Construction of "Double-qualified" Faculty in Applied Undergraduate Colleges and Universities under the Supply-side Reform

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Abstract. The construction of double-qualified faculty is an inevitable demand for the transformation and development of colleges and universities as well as the cultivation of applied talents. In order to solve the problem of the insufficient number of double-qualified teachers, this work constructed the three-dimensional competency model of "individual-position-organization" after clarifying the basic situation of double-qualified teachers, and further clarified the competence that double-qualified teachers should possess. Finally, this work took this model as the guide and relied on the two platforms of schools and enterprises to carry out teaching practice.

1. Introduction

Solving the problem of employment difficulties for college students and stabilize employment is urgent. In contrast, it is difficult for companies to recruit workers and find suitable talents. In order to solve the gap between talents delivered by colleges and universities and talents required by enterprises, the Chinese government has made an important decision to promote the transformation of ordinary undergraduate universities into application-oriented undergraduate education, which is an important part of the supply-side reform in the education field. At present, the biggest problem encountered by ordinary colleges and universities in the transition to applied undergraduate colleges is insufficient to double-qualified teachers. Therefore, based on the background of supply-side reform, it is of practical significance to discuss the construction of "double-qualified" faculty in applied undergraduate colleges.

2. The Construction of Double-qualified Faculty is the Requirement of the Times

2.1. The need for transformation and development of colleges and universities

The transformation of ordinary undergraduate colleges and universities to applied undergraduates is an important measure of supply-side reform. In the "Thirteenth Five-Year Plan for National Economic and Social Development", a clear instruction was made to promote the transformation of qualified ordinary undergraduate to applied colleges and universities. The "National Vocational Education Reform Implementation Plan" further clarified the development goal of "a large number of ordinary undergraduate colleges and universities transition to application-oriented", which promotes the integration of production and education, the "dual" education of schools and enterprises, and adoption of multiple measures to create double-qualified teaching force. The " Opinions of the State Council on Comprehensively Deepening the Reform and Construction of Teachers in the New Era" (issued on January 20, 2018) emphasizes the need to comprehensively improve the quality of teachers in vocational colleges and build a high-quality double-qualified teacher team. Therefore, the construction of double-qualified faculty in applied undergraduate colleges and universities is required for transformation.

2.2. The need for applied talent training

Applied undergraduate education mainly cultivates applied talents who not only have a relatively solid professional theoretical foundation but also have relatively mature technology and practical application ability in order to be able to adapt to the needs of society and jobs as soon as possible. Cultivating applied talents is an important measure to solve the difficulty of students' employment and corporate recruitment. The cultivation of applied talents requires that colleges and universities should attach importance to experimental training and increase the proportion of practical teaching

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in talent training programs, which will definitely require that applied undergraduate colleges and universities should have teachers who are competent for both theoretical teaching and experimental teaching, and double qualified teachers who are competent for both types of courses. Therefore, it is necessary for applied colleges and universities to strengthen the construction of double-qualified teachers.

3. Basic Overview of Double-qualified Teachers

3.1. The concept of double-qualified teachers

In terms of the definition of double-qualified teachers, there are currently six kinds of statements in the academic world, namely "double-certificate theory", "double-title theory", "double-quality theory", "double-object theory", "double-source theory" and "double-level theory", which is not unified. Each theory tends to be interpreted more extensively. The diverse definition of connotation and vague definition of concepts lead to unclear training standards and ambiguities training objectives in practical application.

Combining with the reality of current applied colleges and universities, the author believes that double-qualified teachers can be defined separately at the individual level and the school level. At the individual level, teachers are required to have "double-quality" and "double-ability", which means that they should be qualified for both theoretical teaching and practical teaching, and they should have the ability to teach the theory and guide the practice. At the school level, it can be "double-structure" and "double-object", that is, there are theoretical teachers from colleges and universities, as well as part-time teachers from industries and enterprises, and there are both theoretical teachers who are good at theoretical teaching and practical teachers who are good at practical teaching. Such a definition fully conforms to the goal of applied undergraduate talent training. According to this statement, an applied undergraduate college can consist of three types of teachers: theoretical teachers, double-qualified teachers and practical teachers. With the further development of applied undergraduate education and the requirements of teachers' personal growth, theoretical teachers and practical teachers will change to double-qualified teachers, and double-qualified teachers will occupy a larger proportion. Three types of teachers will always exist, but the number of teachers who can impart theoretical knowledge and guide students to practice is bound to increase.

