Exploration of Curriculum and Teaching Reform based on Professional Practice under the Talent Training Mode of High-Level Apprenticeship

-- Taking the Course"Huawei Routing and Switching Technology" as an Example

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Abstract

The high-level apprenticeship is a modern talent training mode focusing on skills training for students through deep cooperation between universities and enterprises. The high-level apprenticeship system pays more attention to the inheritance of skills, so its curriculum and assessment standard are jointly designed by universities and enterprises, which reflects the deep integration of school enterprise cooperation. The high-level apprenticeship system is conducive to promoting enterprises to participate in the whole process of vocational education and talent training, realizing the connection between course arrangement and industrial demand, the connection between course content and vocational standards, the connection between teaching process and production process, the connection between graduation certificate and vocational qualification certificate, the connection between vocational education and lifelong learning, which improvs the quality and pertinence of personnel training. In view of some problems existing in the traditional teaching methods, the curriculum and teaching reform of the course "Huawei Routing and Switching Technique" is a topic of research value to improve teaching effect to achieve the integration of production and education, and improve students' employment competitiveness. This paper mainly discusses from three aspects: teaching mode, practical teaching and assessment implementation. The curriculum reform can significantly improve students' learning enthusiasm, learning effect and practical operation ability.

Keywords

Apprenticeship; Curriculum and Teaching Reform; Personnel Training.

1. Introduction

The high-level apprenticeship system was proposed by the Ministry of education of the people's Republic of China in 2014. It aims to deepen the integration of industry and education and school enterprise cooperation, further improve the school enterprise cooperative education mechanism, and innovate the training mode of technical and skilled talents.

Our university carries out pilot classes in the 21st level communication engineering major, and the talent training mode mainly adopts the high-level apprenticeship system. An important way to further effectively carry out the high-level apprenticeship curriculum is to reform the communication engineering curriculum through in-depth school enterprise cooperation, so as to further ensure that the curriculum design can meet the needs of talent training and social development in an all-round and multi-level way.

The curriculum reform has two meanings. On the one hand, it is in line with the talent training mode under the background of high-level apprenticeship. On the other hand, the development, research and effective implementation of the curriculum is an effective guarantee for the future development of enterprises, and has certain guiding significance.

"Huawei Routing and Switching Technique" is a practical and comprehensive professional course in the curriculum system of communication engineering, which is opened in the fifth semester. Through the study of this course, students can master the knowledge of switching technology, routing technology, security technology and dynamic routing protocol, have the ability to configure and debug equipment in simple networking, deeply understand the core practical content in network engineering, and lay a foundation for effectively analyzing and solving complex problems in network engineering. The leading course of this course is "Computer Network Technique", parallel courses include "Network Security Technology". This paper discusses some problems in the implementation of "Huawei Routing and Switching Technique"exchange course in the past.

2. Analysis of Current Teaching Situation

(1) Many teaching contents, less class hours, single teaching mode

The course "Huawei Routing and Switching Technique" is rich in content, covers a wide range and has many knowledge points. However, the teaching hours in the previous teaching design are only 48 hours, and all of them are theoretical hours. In this limited teaching time, teachers mostly adopt the traditional teaching mode of "giving priority to theoretical teaching and supplemented by practical training". Most of the time, students passively accept knowledge and need high concentration It is difficult for most students to digest a large number of knowledge points in a short time and have practical ability.

(2) Students practice less, weak practical ability

The teacher takes more time to demonstrate and explain the key steps of practical operation in class, and the students have less time to practice. This requires the students to consciously complete it after class, which requires the students to have a strong consciousness. The students with poor consciousness fail to complete it in time and have insufficient understanding of theoretical knowledge. The students have a sense of frustration in digesting knowledge after class, the teaching effect is poor, and the students' learning enthusiasm is greatly reduced.

(3) Limited assessment methods, inaccurate evaluation results

The course adopts the assessment method of usual score (10%) + stage test (20%) + practical assessment (30%) + final score (40%). Although there are many assessment methods, there are many overlaps between the usual assessment and the stage assessment, and the students' mastery of the curriculum is not accurate. The practice assessment results are only assessed through the practice report, resulting in the mismatch between the results and practical skills, and the evaluation of students' ability to analyze and solve problems is lack of objectivity.

To sum up, in the current course teaching process, it is easy to cause students to "pay attention to theory and light practice", "pay attention to knowledge and light ability", "pay attention to results and light process", and the teaching effect still has a lot of room to improve.

3. Exploration of Curriculum Teaching Reform

(1) Exploration of teaching mode

The curriculum hours are increased to 64 hours (40 theoretical hours + 24 practical hours). The curriculum teaching design, curriculum content and practical projects are jointly formulated by teachers and enterprises. The practical content corresponds to the theoretical teaching unit, emphasizing the cultivation and training of students' professional skills and

professional quality. Optimize the teaching mode, take the post ability as the core, have the general technical ability and basic design ability related to network switching and routing of small enterprises, as well as the basic network construction and management ability, focus on practical application, focus on skill training, cultivate students' ability to comprehensively solve problems, make students practice their theoretical knowledge and improve their professional ability.

