

Teaching Mode Reform and Practice Exploration of Big Data Processing and Analysis under the Background of Industry and Education Integration

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Abstract: *The background of integration of industry and education has brought new ideas to the innovation of university curriculum implementation mode. The implementation of university curriculum under the background of integration of industry and education should promote the unity of teachers' curriculum teaching and production practice process, the support of students' professional quality and production practice quality, and the integration of teaching evaluation system and practice quality evaluation. In order to further improve the teaching quality, focus on cultivating students' professional skills, and deepen students' understanding of the actual production of the industry, a new attempt was made to build the course Big Data Processing and Analysis. The learning mode of "enterprise+classroom" is adopted to cooperate with the factory site visit; a lecture hall, experimental courses, curriculum design related to intelligent driving and final assignments have been added to further strengthen the integration of teaching and industry, improve students' ability to combine theory with practice, and cultivate versatile talents. Through the reform of teaching methods, practical teaching and assessment system, the course has achieved preliminary teaching results.*

Keywords: *Industry and education integration, Big Data Processing and Analysis, Teaching reform*

1. Introduction

Big Data Processing and Analysis is a new course, which mainly explains the collection methods of mobile APPs networking data, the data analysis methods based on Wireshark software, the data analysis methods of Excel files, the general big data analysis methods and data display methods based on Splunk platform, so that students can understand the general ideas and processing of big data analysis, and master the use of three data analysis tools. Through the study of this course, students will have the ability to collect data based on intention, analyze unstructured data, construct regular expressions, construct Excel formulas, and use the Splunk platform, so as to cultivate students' ability to analyze big data and lay a foundation for future work related to big data analysis. This course can be used as a general education course for the whole school.

In the teaching process, students tend to have insufficient understanding of the course and lack of interest in learning, so they are unwilling to go deep into learning and exploration, and ignore the important application of the course in real life. But at the same time, this course is particularly widely used in engineering practice, and its importance for engineering students is obvious[1]. Therefore, it is particularly important to reform the teaching of this course and improve students' learning enthusiasm subjectively. Obviously, if we can endow all kinds of boring and abstract theoretical knowledge with visual cognition in teaching, and combine them closely with engineering application, students' interest in learning will be greatly improved, so that students can control and flexibly use the teaching content in depth. In view of the situation of this course under the background of integration of industry and education, combined with the actual situation of the national new industrial revolution and industrial upgrading, the teaching reform of the course Big Data Processing and Analysis was explored and practiced with the goal of cultivating versatile talents and delivering fresh blood to the national new industry. This paper will introduce the exploration and thinking of teaching reform in teaching methods, practical teaching and assessment system.

2. Realistic problems in the implementation of Big Data Processing and Analysis in the context of industry and education integration

2.1 Teachers' teaching methods cannot meet the needs of students' practical ability training

In recent years, although application-oriented universities are constantly deepening the reform of curriculum teaching, there are still some teachers who are not practical, flexible and innovative enough in teaching, which makes it difficult for school teaching activities to meet the needs of students' practical ability training[2-3]. First, the practicality and application of theoretical teaching are insufficient. At present, the teaching of most Big Data Processing and Analysis courses is still dominated by the unilateral knowledge "teaching" of the school's professional teachers. In practice, although some schools try to introduce the strength and resources of industry enterprises and promote the cooperation between industry enterprise experts and professional teachers to carry out the teaching of professional theory courses, most of them still stay at the shallow level of special lectures and teaching consultation, and the practicality and application of professional theory course teaching are relatively insufficient. Second, the flexibility of teaching methods is not enough. Different teaching methods have their unique advantages and applicability. Flexible use of various teaching methods is more conducive to the development of students' practical ability. With the deepening of teaching reform in universities in China, most Big Data Processing and Analysis courses are also promoting teachers' teaching reform and innovation. However, some teachers are still unable to flexibly select the most appropriate teaching methods according to the characteristics of teaching content in teaching practice because of their inaccurate grasp of the characteristics, advantages, applicability and other characteristics of teaching methods. A single teaching method is difficult to stimulate students' initiative in learning and thinking Creativity. Third, there are few innovations in teaching methods rooted in the frontline of practice. Teaching based on the frontline of professional practice is an important measure to promote students' in-depth understanding and firm grasp of professional theoretical knowledge and practical skills. At present, most of the teaching of Big Data Processing and Analysis is still based on the teaching of school theoretical knowledge, which is not closely integrated with production practice[4]. Although practical teaching is carried out in the practical training base, the problem of "shallow" and "going through the motions" of students' practical training in enterprises is still prominent. There are few innovative explorations of teaching methods by both schools and enterprises in combination with the actual process of production practice. The process of teaching activities is far from reaching the expectation of in-depth collaborative education between schools and enterprises.

