Research on Collaborative Construction of Virtual and Real Teaching and Research Section in Application-oriented Universities

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Abstract. The collaborative development of virtual and real teaching and research offices is an important exploration of the construction of new grass-roots teaching organizations in the information age. In order to better define the construction standards of virtual and real teaching and research offices and construct the evaluation index system of virtual and real teaching and research offices, this paper discusses the necessity of collaborative construction of virtual and real teaching and research offices in colleges and universities from the perspective of synergy theory, sorts out the present situation and existing problems of teaching and research offices in colleges and universities, and puts forward corresponding solutions and construction objectives. By constructing a "one body, two wings and multiple supports" teaching and research section organization system, the function of teaching and research section as a basic teaching organization in applied undergraduate colleges is strengthened.

Keywords: Colleges and Universities; Teaching and Research Section; Applied Type; Synergy; Personnel Training.

1. Introduction

At present, there is a teaching and research section in the mode of "school-department-teaching and research section" in China, which is called entity teaching and research section or traditional teaching and research section. Because its functions are gradually weakening, rebuilding teaching and research section is a systematic organizational improvement [1]. The State Council emphasized strengthening the construction of learning communities such as teaching and research section, and establishing and perfecting mentoring mechanism, which provided strong support for the functional return of teaching and research section. Tan Junhua uses target management and performance appraisal to stimulate the vitality of the teaching and research section [2]. Zeng Jianchao and others explored the construction path of virtual teaching and research room [3]. Starting from "double first-class", Yue Jianjun expounded the new ideas of co-existence, sharing and symbiosis of teaching and research sections [4]. Guo Jianyao and others analyzed the internal power structure of the school, and put forward the ideas of perfecting the system and expanding autonomy in the construction of teaching and research offices in newly-built undergraduate colleges [5]. Wang Xiumei pointed out that while the virtual teaching and research section is developing vigorously, it should also prevent the virtual teaching and research section from becoming a mere formality, formulate management measures according to the characteristics of the teaching and research section, strengthen the assessment and evaluation mechanism, respect teachers' intellectual property rights, and ensure its own professional characteristics while learning from the experience of other universities [6]. Song Wei proposed to fully implement the fundamental task of cultivating people by virtue, change the phenomenon of attaching importance to scientific research and neglecting teaching, and truly return to the "people-oriented" concept [7].

To sum up, the current research mainly focuses on the function, management and evaluation of entity and virtual teaching and research offices, but there is still a lack of research on improving the vitality of traditional teaching and research offices and exploring new teaching and research forms

of virtual teaching and research offices. Based on the reality of application-oriented undergraduate colleges in the new era, this paper focuses on building a teaching and research section system with "one body, two wings and multiple supports", with moral education and improving education level as the main body, physical teaching and research section and virtual teaching and research section as the two wings, supported by cultural infiltration and wisdom support, and building a high-level teaching and research section with synergy between reality and reality and full of vitality. On the basis of previous investigation and practice, this paper discusses the necessity and present situation of the construction of teaching and research section in colleges and universities, with a view to providing some guidance and reference for the construction of virtual teaching and research section in colleges and universities and the digital transformation of education.

2. Necessity of Construction of Teaching and Research Offices in Colleges and Universities

Support teaching and scientific research activities in colleges and universities. The teaching and research section of colleges and universities is an essential place for teaching and scientific research, which can provide necessary conditions such as hardware facilities, software tools and data resources to promote the development and innovation of teaching and scientific research activities in colleges and universities.

It is an effective way to improve the grass-roots teaching organization to combine the virtual with the real and develop the teaching and research section construction mode in coordination. Strengthen the top-level design, clarify the functional orientation, give full play to their respective advantages, build a supporting platform, and jointly promote the improvement of teaching organization.

