



Research on the Application of Standard Collaboration Method During Network Course Construction

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Abstract. This paper puts forward a new way to build high-quality network courses in batches based on standard collaboration method in view of the problems faced by professional teachers in application-oriented universities when making network course. This paper analyzes the concept and connotation of the standard collaboration method, and discusses the specific content and implementation process of the standard collaboration method. Taking the engineering graphics network course as an example, the paper makes corresponding network courses for five mechanical majors at the same time. On the basis of summarizing the experience of making engineering graphics network course, this paper analyzes the management mechanism, specific content, organization and implementation, technical requirements and construction steps of the standard collaboration method in its production process, which has obvious reference value for the efficient mass production of network course.

Keywords: Network course · Course system · Standard collaboration · Design of Network Course

1 Introduction

Making high-quality network course is an important part of modern engineering education [1, 2]. At present, the challenges brought by the large demand and long development cycle of network course and the construction quality of network course are common contradictions in the actual construction process. The network courses in application-oriented universities are generally designed and produced by the teachers themselves. This production mode of network course is restricted by three situations: first, it is restricted by the production environment; second, it needs certain energy and technology to guarantee; the third is to ensure that the production task is completed within the appropriate time point. Since June 2018, the mechanical major of our college has adopted the construction method of overall planning and design, unified technical requirements and unified management, and has successively built 8 network courses, all of which

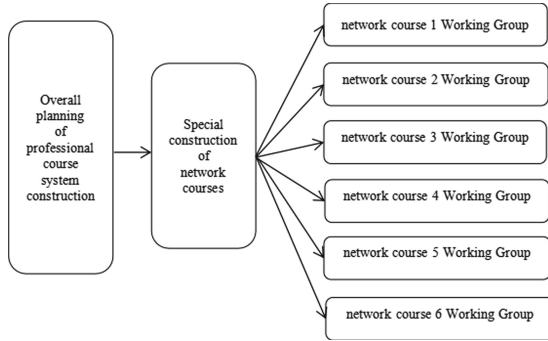


Fig. 1. Organization and management system of standard collaboration method (Fig. 1 is self drawn)

have reached the high-quality course standards, of which two courses have been recognized as excellent resource courses by Guangdong Province. Practice has proved that the construction of web-based courses based on standard collaborative methods can not only realize the technical support, quality supervision, progress assurance and coordination management of the whole construction process, but also better solve the technical problems encountered in the construction of web-based courses.

2 Standard Collaborative Method

Network course is a teaching mode emerging in the network era. It has the remote and convenient nature of the Internet, and also has the seriousness of teaching [3]. The establishment of network course construction organization system and management mechanism is the fundamental guarantee for the efficient construction of high-quality network courses. The standard collaboration method is to uniformly organize and manage various tasks in the network course construction. After defining the network course construction tasks in the professional course system, first establish the operation mechanism of the course construction quality under the standard collaboration, and establish a “leading group” for the special construction of network courses, with members including the principals of each specialty and the principals of the course group; A “network course working group” was established, with the person in charge of the course group as the group leader. The members include backbone teachers and experimental teaching assistants. The organization and management system is shown in Fig. 1.

The network course working group carries out its work after being authorized by the leading group and is responsible for the secondary college. Its function is to coordinate and manage the technical support, quality supervision, progress assurance, production funds, etc. in the whole process of the production of the six network courses, and to assume the function of the secondary administrator of the network courses. The principals of each network course working group undertake the organization and construction of the course, as well as the management and technical coordination functions of key teachers and teaching assistants.

After establishing a perfect organization and management system, the leading group of curriculum system construction must formulate construction plans, management measures and functional division for specific network course; Put forward technical requirements, determined time points, quality requirements, fund management methods, etc. [4]. When formulating management measures, we should grasp three basic principles: first, we should fully mobilize the enthusiasm of the production personnel of each working group, understand the ideas of the creative teachers, and understand their difficulties; The second is to formulate management measures according to the specified determined time point and quality requirements of quality courses; Third, coordinate the work of technical personnel to ensure the timeliness of technical support in the construction process.

3 Specific Content and Implementation of Standard Collaboration Method

Using the standard collaboration method to simultaneously build multiple network courses within the professional curriculum system, its core content is to provide technical support, quality supervision and progress assurance for the network course construction requirements according to the curriculum system construction plan. The following introduces the cooperation contents and implementation methods in the process of network course construction from three aspects.

3.1 Unified Quality System and Management

Adhere to the overall construction idea of “quality control and progress assurance” and run through the whole construction process. It mainly includes the reasonable suggestions for the construction of network courses, the quality of network teaching materials, the quality of electronic teaching materials, the quality of teaching materials, the quality of material library, the saturation of course configuration, the quality of course operation, the quality of late course application and the overall quality evaluation of the course.

After the production is started, the platform will be developed uniformly according to the curriculum system, technical support will be provided uniformly, guidance and help will be provided for the rationality of technology application, human resources will be reasonably allocated, the production environment will be unified, and resource sharing will be reasonably arranged; During the production process, technical research was carried out on difficult problems such as expanded functions, resource base, test question base, etc., suggestions and help were put forward in time, and various working groups were organized to exchange experience, learn from each other’s strong points to complement each other’s weak points, so as to jointly improve; In the later stage of production, coordinate and manage the operation of network courses, track the application effect of network courses, and reasonably evaluate the overall construction of network courses. At the same time, each working group must adhere to the daily management system during the development process and check the construction progress at each determined time point.