(2) Exploration of practical teaching

Under the high-level apprenticeship system, schools and enterprises alternately complete the training of students, focusing on improving students' vocational skills and professional quality. Therefore, when schools and enterprises jointly formulate curriculum standards, they especially need to emphasize the importance of students' practical teaching. Make full use of eNSP simulation software to build a practical operation practice Library of "Huawei Routing and Switching Technique", which is combined with the practical operation of network hardware equipment in Huawei digital communication laboratory, so as to improve students' hands-on operation ability and enhance their employment competitiveness.

Professional teachers cooperate with the project-based reform of professional courses, integrate the necessary knowledge and skills of the post into the teaching projects, and develop Huawei routing and switching technology into an enterprise based theory practice integrated course. The course is divided into five projects for teaching, and each project is equipped with corresponding practice links. Considering the cost of enterprise personnel and the ability and expertise of enterprise masters, the practice links of sub projects are completed in the school, and the comprehensive practice links (large assignments) of the course are guided by enterprise masters and assessed in enterprise practice.

Table 1. "Huawei Routing and Switching Technique"course practice items

Serial number	Project	Responsibility teaching	Place	Remarks
1	Spanning tree protocol configuration	School Teachers	On campus laboratory	
2	VLAN configuration	School Teachers	On campus laboratory	
3	Static routing and default routing configuration	School Teachers	On campus laboratory	
4	Dynamic routing configuration	School Teachers	On campus laboratory	
5	Comprehensive practice project (large operation)	Enterprise master	On campus laboratory/Enterprise	Group teaching

At the same time, we will integrate Huawei certification into practical teaching, deeply integrate school enterprise cooperation, combine with Huawei ICT college and enterprises, select real work projects and tasks in the teaching content, achieve better connection with the professional abilities of network engineers and network managers in the fields of network construction and network management, and introduce professional standards and industry norms, Truly realize the progressive way of theory, practice, re-theory, re-practice in different learning stages, so that students can learn the current mainstream network technology and successfully pass the Huawei HCIA engineer certification examination after course learning.

(3) Exploration on the implementation of assessment

According to the training goal based on professional practice under the apprenticeship system, the curriculum teaching must highlight the training of vocational skills and professional quality,

take the training of comprehensive ability as the goal, form a "diversified and whole process" assessment standard, and combine the theoretical assessment of the school with the practical assessment and the post assessment of the enterprise, so as to achieve the purpose of students' learning theory, practice and completing according to the post training standard.

In the process of curriculum reform, comprehensive evaluation is carried out by enterprise tutors, school tutors and training platforms. Enterprise tutors and school teachers provide targeted guidance on professional awareness, professional skills and strategic thinking in the teaching process.

Diversified assessment can comprehensively and comprehensively understand students' mastery of the course through students' classroom discussion, stage detection, module test, practical operation and report, defense assessment, comprehensive ability assessment and other forms.

The whole process assessment runs through the whole course implementation stage. The assessment information is collected by stages according to the "pre class - in class - after class - end of the term", focusing on the process evaluation of students' learning, and combined with the evaluation of comprehensive practical links to form the whole process assessment.

In the comprehensive practice (big homework) link, students take groups as units, and each group is equipped with an enterprise master. Under the guidance of the enterprise master, each team first completes the project design in the professional laboratory, and finally focuses on the enterprise for project commissioning and defense assessment. In this way, classroom teaching and enterprise project training are organically integrated, so that students can adapt to apprenticeship in advance and improve their job adaptability.

4. Conclusion

This paper studies the teaching reform of "Huawei Routing and Switching Technique" based on the professional practice under the high-level apprenticeship talent training mode, mainly from the aspects of teaching mode reform, practical teaching reform and assessment implementation reform. The teaching reform of professional courses under the high-level apprenticeship system is a teaching reform project that needs to be explored for a long time in the teaching process, only with the in-depth cooperation between schools and enterprises, To ensure and improve the quality of modern apprenticeship personnel training, we should find out the commonness of professional courses and enterprise post skills and the starting point of education. I believe that the teaching reform based on the long-term cooperation between schools and enterprises will promote the smooth and efficient progress of curriculum reform.

References

[1] Zhou Xiaoyan. Research on the curriculum reform of routing switching technology based on Huawei certification[J]. Network security technology and application, 2020 (6): 3.

[2] Liang Yan. Research on teaching reform of routing switching technology course[J]. Chinese educational technology equipment, 2011.

[3] Pu Baoqing, GAO Qingfang, Sa Zhimin. Curriculum reform and practice of routing switching technology based on ENSP[J]. Information technology and informatization, 2020 (3): 3.

[4] Shi Hongyan. Exploration on teaching reform of "routing switching technology and application" based on achievement orientation [J] Science and technology horizon, 2020 (23): 2.

[5] Lijianghua, Huguiyin, Wen Shunjie Thinking and Research on teaching reform of "routing switching technology" [J] Journal of Tongling Polytechnic, 2022, 21 (1): 4.