Constructing a perfect and effective evaluation system of teaching and research section is an important content of strengthening teaching construction. Taking moral education as the basic task, building a teaching and research section construction system with one body, two wings and multiple supports can promote the establishment of a long-term operation mechanism for the high-level construction of teaching and research sections and provide practical basis for the education authorities to formulate policies.
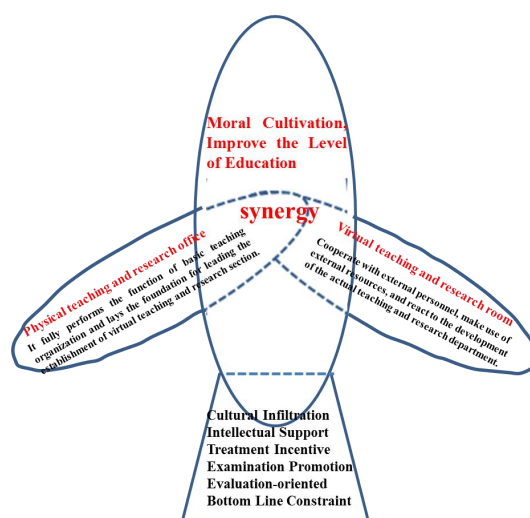

Figure 1. Construction system of teaching and research section with integrated two wings and multiple supports

3. Current Situation of Teaching and Research Offices in Colleges and Universities

The virtual and real teaching and research sections are integrated. Virtual teaching and research offices and physical teaching and research offices in colleges and universities have their own advantages. Many colleges and universities have begun to integrate virtual teaching and research offices and physical teaching and research offices to build a diversified and all-round teaching and research system.

The function of the entity teaching and research section is blurred, and the role is ineffective. In order to meet the needs of improving the cultivation ability of applied talents, the development standards and evaluation index system should be re-established in teaching management, teaching reform and teacher training.

Solve the problem of insufficient collaboration between the virtual and real teaching and research offices. It is necessary to build a "one body, two wings and many supports" teaching and research room system based on reality, supplemented by virtual reality and coordinated by virtual reality, and guided by a perfect evaluation system to realize the high-level development of teaching and research room.

4. Solution to the Construction of Teaching and Research Section

Construct the evaluation system of virtual and real teaching and research office. Based on the theory of learning organization and collaboration, the index system of virtual and real teaching and research section evaluation is constructed by fuzzy mathematics method, and an evaluation mechanism is established, which embodies process evaluation and value-added evaluation, makes full use of big data and wisdom education means, and is implemented by multi-subjects.

Through the establishment of the virtual and real teaching and research section consortium or collaborative mechanism, the resources sharing and collaboration between virtual and real teaching and research sections can be realized. For example, schools can build and own virtual and real teaching and research sections in a unified way to jointly maintain and develop teaching resources, reduce costs and improve quality. At the same time, deepen the application of virtual and real teaching and research department in teaching and research, design teaching courses for different disciplines, evaluate the teaching effect of virtual and real teaching and research department, and put forward teaching improvement strategies and practice.

Formulate measures for construction and management, carry out pilot trials, reconstruct full-coverage entity teaching and research offices, establish virtual teaching and research offices based on entity teaching and research offices, and encourage teachers to participate in external teaching and research offices. Combining the virtual and real teaching and research office with industry and scientific research, constantly introducing new virtual and real technology, carrying out diversified research on the construction of virtual and real teaching and research office, promoting the innovative development of virtual and real teaching and research office, and providing more professional practice and work opportunities for students.
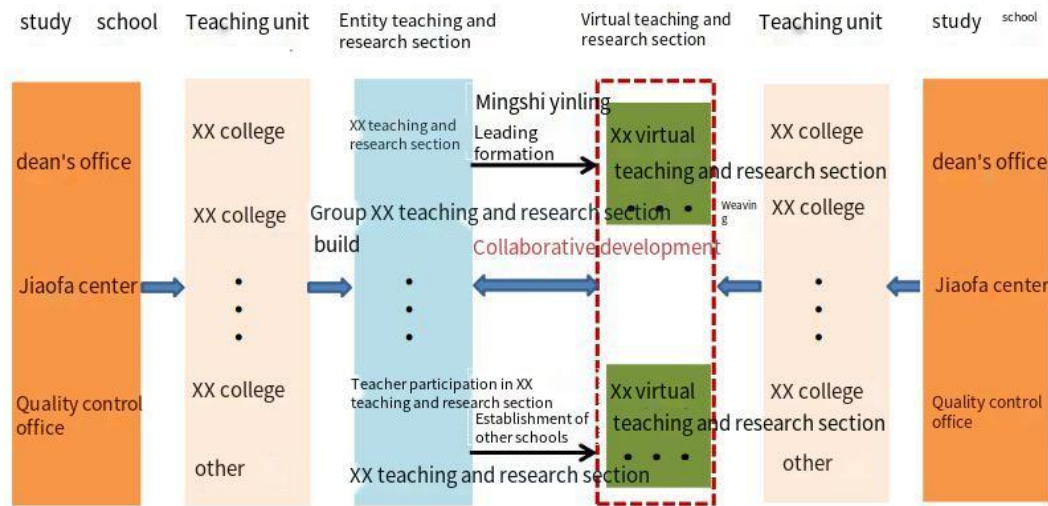
Figure 2. Organization Framework of Teaching and Research Section

