

The path and effect of training and improving practical ability of applied undergraduate data science and big Data teachers

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Abstract: At present, application-oriented undergraduate data science and big data major generally faces the problem of shortage of teachers, lack of practical teaching ability of teachers, lack of practical application ability of graduates, can not meet the needs of employers, and need to go through enterprise training before taking jobs. On the one hand, applied undergraduate can not copy a college training program and teaching mode, should be based on the training objectives of applied undergraduate and market employment demand timely revision of personnel training program, curriculum system and teaching mode. On the other hand, local application-oriented undergraduate big data major teachers are weak, lack of big data technology training environment and slightly lag behind, improve the teaching level of big data teachers, especially the practical ability of teachers is imminent. This paper first analyzes the teaching status and problems of big data major practical courses in our school, and classifies the practical courses of big data major according to the training direction according to the practical curriculum system. Secondly, it puts forward the ways and methods to improve the practical ability of big data major teachers in our school, and shows the effectiveness of school-enterprise cooperation in cultivating the practical ability of big data major teachers in our school.

Key words: Data science and big data specialty; Practical curriculum system; School-enterprise cooperation; Practical ability; Artificial intelligence

I. Introduction

In order to respond to the major national strategy and promote the development of new engineering with multi-disciplinary and multi-industry cross-integration combining data technology and industrial application, it is particularly urgent to explore the training of big data talents with both data knowledge and application vision under the new situation. At the same time, the importance of practical teaching should be highlighted. Therefore, the construction of the practical teaching system of big data technology and application should be aimed at cultivating big data technical talents to meet the needs of the industry for big data application talents. Our university is a private application-oriented undergraduate in Guizhou province, and the major of big data began to enroll students in 2018. At present, there is a shortage of big data teachers, most of whom are computer or statistics teachers and lack practical experience in big data. Therefore, it is very important to provide training opportunities and platforms for teachers to improve their professional and practical ability. Young teachers are organized to participate in big data online or offline training inside and outside the school in stages, strengthen the communication between colleges and enterprises, promote the development of young professional teachers in colleges and universities, improve the ability of teachers, and help teachers grasp the current social needs and the needs of enterprises for post technology.

II. The teaching status and problems of big data professional practice course

1. Teaching status of big Data professional practice course

In the teaching of big data in our university, there are often the following three problems: First, there is a lack of big data experiment and analysis cloud platform, and teachers only prefer the experimental teaching of crawler, Numpy or Matplotlib, collection, analysis and visualization of basic data of machine learning. There are few teachers who are qualified for big data practice courses Hadoop, Spark and Hbase; Second, parallel and distributed curriculum practice lacks hardware and software platforms and completed practical training projects. The third is the lack of cross-integration of artificial intelligence and big data practice courses.

2. Problems faced by big data professional practice courses

Big Data professional practice courses are classified into: comprehensive practice of big data architecture, comprehensive practice of big data analysis, machine learning and artificial intelligence, database system and data warehouse, distributed computing and parallel computing, big data platform and programming practice. These practical technology courses need to build practical training platforms and big data tools, as well as dual-qualified teachers with experience in big data projects. Our faculty alone cannot meet the demands of computer experiments, course design, practice training, scientific research training and other aspects.

III. Reform the big data professional practice course system

1. Establish a practical teaching system suitable for big data major of our university

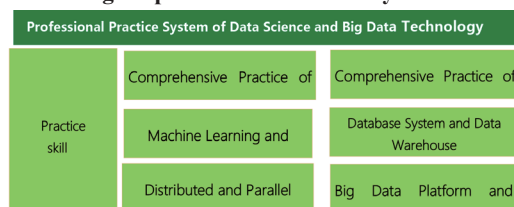
In recent years, the Ministry of Education and the National Development and Reform Commission have repeatedly emphasized and proposed guiding directions and opinions for the future transformation and development of institutions of higher learning, clearly pointing out that universities should focus on innovation-driven development, Internet +, innovation and entrepreneurship, the "Belt and Road" and other important national policies to identify the strength and breakthrough points of transformation and development. To provide higher value for the society and the country to train higher quality talents to better serve the society. This requires colleges and universities to add big data technology and application majors at the same time, actively do a good job in the construction of teaching system, in order to better train higher quality scientific and technological talents to do a good job, and actively explore a variety of education and teaching modes in teaching practice, especially innovative application, technical

