

## The Core Curriculum Construction in Application-Oriented Universities: "Two Integration" & "Two Convergences"

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### Abstract

Core curriculum construction is an important guarantee to enhance the core competitiveness of the major and to improve the effect of teaching and studying. However, application-oriented universities in ethnic minority areas are taking challenge of practical dilemma in the process of construction of core courses due to the limitations of objective conditions and lack of subjective understanding. A new curriculum construction system is proposed by creating the idea of "two integration" + "two convergence". The new curriculum construction system can break through the objective bottleneck and eliminate the subjective dilemma, and thus we can make sustainable construction of the core curriculum.

### Keywords

Curriculum construction; The integration of curriculum resources; The integration of university faculty; The convergence of competitions and courses; The interaction between university and enterprise.

### 1. Introduction

The transformation of local undergraduate colleges and the construction of first-class undergraduate majors inevitably require the construction of first-class undergraduate courses, and the curriculum construction is guided by the construction of professional core courses. The construction of high-quality core courses directly supports the first-class undergraduate majors, and having the first-class undergraduate majors is a necessary condition for cultivating high-level applied talents.

The latest policies of education reform are as follows: In October 2015, the Ministry of education, the national development and Reform Commission and the Ministry of Finance jointly issued "the guiding opinions on guiding some local universities to transform into application-oriented universities". In January 2018, the Ministry of Education issued "the national standard for undergraduate professional teaching quality in ordinary universities". In August 2018, the Ministry of Education issued "the National Conference on Strengthening Undergraduate Education in new era". In April 2019, the general office of the Ministry of Education issued "the notice on the implementation of the "double ten thousand plan" for the construction of first-class undergraduate majors"; in October 2019, the Ministry of Education issued "the implementation opinions on the construction of first-class undergraduate courses". These programmatic documents make clear the direction and path for the construction of core courses in Application-oriented Universities: the construction of core courses in application-oriented universities needs to connect with industry standards, production practices, new technologies, redefine teaching teams, re integrate courses, and further develop the interaction between schools and enterprises, and the integration of courses and competitions.

Curriculum teaching is the main position and channel of talent training [1], and teachers are the main force of education and Teaching Reform [2], and the backbone of promoting curriculum construction. The integration of production and teaching is the only way to realize the cultivation of high-quality application-oriented talents [3]. Therefore, application-oriented colleges and universities should establish a high-quality teaching staff, and only by strengthening the construction of core courses, they can cultivate a batch of high-quality applied talents for the country and the local.

## 2. Practical Dilemma of Core Curriculum Construction in Application-Oriented Universities

In order to quickly adapt to the needs of transformation and development and enrollment expansion of colleges and universities, local colleges and universities spare no effort to transform into application-oriented colleges and universities, and expand the scale of students from thousands to even tens of thousands. At the same time, in order to meet the requirements of student teacher ratio, colleges and universities vigorously introduce talents, especially those with high education background and enterprise experience, which also brings an embarrassing practical dilemma: Although there is a large amount of accumulation, it is difficult to make a qualitative breakthrough, and the rapid development also lags behind the connotation construction. Figure 1 shows the Construction chart of core curriculum construction in application oriented Universities.