3.2. The competency model of double-qualified teachers

Academia has made a lot of discussions about the qualities and abilities that double-qualified teachers should have, but so far there is no unified statement. Wu Jie (2011) constructed a competency model for double-qualified teachers in higher vocational colleges from the perspective of teaching ability, development ability, educational concept, scientific research practice ability, management ability and personal quality [1]. Yang Hao et al. (2013) defined the quality of double-qualified teachers in terms of professional ethics, teaching basic skills, professional knowledge and experimental practical ability [2]. Zhang Xinlan (2019) used factor analysis to extract the factors of double-qualified teachers' competence in higher vocational colleges, including professional ethics, personal personality traits, professional teaching ability, professional practice ability, academic research ability and basic theoretical knowledge, in which the professional ethics is the core [3]. The views of these scholars are mainly aimed at the competency requirements of double-qualified teachers in higher vocational colleges, but fail to define the ability of applied undergraduate double-qualified teachers. Since higher vocational education and applied undergraduate education belong to two different levels of education, it is necessary to define the quality of double-qualified teachers in applied undergraduate colleges and universities. In summary, based on the people-oriented concept, comprehensively and balanced organizational development and personal development, this work constructed a competency model for double-qualified teachers from the three dimensions of "individual-post-organization" [4], as shown in Figure 1.