and skilled personnel training mode. In the construction process of the practical teaching system, the practical teaching system should be divided into several parts from the level of course experiment, semester practical training, professional internship, enterprise internship, graduation design and extracurricular practical training expansion. The course experiment is the cornerstone of the whole practical teaching system. It is composed of simple verification experiment and design experiment. The purpose is to deepen the understanding of the course theoretical knowledge and train the basic practical skills. Under the guidance of practical application, the theme of practical courses is very important. Adding practical training for engineering projects and semester practical training is a kind of comprehensive and phased practical training, which is a teaching method to test students' comprehensive theoretical knowledge and practical ability. This kind of concentrated practical training can deepen students' understanding of the major and the familiarity of professional skills, and reflect and give feedback on the problems encountered in practice, and improve students' comprehensive literacy.

2. Classification of practical curriculum system

To construct the practical teaching system of "Data Science and Big Data Technology" specialty, three aspects should be considered: (1) the relationship between practical teaching system and professional ability training; (2) the relationship between practical teaching system and big data technology system; (3) The role of practical teaching system construction on enterprises.

Figure practical curriculum system



IV. Ways and implementation of big Data professional teachers' practical ability improvement

The rapid development of digital economy construction in Guizhou has led to the shortage of big data teachers. The strategy of "internal training and external recruitment and multi-disciplinary integration" is adopted. As the name suggests, "internal training" is used to train internal teachers. Professional teachers can be trained on big data application methods by hiring experts from other universities or searching for high-quality course resources online. "External introduction" refers to the introduction of high-quality external resources. Professionals from big data-related enterprises can be recruited for training, so that they can have the teaching ability of new engineering. "Expanding recruitment" means to broaden the channels of teachers. By improving the treatment of teachers, we can increase recruitment efforts, recruit high-level talents in related majors, and improve the overall level of teachers.

1. Strengthen cooperation between schools and enterprises

In order to highlight the importance of practical teaching, cultivate students' practical ability in practice, and solve the adverse effects such as lack of teachers and lack of practical experience, Guiyang College of Humanities and Science and Technology has adopted the professional training mode of "Data Science and Big Data Technology" jointly built with Huike Group. Guiyang College of Humanities and Science and Technology and Huike Group actively integrate resources, with the characteristics of "enterprise entrance, student workshop and practical training", pay attention to students' practical skills training and enterprise project practice, realize the "seamless" docking of on-campus learning and skills training with industrial employment needs, and realize the real concept of "learning to do, learning to do" integration of production and education. To train technical personnel who can be employed in similar fields (high quality) of the profession. First year: not only arrange basic theory courses, but also intersperse professional lectures and extension courses, so that students can have a comprehensive and clear understanding of the professional industry in advance;

The second and third grades: complete the basic courses and core courses of the major and carry out practical courses of the project, on this basis, add unique enterprise practical courses to improve students' practical ability, help students deepen the real environment experience of the enterprise and enhance the cultivation of comprehensive practical ability;

Fourth grade: students will take one semester of on-the-job practice to better serve the regional economy, train application-oriented and technical talents, improve students' employability and adapt to the needs of market economy.

2. Teachers participate in the training of big data practice course during the holiday

Teachers use the holidays to participate in online or offline training courses organized by enterprises, including: data crawling, data cleaning, data warehouse, data mining, natural language processing, machine learning, deep learning, big data platform practice and data visualization technology, and participate in the project comprehensive practical training. After the training, the teachers can obtain the professional qualification certificate of the relevant big data industry by taking the examination of the Ministry of Industry and Information Technology.