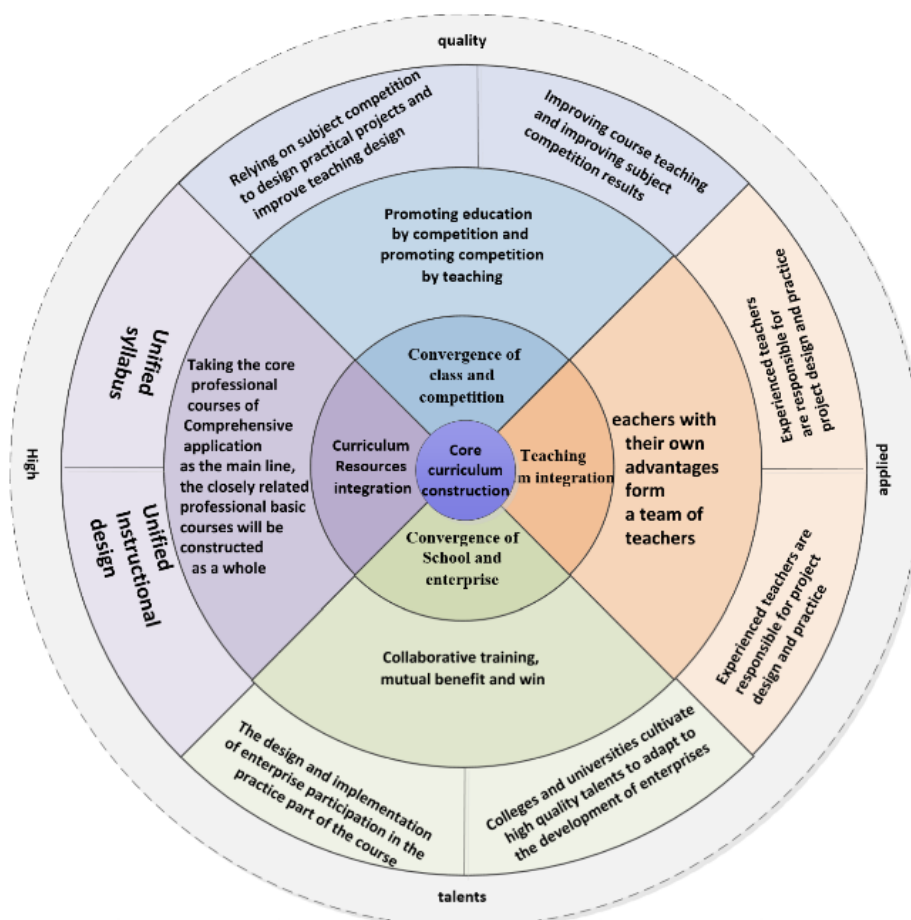


Figure 1. Construction chart of core curriculum construction in application oriented Universities

At the beginning of the transformation, due to the lack of teachers, there were few teachers who served as professional core courses because of the lack of teaching staff. The teachers of various professional courses were not willing to take the initiative to communicate with each other. It was difficult to build an effective bridge between courses, and students could not know the relevance between courses. Why study? How to form knowledge system? How to apply knowledge synthesis to production practice? The students were at a loss. How to teach? How to change it? How to connect with the industry? How to cultivate applied talents? The teacher was at a loss.

The deep integration of school and enterprise in application-oriented colleges and universities is to establish a cooperative relationship of complementary advantages, risk sharing and benefit sharing, so as to achieve the goal of integration of production and education and common education [4]. At present, most of the local application-oriented undergraduate colleges and universities only sign agreements or simply hire enterprise engineers to serve as courses or to observe the level of enterprises. They do not really participate in the design of teaching process and teaching project, and fail to achieve the leading role.

In recent years, with the enrollment expansion and transformation development of colleges and universities, colleges and universities attach great importance to the introduction of talents with rich practical experience and project experience from enterprises, such as doctors, engineers, senior engineers, and even professor level senior engineers. They have rich practical experience and project experience, but no teaching experience. Most college teachers have rich teaching experience, but lack of actual project development experience. At the same time, there is mutual disdain and mutual disapproval between the two types of teachers, which seriously affects the reform and development of teaching. How to get through the last mile of seamless connection between enterprise talents and original teachers and realize complementary advantages are the obstacles in the construction of professional core courses.

The establishment of a perfect "subject competition +" mechanism is one of the paths to cultivate high-quality applied talents [5]. However, how to link the curriculum and subject competition organically and give full play to the role of subject competition in the cultivation of applied talents is a problem that should be considered in the construction of professional core curriculum. Taking electronic information specialty as an example, most of the subject competitions of electronic information specialty are presented in the form of completed projects, especially the electronic design competition, UAV competition, robot competition and other competitions. Students are required to have the actual development ability to complete the work design, production and on-site demonstration within a certain period of time. Therefore, there is still a long way to go to integrate subject competition into curriculum construction.

To build a first-class undergraduate major, we need to allocate first-class teaching staff [6], first-class educational facilities, build first-class courses, gradually transform from quantitative change to qualitative change, and realize connotative development. There is a long way to go for application-oriented universities to build first-class undergraduate majors.

### **3. Construction of Core Curriculum in Application - Oriented Universities**

The remarkable feature of application-oriented university lies in "taking career demand as the guidance and taking career development as the core" to cultivate high-level application-oriented talents who are good at thinking, dare to practice, dare to innovate and pay attention to application. The construction of core curriculum is inseparable from curriculum, teachers and students. Curriculum is the main body of construction, teachers are the leading role of curriculum construction, and students are the center of curriculum construction. The purpose of building core courses is to cultivate high-level applied talents. The cultivation of high-level

applied talents in application-oriented universities needs to build "two integration" + "two convergence", in order to promote the construction of core courses.

### **3.1. Two Integration of Core Curriculum Construction in Application-oriented Universities**

To carry out curriculum construction around the center, we must integrate curriculum resources and teaching team.

#### **3.1.1. Curriculum Resources Integration**

Different curriculums are related, and closely linked. When building core courses and offering professional courses, we should fully tap the internal links between courses, organically combine closely related courses and form a curriculum system, rather than building and offering courses in isolation.