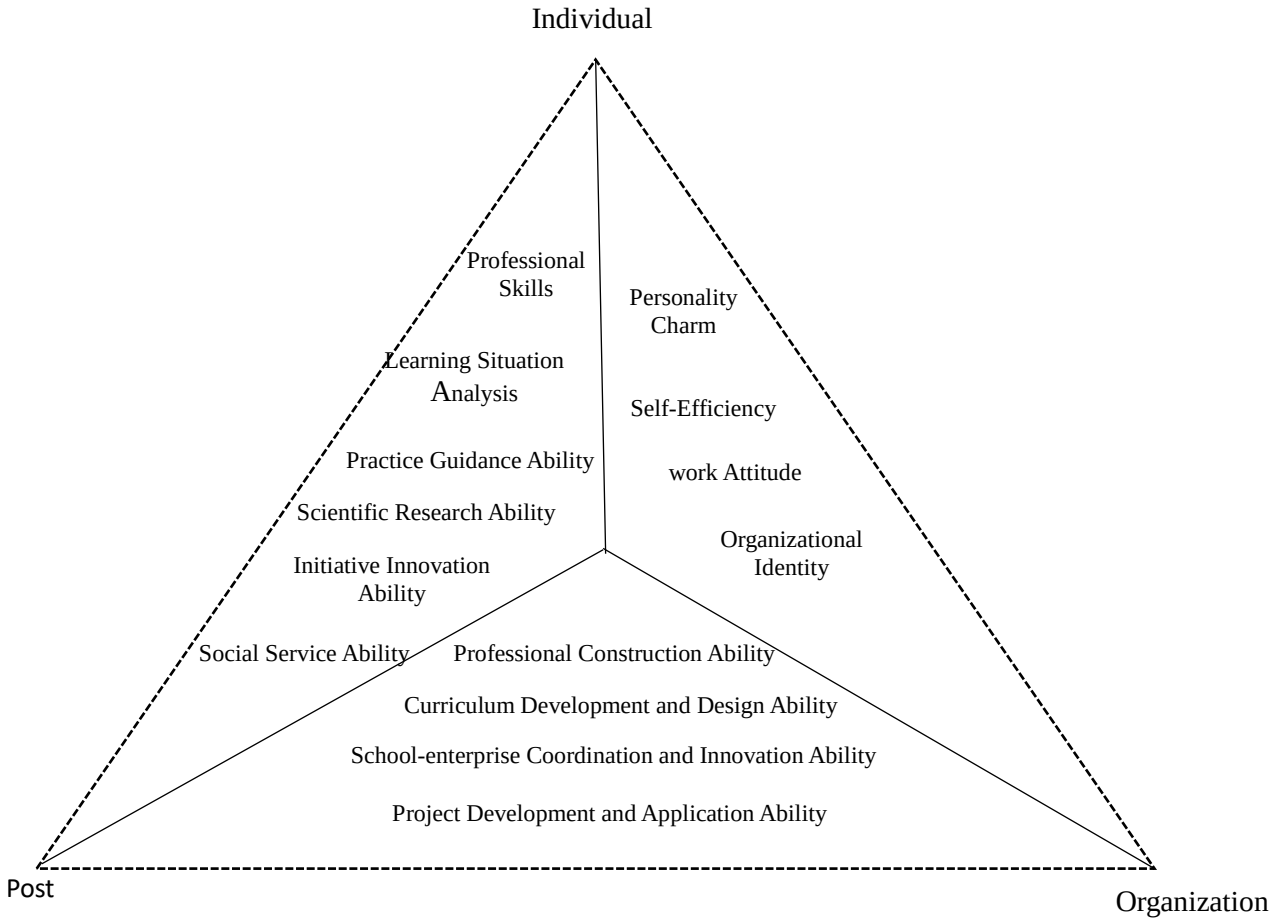

Figure 1. The competency model of double-qualified teachers in applied undergraduate colleges and universities

The individual dimension mainly includes qualities such as personality charm (such as noble moral sentiment, integrity, firm ideals, etc.), self-efficacy (such as personal accomplishment), work attitude, and organizational identity (such as organizational loyalty and organization commitment, etc.).

The post dimension mainly includes ability characteristics required for double-qualified teachers to be qualified for the job, including professional knowledge, professional skills, teaching design ability, teaching practice ability, teaching organization and management ability, professional practice ability, experimental practice guidance ability, communication and coordination ability, scientific research ability, scientific research results promotion and transformation ability, learning and innovation ability, social service ability, etc.

The organizational dimension mainly requires teachers to possess necessary competency characteristics from the perspective of organizational development, that is, double-qualified teachers should adapt to and promote the ability of organizational development, including professional construction ability, curriculum development and design ability, school-enterprise coordination and innovation ability, project development and application ability, experimental training room construction and planning ability, talent training program demonstration and design ability, off-campus training base development and construction ability, etc.

4. Construction Approach of the Double-qualified Faculty Based on the Competency Model

Clarifying the concept of double-qualified teachers and the qualities they should have provides a clear direction for how to cultivate them. The following will take the promotion of quality capabilities as the starting point and use the two platforms of schools and enterprises to discuss the construction approach of the double-qualified faculty.

4.1. Construction approach of the double-qualified faculty based on schools

4.1.1. Attaching importance to the construction of teachers' morality and improving the charm of teachers' personality

The most significant part of education is teachers. President Xi Jinping believes that a good teacher is supposed to have "ideals and convictions, moral sentiments, solid knowledge, and kindness". In the recruitment process of colleges and universities, teachers' morality investigation should be put in the top priority. In addition, in the process of building a double-qualified teacher team, the construction of teachers' morality should be attached great importance to, so that it can create a good environment for respecting teachers and guiding the majority of teachers to develop morality, teach with morality and become role models for students. Only in this way can teachers realize "life to life irrigation, and spirit to spirit contaminate" and continuously improve their personality charm.

4.1.2. Cultivate teachers' competence in teaching practices

Teaching is an activity that integrates science and art. The growth of teachers benefits from the practice of teaching. At present, a major source of teaching force is from colleges and universities, and many college teachers are graduates of non-teacher-type majors. Although there is pre-job training for teachers to impart relevant knowledge of educational theory and educational psychology, the time is short and the effect is not obvious. To this end, it is necessary to attach importance to the training of double-qualified teachers in teaching practice: first, assigning certain teaching tasks to young teachers; second, implementing mentoring system and assigning an experienced teacher as the tutor; third, formulating strict teaching standards to guide teachers to gradually develop good teaching qualities in the teaching practice process; forth, reflecting on teaching. Through teaching practice and teaching in person, teachers can be trained to be competent for teaching positions, and gradually improve their teaching design ability, learning situation analysis ability and teacher quality.