3. Set up a big data enterprise studio, and encourage teachers to actively apply for big data-related scientific research projects and write practical textbooks

The school actively encourages and supports faculty within the school and enterprise teachers to jointly lead students to practical projects and scientific research projects, so that students can master big data technology through projects. The joint writing of big data practice textbooks by teachers from schools and enterprises can be used for big data experiment courses on the one hand, and enhance teachers' practical ability on the other hand.

4. School-enterprise joint teachers to take students to graduation practical training design and work combination project

PBL project-based teaching model has produced a total of various projects, and the real project of work-integrated collaborative

education model comes from more than 10 enterprises such as Beijing Jiechuanggrong Information Technology Co., LTD., Guiyang Beidou Maker Space, Guiyang Zeyang Software Co., LTD., and Guiyang Branch of Telecom Design Institute, which enriches teachers' project resources and improves teachers' practical teaching ability.

V. The effectiveness of school-enterprise cooperation in training the practical ability of teachers specializing in big data

1. Introduction of resources

Jointly build a training base for the integration of production and education, build three platforms and six kinds of space for the introduction of hardware and software teaching environment and industrial resources, and jointly build talents by introducing Huawei to promote the integration of production and education, school-enterprise cooperation, and cultivate digital professionals.

2. Implementation of practical course teaching

In the teaching process, the school and enterprise establish a project group to create a talent training program with the characteristics of an industry enterprise. PBL project-based teaching and work-study education model are adopted to jointly carry out industrial engineers into the classroom, and talent training is closely combined with industry practice.

3. The effect of joint training of teachers

School-enterprise cooperation has been approved three projects of the Ministry of Education's "Industry-University Cooperation and Collaborative Education" project to empower school teachers, and jointly research "Golden course" Huike college teacher training with professional teachers of the college, helping the college teacher team construction and the improvement of teachers' teaching level. The enterprise college teacher training helps the college teacher team construction and the improvement of teacher teaching level.

4. Construction of training bases and training platforms

Big Data and artificial Intelligence production and Education Integration Training base is built by Guiyang College of Humanities and Science and Technology, Jinshan Cloud and Huike by actively integrating resources to build big data and artificial intelligence production and education integration training base, forming a model of production, school and enterprise joint construction, focusing on professional practical skills training and empowering students. The center is composed of the Linglu Experiment digital platform, Candelu teaching and research digital platform, Deer operation digital platform, big data and artificial intelligence training room, enterprise exhibition hall, intelligent meeting room, smart classroom, enterprise studio and student workshop.

It serves a variety of education and teaching scenarios: theoretical course teaching, experimental course teaching, student innovation practice activities, enterprise office practice training, small-class meeting discussion, mixed interactive teaching, MOOCs live teaching and other traditional and modern fusion scenes. Introduce enterprises to the base and let the project land in the base.

5. Teachers lead students in discipline competitions

Through the joint training of schools and enterprises, in the process of cultivating students, not only pay attention to the cultivation of students' professional ability, but also pay attention to the cultivation of students' ideological and political awareness and vocational ability. The students have won more than 300 professional competitions, more than 800 ideological and political and vocational competitions, and won the national second prize, the national third prize and provincial awards in the Guizhou section of the National Statistical Modeling Contest for College students.

VI. Summary

In the past two years, the Big Data major of Guiyang College of Humanities and Science and Technology has adjusted its training program and practical course system according to its own and professional training objectives and market needs, focusing on students' practical teaching and the construction of software and hardware platforms. Through the joint training of students and teachers by the university and enterprise, the construction of online experiment platform, the introduction of a number of enterprise work-study projects, and the construction of student factories and studios, Guiyang University has taken the lead in the evaluation of big data majors in local universities in Guizhou. In the future, we will continue to cooperate with enterprises to build new courses, provide internship and practical training opportunities for students inside and outside the school, introduce engineering certification, and strive to build big data major into a "first-class major" in the province and contribute to the economic development of Guizhou.

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