2.2 The training practice link fails to effectively support the development of students' practical literacy

Practical training is a key link in cultivating students' professional practice quality. However, some universities do not attach enough importance to practical training, and the arrangement of practical training is unreasonable, the system is imperfect, and the effect is not ideal, which limits the promotion function of practical training on students' practical quality development. First, the arrangement of students' practical training is unreasonable[5]. Making overall arrangements in advance is an important measure to improve the efficiency of practical training, improve students' experience, and enhance the effect of practical training. However, most of the Big Data Processing and Analysis courses still place practical training in the subordinate position of theoretical teaching, and have not yet established an independent practical teaching system, resulting in unclear objectives, unreasonable time arrangements, low credit ratio, unscientific training content and methods incomplete management and evaluation mechanism and so on. Second, the guidance mechanism for students' practical training is not sound. Effective guidance of students' practical training and practice requires both high-quality teachers and a sound implementation mechanism. From the perspective of the construction of teaching faculty for the course Big Data Processing and Analysis, teachers lack practical experience and practical ability, enterprise tutors have low educational qualifications, lack of professional theoretical knowledge and teaching experience, and the number of "double qualified" teachers is relatively insufficient; from the perspective of implementation mechanism, the teaching of Big Data Processing and Analysis in some schools has not clarified the main responsibility of students' practical training guidance, and has not yet built a perfect practical training guidance mechanism, which makes it difficult to fully guide students' practical training. Third, the effect of students' practical training needs to be improved. From the actual situation of practical training, most of the teaching and practical training sessions of Big Data Processing and Analysis are short, mostly concentrated in a week to a month, and some are less than a week. Because the production practice process of enterprises is very complex, and the early work

arrangements of some schools are unreasonable, students have to adapt for a long time in the process of practical training. The practical training practice has not significantly promoted the improvement of students' practical literacy, and has a limited role in improving the quality of talent training.

2.3 The teaching evaluation method has not yet met the requirements of talent training objectives in depth

Scientific and reasonable teaching evaluation is the guarantee for the smooth realization of the curriculum teaching objectives. However, some university teaching evaluation mechanisms are not perfect, and the teaching evaluation methods have not yet been deeply consistent with the talent training objectives of the school[6]. First, the subject of the course evaluation of Big Data Processing and Analysis is relatively single. The teaching of Big Data Processing and Analysis course should not only promote students' learning of basic theoretical knowledge of the major, but also pay attention to students' ability to use theory to solve problems, which makes it a rational choice to carry out professional theory teaching evaluation from multiple levels and perspectives. In terms of reality, most of the teaching evaluation of Big Data Processing and Analysis is still dominated by teachers, with less participation from industry personages, enterprise experts and other relevant subjects, making it difficult to accurately grasp the actual teaching situation in professional theory teaching evaluation. Second, the scientific and efficient evaluation mechanism of practical teaching needs to be constructed. The complexity and practicality of practical teaching process make it particularly important to build an independent and efficient practical teaching evaluation system. However, from the perspective of practical teaching evaluation, most of the practical teaching evaluation of the Big Data Processing and Analysis course is mainly the responsibility of the teachers in the school. The evaluation content is often just a "segment" of the students' practical training and practice process, and the evaluation content is not comprehensive enough[7]. The evaluation is often only a summative evaluation. After the students' practical teaching, the teachers give a "impression score" according to the students' performance, evaluation plays a limited role in optimizing the process of practical teaching and improving the quality of practical teaching. Third, the evaluation method is difficult to grasp the development of students' practical literacy. In terms of evaluation methods, most of the course evaluation of Big Data Processing and Analysis is still based on written tests, small papers and other theoretical assessment forms, while the evaluation of practical teaching is mainly based on teachers' subjective judgment based on students' practical reports. Although these evaluation methods can basically understand the students' mastery of professional theoretical knowledge, it is difficult to grasp the development of students' practical knowledge application ability, professional practical ability and vocational adaptability, and the teaching evaluation methods can hardly meet the requirements of the training objectives of high-quality application-oriented talents.

3. Teaching mode reform of Big Data Processing and Analysis under the background of industry and education integration

3.1 Teaching team building mode for implementing courses

Establish a curriculum leader system, promote the formation of a "double qualified" teaching team with the curriculum leader as the core, and adapt to the content and structure of the curriculum, and carry out the teaching of professional theory courses with multi subjects. First, scientifically select the person in charge of the curriculum, and comprehensively plan the curriculum setting and implementation related matters[8]. According to the nature, objective requirements, content characteristics and teachers' professional expertise of the curriculum, select the teacher who best meets the needs of the curriculum as the curriculum leader, implement the curriculum construction responsibility system of the curriculum leader, and fully give the curriculum leader the autonomy of the curriculum, at the same time, clarify his/her main responsibilities in the curriculum goal positioning, curriculum content selection, curriculum teaching process and other links, respect their decision-making power in the selection of teaching team members. Second, we should carefully study the requirements of curriculum objectives and contents, and refine the requirements of curriculum teaching on teachers' quality. Relying on the school's "teaching reform project", further strengthen the curriculum teaching research, build a curriculum teaching research mechanism with the curriculum leader as the core. While deeply studying the requirements of curriculum objectives, the characteristics of curriculum content, and the selection of teaching methods, focus on promoting the refinement and concretization of the teaching needs of curriculum content, and accurately grasp and implement the