5. Goal of Teaching and Research Section Construction

Build a "one body, two wings and multiple supports" teaching and research office organization system. Based on the characteristics of the development orientation of application-oriented undergraduate colleges, the construction standards of virtual and real teaching and research offices are clarified, and the evaluation index system of virtual and real teaching and research offices is constructed. Establish a more perfect management system and operation mechanism of teaching and research section, promote the coordinated development of virtual and real teaching and research section, and strengthen the function of teaching and research section as a basic teaching organization in applied undergraduate colleges.

Realize the resource sharing and collaboration of the virtual and real teaching and research section. Realize the intelligent interconnection and data sharing between different virtual and real teaching and research departments, and build a cross-regional or interdisciplinary virtual and real education and research network. In addition, through the establishment of virtual and real teaching and research section consortium or collaborative mechanism, we can jointly promote research and teaching.

Team building and management of the virtual and real teaching and research section. Select and train the professional team of the virtual and real teaching and research section, formulate the responsibilities and evaluation criteria of the members of the virtual and real teaching and research section, rationally allocate team resources and manage the virtual and real teaching and research section. Promote the improvement of teachers' teaching, scientific research and social service capabilities, further improve the level of education, and improve the quality of talent training in application-oriented undergraduate colleges.
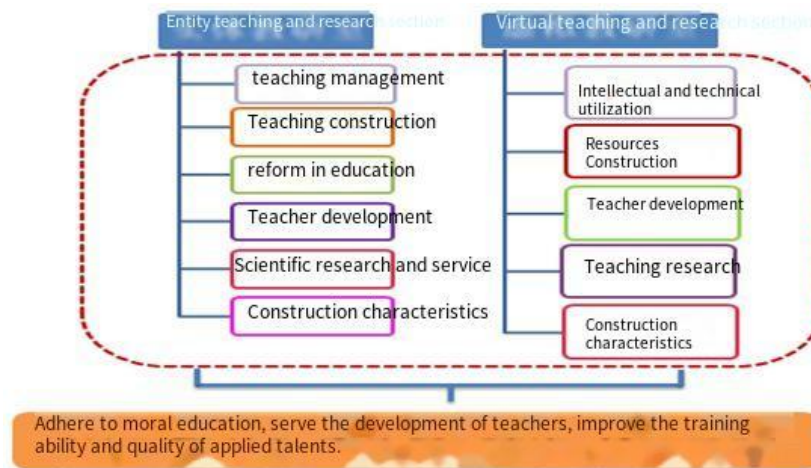
Figure 3. Main elements of construction standards for virtual and real teaching and research offices

6. Conclusion

The collaborative construction of virtual and real teaching and research offices can promote the sharing of teaching resources between schools and majors, improve students' educational, teaching and practical abilities, and provide more exchange opportunities for Industry-University-Research cooperation. It is necessary to establish a consortium and collaborative mechanism of virtual and real teaching and research offices, which can promote the quality and level of collaborative construction of virtual and real teaching and research offices through unified management platform, shared resource pool, high-quality service and intellectual property protection. Because the virtual and real teaching and research office includes the construction of software and hardware, the formulation of unified standards and norms can improve the construction quality of the virtual and real teaching and research office, reduce the construction cost and promote the improvement of education and teaching quality.

This paper focuses on the problems in the transformation and development of application-oriented undergraduate colleges, and from the point of view of adhering to moral education, strengthening school-enterprise cooperation, integration of production and education, and improving the training ability of applied talents, constructs the construction standards of teaching and research offices, and constructs a teaching and research office construction system with "one body, two wings and multiple supports". At the same time, it expounds the shortcomings of the construction of teaching and research section in application-oriented undergraduate colleges in the new era, and explores the corresponding construction path, which has a guiding and reference role for the construction of application-oriented undergraduate colleges.

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