4.1.3. Setting up a curriculum team to guide teachers to learn from each other

Teaching ability includes teaching activity design ability and teaching practice ability. Teaching activity design is commonly known as lesson preparation, which focuses on teachers' proficiency in teaching materials, teaching methods and learning conditions. The development of this ability requires talent, experience, and other people's guidance. In current colleges and universities, most of teachers prepare lessons by themselves, and there are few collective lessons. The so-called "eight immortals cross the sea, each has its own power", each teacher has its own strengths and weaknesses. To this end, setting up a curriculum team, assigning a chief teacher and carrying out teaching and research activities such as collective preparation of lessons, collective reflection on lectures, and other teaching and research activities are of great benefit to promoting mutual learning and common growth among teachers.

4.1.4. Enhancing teachers' self-efficacy through teaching competition platform

The motivation need theory proposed by McClelland believes that personal development is driven by achievement needs, power needs, and social needs. The level of achievement needs affects the individual's motivation to pursue success. The stability of college teachers is relatively strong, and the career of teachers lasts 30 to 40 years. In this long period, day-to-day teaching practice is prone to cause professional fatigue. Establishing a competitive teaching competition platform is an important means to alleviate professional fatigue and awaken teachers' achievement need. By participating in teaching competitions, obtaining rankings and winning awards, teachers can prove their abilities and meet the needs of achievement. Therefore, colleges and universities should regularly hold teaching competitions that cover a wide range of high-level, docking provincial and national competitions to promote the competition and cultivate teachers with high level of teaching literacy. At the same time, in terms of professional title assessment, annual assessment and incentive mechanism, teachers who have won prizes are inclined to improve their enthusiasm for the competition. In addition, teachers are selected through teaching competitions to carry on the prize and be the typical example, which meets the need of teachers' achievements and improves teachers' self-efficacy.

4.1.5. Improve teachers' practical guidance ability through non-curricular extension projects

In the talent training program of applied undergraduate colleges and universities, there are two major platforms for the cultivation of students' comprehensive ability, one is the classroom teaching platform, and the other is the non-curricular expansion project, including innovation and entrepreneurship practice, professional skills competition, scientific research projects, invention-creation, thesis publishing, professional qualification certificate, etc. These projects, like professional skills competitions, generally require an instructor. In the process of guiding, teachers can also improve their practical guidance ability. However, few teachers are willing to put in the effort to be a mentor since and the return on time is low. In order to improve this situation, first, schools should take teaching practice such as guiding students to participate in competitions, innovation and entrepreneurship projects and other non-curriculum development projects as basic teaching tasks, which are assigned and implemented; second, establishing a complete evaluation incentive mechanism. Schools can assign a classification list of student competitions each year to give different evaluation weights for teachers to choose.

4.1.6. Comprehensively improving teachers' practical teaching ability in experimental training teaching

The experimental training teaching link is an important way to improve students' professional literacy and practical ability. The proportion of practical teaching links in some applied undergraduate colleges and universities has been as high as 50%. However, in actual operation, many teachers are unwilling to undertake experimental training teaching tasks. The first reason is that there lack corresponding experimental training materials for applied undergraduate colleges and university, therefore, teachers need to design experimental and practical teaching projects by themselves, which costs a lot of energy. The second reason is that some applied undergraduate colleges and universities lack corresponding experimental training places, or just have backward practical teaching conditions, increasing the difficulty of experimental training teaching. The third reason is that teachers themselves lack practical work experience, so that they can only "talk on paper" in practical training and teaching, which results in poor experimental practice teaching quality and low student evaluation. In summary, in order to improve the quality of experimental practice teaching in applied undergraduate colleges and universities, it is necessary to work hard on curriculum design, teaching design, site design, teaching material design, and teacher training. When conditions permit, the experimental training class should be implemented under the "double-qualified" system, that is, one experimental training class is equipped with two teachers, one is a full-time teacher in the school, and the other is an expert in the enterprise. They teach together, learn from each other, and gradually improve the experimental practice teaching ability of teachers in practice.

4.1.7. Improving teachers' scientific research and social service ability through horizontal research

Double-qualified teachers should have the ability to serve society, carry out scientific research and transform scientific results. Double-qualified teachers should actively participate in horizontal subject research while carrying out vertical subject research. The horizontal topic is an important channel of cooperation between college teachers and enterprises, and it is also an important way for college teachers to understand the development trend of the industry, the needs of enterprises and the latest product technology development frontier. Through horizontal subject research, college teachers can understand more about the status and development needs of professional teaching development, so that they can impart the latest development status and needs to the classroom, which helps to reduce the gap between school talent training and corporate needs. Therefore, with the help of horizontal topic research platforms, the integration and development of production, education, and scientific research can be promoted.

