School-enterprise Cooperation**

(1) Change the concept of education, improve ideological understanding, and promote teachers' practical ability

From the perspective of individual teachers, the school-enterprise cooperation model provides a high-quality practical learning platform for teachers. Teachers need to change their inherent educational concepts, pay attention to the development of their own "dual-teacher" ability and change their misconceptions about "dual-teacher". Teachers should realize the importance and necessity of becoming a "dual-teacher" from their thoughts and actions. They should adjust their career plans from the actual needs. From the perspective of government, enterprises, and schools, they should also update their educational concepts, actively provide different development channels for teachers to improve their comprehension skills, broaden the ways for teachers to improve their skills, and increase their enthusiasm for training. In school-enterprise cooperation, teachers in colleges and universities should make full use of the opportunities provided by enterprises to actively participate in practice, continuously improve their practical ability and make the skills and knowledge they learn serve their teaching. Make use of the summer and winter time to actively go deep into the enterprises for attachment, exchange experience with the industrial engineers, and use their specialties to provide support for enterprises. The engineers of enterprises can go deep into the front line of teaching and provide valuable opinions for the curriculum reform of the institutions with their rich experience through such means as changing teaching positions.

(2) Strengthen school-enterprise cooperation and improve teacher training mechanism

Enterprises are the main site of "dual-teacher" training, and also the recipient of talents delivered by schools. They are the core force to promote schools to industry and market demand. To build a mature school-enterprise cooperation mode, it is necessary to clarify the core position of enterprises in the construction of "dual-teacher", respect the main position of enterprises in the construction of "dual-teacher", and enhance the active participation of enterprises in the construction of "dual-teacher". In addition, in the school-enterprise cooperation, the university and the enterprise will cooperate and build a community of interests. In addition, in the cooperation between schools and enterprises, the school should improve the training and evaluation system, stipulate the training and assessment tasks of teachers, establish a lifelong learning support service system for teachers, guide teachers to continuously enrich new knowledge in professional fields, make up for the defects and deficiencies of their skills, and improve the comprehensive ability of teachers in all aspects.

(3) Build a shared teaching platform and implement resource sharing

In the context of school-enterprise cooperation, a public "dual-teacher" resource sharing platform should be organized by the enterprise sector, and a column for course learning and practical training should be established by subject and course modules. At the same time, schools should take the

initiative to invite engineers from enterprises into their schools to conduct training for teachers in the classroom through the network platform. Supporting the construction of a data platform for “dual-teacher” needs to call on our teachers to actively enroll and participate in the training, and encourage our teachers to share their experiences. In addition, the government should give policy support to communication, exchange, and cooperation between institutions and enterprises. They should help schools and enterprises to collect real teaching cases for actual teaching, and encourage schools to design and develop professional teaching materials that are practical and meet the actual needs of the industry.

#### (4) Cooperation between schools and enterprises to develop “dual-teacher” training programs

To cultivate excellent “dual-teacher” in data science and big data technology, we should update our concept and think to explore high-quality enterprises for cooperation. For example, Tencent Cloud, an enterprise with senior experience in the field of big data technology, should be taken as the target of school-enterprise cooperation. They have the ability to redesign the training curriculum system, introduce enterprise-level data mining and data analysis courses, and design perfect curriculum modules for teachers at different levels. The course modules can cover all stages of teachers' professional life, meet the actual needs of teachers' professional development, and can be continuously optimized and improved in response to changes in the actual situation.

#### (5) Adopting a two-way training path of "sending out and bringing in"

Firstly, according to the structure of professional teachers, some young teachers are selected to go to enterprises for on-the-job practice and cooperate with enterprises to declare horizontal projects. Full-time teachers with the practical ability and theoretical foundation are selected to engage in professional skills training, scientific research and product development at the front line of industrial enterprises to improve teachers' social application ability; Secondly, according to the characteristics of data science and big data technology, technical experts from enterprises and engineering technicians with rich practical experience are hired as part-time teachers to enter the campus. Then, a professional industry tutor team is formed to create a "double-teacher" teacher team with the reasonable structure of both full-time and part-time ratio.

## 5. Conclusion

The teacher team construction of data science and big data majors determines the quality of talent training. The school-enterprise cooperation plays an important role in the construction of "double-teacher" teachers. This paper analyzes the advantages of school-enterprise cooperation and the problems of “dual-teacher” team construction and proposes the path of building a “dual-teacher” team in data science and big data technology, which is of great practical significance.

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