Taking the course of electronic information as an example, when constructing the course of principle and application of single chip microcomputer, the courses of principle and application of single chip microcomputer, circuit design and production, and course design of principle and application of single chip microcomputer should be constructed and set up as a whole. The curriculum integration needs to unify the outline and the statistical teaching design and the unified thought. At the same time, the unified thought needs to have the unified teaching team.

#### **3.1.2. Teaching Team Integration**

Application-oriented university is a university that cultivates talents with application skills that meet the needs of enterprises. What kind of teachers is needed to cultivate is urgent problems to be solved. Therefore, in the construction of core courses, it is necessary to re integrate the teaching team, and set up a teaching engineering research team with rich teaching experience, different professional courses and enterprise project practice experience.

Taking the construction of core course "principle and application of single chip microcomputer" as an example, through the establishment of research team of single chip microcomputer principle and application course, the single chip microcomputer and related courses are divided into different modules according to different knowledge points. Teachers with enterprise project practice experience are mainly responsible for the course project and module design; teachers with teaching experience and good at the module explain the corresponding modules. In the process of teaching, teachers can promote each other, learn from each other, share resources, and make progress together. For students, they can not only enjoy the optimal professional knowledge guidance, but also truly experience the ability improvement brought by project-based teaching and modular teaching [7], and can get personalized guidance and development according to their own situation.

### **3.2. Two Convergence of Core Curriculum Construction in Application-oriented Universities**

The construction of core courses should fully integrate subject competition, cultivate students' practical ability, system design ability, innovation ability, practical ability, team cooperation ability and comprehensive quality through subject competition; take industry as the standard, integrate teaching activities with production, operation and business activities of employing units, fully achieve school enterprise cooperation, production and teaching integration, and truly realize common development It is the same as cultivating talents.

#### **3.2.1. Convergence of Class and Competition**

Subject competition plays an important role in the training process of applied talents, and it is an important means to test the learning effect of students. Through the subject competition, the students can organically link up the various professional courses, cultivate the students' practical innovation consciousness and basic ability, the humanistic spirit of teamwork and the

study style of integrating theory with practice, and improve the students' engineering practice quality and the ability to solve practical problems. With the ability goal as the guidance, the competition and curriculum are integrated. The professional curriculum is the theoretical basis to guide the subject competition. In the process of competition, we can find our own shortcomings and weak links. The subject competition reacts on the course teaching, promoting teachers to carry out targeted teaching design in the course of curriculum construction and curriculum reform, and relying on the subject competition topics to teach Learning project design. Curriculum teaching and subject competition complement each other. The effective integration of curriculum teaching and subject competition is to unify the "teaching" of teachers and the "doing" of students, so as to realize the "living" of curriculum teaching and subject competition with teachers as the guide, students as the main body and students as the center. Therefore, in the construction of core curriculum, subject competition should be integrated into teaching design and teaching implementation.

### 3.2.2. Convergence of School and Enterprise

Talents are the soul of enterprises, and colleges and universities are the cradle of cultivating talents. The talent demand of enterprises is the vane of cultivating talents in Colleges and universities; especially the application-oriented colleges and universities highlight the importance of enterprises participating in talent cultivation. The application-oriented universities without deep school enterprise integration are castles in the air, while the application-oriented universities with deep school enterprise integration are connotative development and sustainable development.

The key of school enterprise convergence is that enterprise engineers integrate into the teaching team of curriculum construction, integrate new technology, new ideas, new methods, new industry standards and enterprise culture, and integrate these new technologies, new ideas, new methods, new standards and enterprise culture into the syllabus, teaching plan, teaching design and project design to guide teaching and practice and guide discipline competition. From signing agreements to visiting enterprises, from inviting enterprise engineers to carry out lectures to inviting enterprise technicians to participate in guiding the construction of professional core courses, to jointly developing school-based teaching materials, leading students to carry out course training, project research and development, and finally guiding employment, gradually moving towards the road of connotative development and sustainable development, so as to lead the regional industrial upgrading and transformation.

## 4. Conclusion

In order to create a first-class undergraduate specialty, application-oriented universities should pay close attention to undergraduate teaching: eliminate "garbage course" and create "golden course". In order to eliminate the "garbage course" and create the "golden course", we should focus on the construction of professional core courses, focus on the integration of curriculum resources and teaching team, deeply realize the integration of course competition and school enterprise convergence.

We need to transform the disadvantage that the talents introduced by enterprises can not "teach" into the advantages of curriculum construction project design and discipline competition guidance, highlight the advantages of the original teaching team. Our advantages complement each other and jointly breed high-quality applied talent.

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