3.2 Uniform Technical Specifications

In order to build high-quality network course, we must adhere to the “characteristics” construction of specialties and courses, and make innovations on the basis of meeting basic requirements [5, 6]. Therefore, each working group needs to formulate the overall technical requirements that can fully reflect the characteristics of the specialty for specific network course at the initial stage of Construction:

- The elements of the network course development platform for similar majors must be complete;
- Encourage innovation. The organization of teaching content should reflect the characteristics of professional courses (engineering quality training) and be able to show it in pictures, texts, sound, images and animation;
- The development of extended functions is the best stage to reflect the characteristics of the course. In the course design, the existing experiments and scientific research achievements, such as MATLAB simulation calculation, SIMULINK simulation, virtual instruments, digital twins, robots, intelligent devices, databases, etc., should be considered to provide help for students to improve their cross-border thinking ability and create conditions for the production of excellent courses;
- Widely collect visual resources and academic materials related to network course, including engineering applications, industrial applications, education, etc., to enrich and enrich the content of network course;
- The interface design, classroom style design and animation design pay more attention to the course style, and the forms can be diverse. Don't stick to one style, such as picture editing, PPT animation, making animation on video, etc.

3.3 Unified Implementation and Organization

According to the construction principle of “scientific planning and unified implementation”, the construction process is divided into three stages: “basic construction, enrichment and improvement, and perfect application”; It shall be organized and implemented in accordance with the four construction steps of “curriculum planning, resource construction, curriculum allocation and later application”.

Considering that the funds for the construction of network course are very limited, they must be managed uniformly and used intensively to play their maximum role. The construction funds for batch network courses shall be managed by the leading group in accordance with the principle of “fairness, openness and urgent need”, so as to ensure that all the expenses are used for course construction; The person in charge of the working group shall apply to the leading group for the expenses of each network course according to the progress of each course. The expense items shall be reviewed by the working group and approved by the leading group.

4 Analysis of the Advantages of Standard Collaboration Method

By comparing and analyzing the construction effects of the six network courses, we find that the standard collaboration method has four incomparable advantages over the decentralized Construction:

First, we worked together to solve technical problems and improve production efficiency. It is a new and complex system engineering to adopt a unified platform to make network courses according to similar majors. Many technical problems will be encountered in the construction. If each course is tried to solve, it will cause a waste of human and resources. The working group has adopted the method of “problem decomposition, special personnel to tackle key problems, and achievement sharing”, formulated a unified plan, designated special personnel to tackle key problems, made clear the main direction of each course, and dynamically taught the problem-solving methods to other network course working groups to avoid repeated work and improve construction efficiency.

Second, the unified construction and development environment has saved funds and energy. The network course requires recording teaching videos, and requires shooting equipment and environmental conditions; In case of decentralized construction, the funds for each course are limited, so it is difficult to build ideal shooting equipment and environment, which affects the construction quality. During batch construction, a small amount of funds will be allocated for each course for centralized management and unified use, and the recording and editing environment for background, light, sound, etc. will be developed in a unified way. On the premise of ensuring the construction quality, the construction funds and developers' energy will be saved.

Third, establish a phased inspection system to ensure the construction quality. Building high-quality network courses is the goal pursued by every backbone teacher and teaching assistant who participates in the construction; Teachers are not full-time developers and have many tasks. There is often a gap between ideas and reality, and the construction quality will be uncertain. The purpose of periodic supervision and inspection is to help them find problems in time, solve problems correctly and avoid detours in the construction process, so as to ensure the construction quality. If problems are found, they should be solved in a timely manner. The inspection process is also a process of mutual learning and exchange. We should jointly discuss ways and ideas to solve problems and ensure the corresponding construction tasks which are completed within the specified determined time point.

Fourth, the leading group of network course construction should earnestly perform its management functions and ensure that all the work of network course construction keeps the same progress. Teachers are “multi task aggregation”, and it is difficult to unify and guarantee the time and energy invested in making courses, which is the biggest problem encountered in the construction process; The mechanism and method of unified cooperation can give full play to the administrative functions of the leading group and the working group, coordinate the working relationship, solve problems for teachers, ensure that teachers have enough time and energy to invest in the construction of network course, and ensure the development progress.

Taking engineering graphics as an example, we launched the task of making network course for five majors at the same time, and gave full play to the role of the working group in the process of making network courses. Before the production, after a lot of research and discussion, we fully studied the characteristics of the course, exchanged lessons preparation experience, and discussed the existing problems and solutions. During the production process, share teaching achievements, analyze students' status and discuss next countermeasures. The course effect has achieved the effect of joint improvement

of students and teachers. For example, we have divided the relevant contents of the drawing rules of the engineering graphics course into two stages. In the first stage, we focus on “getting familiar with national standards, standardizing technical actions and developing good habits”, and in the second stage, we focus on “mastering scientific thinking methods, improving engineering literacy and cultivating innovation ability”. It has effectively proved the effectiveness of the standard collaboration method in the production of network course.

5 Conclusion

The making methods of network course are flexible and diverse. Finding an efficient and high-quality way of batch construction is the goal we have been exploring in recent years. We have adopted the standard cooperation method proposed in this paper to build the corresponding network courses for the six courses of the mechanical specialty, explored the way to successfully build the network courses in batches, accumulated the experience of all-round construction, management and application of the network courses, achieved relatively ideal construction results, shortened the construction time of the network course system of similar professional courses, improved the construction benefits, and had obvious promotion and application value.

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