requirements of teaching content on teachers' professional quality. Third, connect with the actual needs of curriculum teaching and build a "double qualified" teaching team for the curriculum. Promote the implementation of the educational idea of "one person with many lessons, one lesson with many people", and urge the curriculum leader to select the teachers whose professional quality best matches the teaching needs of the curriculum within the department, across departments, and even in the industry and enterprises according to the requirements of the curriculum teaching content for teachers' professional quality, so as to create a "double qualified" teaching team composed of school professional course teachers, "double qualified" teachers, industry and enterprise experts and other multiple subjects, it will lay a solid foundation for the high-quality development of professional course teaching.

3.2 Break through the boundary between theoretical teaching and practical teaching

We should make overall arrangements for theoretical teaching and practical teaching, promote the integrated design of teaching content, strengthen the cooperation between schools and enterprises in the teaching process, and accelerate the construction of a perfect training system for application-oriented talents. First, integrate theoretical teaching and practical teaching, and enhance the systematicness and coherence between them[9]. Focusing on the training objectives of applied talents, combining the educational functions of theoretical teaching and practical teaching, we should design the curriculum system, teaching system and management system as a whole, and do a good job of integrated design from the institutional level, so as to promote the close connection and mutual cooperation between the two in the talent training process, and help achieve the talent training objectives from different aspects. Second, connect theoretical teaching with professional practice, and promote the integration of course teaching content. Accurately grasp the curriculum content required to achieve the talent training goal. On the basis of following the basic laws of curriculum construction, and according to the internal logic of the curriculum content, teachers' teaching laws and students' learning laws, make an overall arrangement of the theoretical teaching and practical teaching content, so that they can closely cooperate and promote each other in talent training, and better serve the school's talent training work. Third, promote the in-depth cooperation between school and enterprise personnel, and carry out theoretical and practical teaching cooperatively. Open up the channels for school enterprise cooperation to carry out curriculum teaching activities from the school system level, establish a special part-time teaching system for industry experts in the school, and lay the institutional foundation for the school to flexibly introduce industry enterprise experts; establish a special practical teaching guidance team in the enterprise to attract the full participation of school teachers and enterprise experts through policy requirements, guidance, incentives and other ways. Deeply promote the two-way cooperation between school teachers and enterprise tutors in all kinds of curriculum teaching, and jointly cultivate students' practical literacy.

3.3 Promote the diversification of teachers' teaching methods

We should guide teachers to constantly deepen teaching reform, choose the most appropriate teaching method according to teaching needs, explore and implement the "learning centered" teaching method, and improve the school's education level. First, promote students to master professional theoretical knowledge with diversified teaching methods. Deeply promote the reform and innovation of classroom teaching, guide teachers to gradually get rid of the single teaching method focusing on teaching, and select more practical teaching methods such as case method, demonstration method and discussion method according to the characteristics of teaching content, so as to return the classroom to students to the maximum extent, stimulate students' initiative and creativity in learning, and let students' learning really "happen". Second, to promote the development of students' production and practice ability with diversified teaching methods. Fully attach importance to the important value of practical training, completely change the situation of "students practice independently and teachers ignore" in the process of practical training, clarify the main responsibility of students' practical training guidance, reasonably arrange the content system of practical training, promote teachers to adopt project teaching method, task driven teaching method, real situation teaching method, practical problem teaching method and other practical teaching methods, and promote students to carry out practical training and practice work in a down-to-earth manner, effectively improve the training effect. Third, "student-centered" to explore more appropriate teaching methods[10]. There are no fixed methods and routines for both theoretical and practical teaching. In order to better cultivate students' professional practical literacy, schools should always focus on "student learning", explore more appropriate, scientific and effective teaching methods, and promote the improvement of teaching quality.

4. Conclusion

Through the exploration and reflection on the teaching reform of Big Data Processing and Analysis, the teaching reform of this course has achieved remarkable results, which has won a lot of recognition among students, deeply stimulated students' interest in this course, strengthened students' understanding of this course at the enterprise level, and improved students' ability to apply this course in practical projects. In the future, we will continue the reform and construction of this course in combination with the integration of industry and education, further explore the teaching content, enrich the teaching methods, strengthen the teaching practice, improve the assessment system, strive to promote the combination of school and enterprise, strive to let students learn to apply, and strive to deliver more fresh blood for the country's new industry.

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