4.1.8. Improving the training system for double-qualified teachers and comprehensively improving their position competence

At present, the training of college teachers lacks pertinence. Although there are many popular lecture-type training courses, the training effect is not satisfactory. Training needs of teachers with

different teaching ages and professional titles are different. What is more, with the needs of different development stages of colleges and universities, the demand for training is also different. Applied undergraduate colleges and universities should formulate a scientific training system, formulate different training plans for different training needs, and make overall arrangements. For example, according to the different teaching years, the teaching team can be classified into new teachers, young teachers with 1-3 years of teaching experience, young teachers with 5-10 years of teaching experience and old teachers with more than 10 years of teaching experience. For those young teachers who just graduated from school, emphasis should be put on training their basic skills and mastering teaching standards through mentoring, so that they can as soon as possible competent teaching, teaching tasks; for young teachers with 1-5 years of teaching experience, emphasis should be put on training their professional qualities and expanding professional knowledge, so that they can master more teaching skills and teaching methods, and grow into the backbone of teaching as soon as possible; for young and middle-aged teachers with 6-15 years of teaching experience, emphasis should be put on training their course development ability, textbook compilation ability, professional construction ability, and training base construction ability, so that they can grow into professional leaders, subject leaders, and backbone teachers, which are the backbone of school teaching development; for those elderly teachers with more than 15 years of teaching experience, emphasis should be put on training them to master new teaching concepts, teaching methods and teaching modes, so that they can meet the needs of information-based teaching and the learning needs of students in the new era. In addition, according to different stages of school development, targeted thematic training can be carried out to meet the needs of different stages of development, such as information-based teaching training, teaching reform and teaching method training, experimental practical teaching training, curriculum ideological and political training and other special training. Teachers can choose different projects for training according to their own needs.

4.2. Construction approach of the double-qualified faculty based on enterprises

Teachers in applied undergraduate colleges and universities assume the responsibilities of talent training, scientific research, and serving society. Therefore, double-qualified teachers should go to the front line of the enterprise to learn and practice, strengthen ties with enterprises, conduct horizontal topic cooperation, and serve society. At present, many applied undergraduate colleges encourage or require teachers to use the winter and summer vacations to go to the enterprise to conduct post-employment practice and in-depth study. However, the actual situation is that due to the short practice time, short service cycles and limited contacts, many enterprises are unwilling to accept teachers to practice their posts during the winter and summer vacations based on actual conditions. This results in a lot of teachers' post-practice are just going through the paces, without in-depth practical learning, the effect is not ideal. In order to improve this situation, the following measures can be taken: first, senior leaders in colleges and universities can take strategic all-round cooperation with some local leading companies to reach in-depth cooperation consensus on scientific research, talent training, student employment, and teacher training; second, colleges and universities can extend the practice time of teachers to more than half a year and assign teachers to take training in enterprises; third, colleges and universities should seize the industry-university-research service platform and carry out horizontal project cooperation; fourth, the government should come forward to introduce relevant preferential policies to encourage enterprises to support education and develop a "dual-element" education model. In short, schools, enterprises, and the government should work together to create an atmosphere of production, teaching and research, and enable enterprises to become important training bases for double-qualified teachers. Only by participating in the first-line production of the enterprise industry and participating in the technology research and development and management of the enterprise, can teachers truly grasp the technical needs of the first-line production in the industry, learn and exercise technical skills in practice, and improve their practical ability to be better competent for experimental practice teaching.

5. Summary

In the context of supply-side reform, applied colleges and universities should attach importance to the training of double-qualified teachers. Colleges and universities should clearly identify the qualification standards of double-qualified teachers, clarify the competency requirements of double-qualified teachers, and further improve the training system of double-qualified teachers. While making full use of the school's conditions, colleges and universities should make full use of the industry-school-research cooperation platform, strengthen cooperation with enterprises, and jointly train a high level of double-qualified faculty.

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