

From the Perspective of system Innovation, the Transformation of College Teachers toward the Professional Development of "Dual Teachers and Dual Abilities"

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Abstract: The teacher structure is a key factor that affects the development of school teaching. The "double teacher" professional teacher team can better reflect the main characteristics and basic characteristics of the teacher structure in teaching. To this end, our country has formulated a series of policy documents to guide and promote the construction of a team of "double-qualified" professional educators. This paper studies the professional development of teachers in colleges and universities transforming to "dual-teacher dual-ability" from the perspective of system innovation. Based on the literature and data, it understand the relevant knowledge and theories of dual-teacher dual-ability, and then use the method of questionnaire survey to investigate university teachers. A survey is conducted on the status quo of the professional development of "dual-teacher and dual-ability". The survey results show that as long as there are problems in the development of dual-teacher dual-ability teachers at this stage, as long as the teacher motivation system is not perfect, accounting for about 44%, then there is the recognition of dual-qualification. The system is not perfect.

1. Inductions

At present, the development of higher education in my country is shifting from the stage of scale expansion to the stage of adaptation, with quality improvement and structural optimization as the core [1-2]. In this context, improving the quality of education has become an important topic of higher education at this stage [3-4]. The quality of higher education lies in the development and transformation of "applicable skills suitable for high-quality human resources, production, construction, management and services", and provides high-quality scientific and technological

services for enterprises [5-6]. First of all, improving teachers' abilities is an important beginning [7-8].

Regarding the research on dual-qualified teachers and the cultivation of dual-ability teachers, some scholars have proposed that dual-qualified teachers must have qualities and special qualities. One is a reasonable professional knowledge system, higher education and teaching capabilities, higher scientific and educational research and development innovation capabilities, and more Comprehensive disciplines and comprehensive literacy; second, specific literacy needs: having too strong professional knowledge system and practical innovation ability, information communication, organization and coordination ability and comprehensive management ability, employment guidance ability and business training skill [9]. From the perspective of dual-teaching education, some researchers have put forward requirements for the basic literacy of dual-teaching education, and pointed out that the following three disciplines must be mastered in teacher education with dual mentor ability: professional, education, technology or subject[10]. Some researchers pointed out that the common characteristics of dual-qualified teachers are mainly reflected in the extensiveness and intersection of professional knowledge, the practicality and application of the ability structure, the integrity and professionalism of the quality structure [11]. "Dual teacher" refers to the qualifications of a specific subject (ie, technical college). Some scholars believe that dual-qualified teachers are innovative talents in terms of the existence, training, and evaluation of dual-teacher qualifications, and their evaluation criteria are dynamic, hierarchical, and Realistic [12]. In summary, there are many research results on dual-teacher dual-capable teachers, but they all stay in theoretical research.

This article studies the transformation of college teachers toward dual-teacher dual-ability professional development from the perspective of system innovation. Based on the literature, the concept of dual-teacher dual-ability and the existence of college teachers toward dual-teacher dual-ability professional development from the perspective of system innovation analyze the question, and then use the questionnaire to investigate the current situation of dual-teacher dual-ability teacher training, and draw relevant conclusions through the results of the questionnaire.

2. Research on Dual-Teacher Dual-Energy Type

2.1 Concept of Dual-Division and Dual-Energy

The "dual-teacher dual-ability" teacher is designed based on the "dual-teacher type" teacher, which meets its basic standards, and the ability requirements are "dual-teacher type" in education. It also combines the concepts of "dual-teacher" and "dual-ability" teachers put forward by scholars, and fully reflects the applicability requirements of applied colleges for teachers. "Dual-teacher dual-ability" teachers must have the basic qualifications of professional work experience related to teacher qualifications. The "dual teacher" teacher must be a person who teaches both theoretical and practical skills, and must have teaching abilities and theories that cross multiple boundaries.

(1) Educational content of "teachers" in education.

According to the characteristics of education and the basic quality requirements of "dual profession" teachers, the main content of "dual profession" teacher training is pedagogy, psychology, professional theoretical knowledge and skills, education and research, including education, vocational skills and abilities, and occupations. The training of guidance, management skills and innovation skills not only reflects the "educational nature" of vocational teachers, but also pays more attention to their "professional character."

(2) The strategy of "dual teacher type" teacher training.

Training "dual professional" teachers is a long-term systematic task. Scholars have explored in theory and practice. There are usually the following strategies: (1) Improve related management systems. This is mainly related to the certification standards, incentive mechanism, degree evaluation system, salary and welfare system of "dual-qualified" teachers. (2) Establish a life-long learning system and actively promote in-service teacher education, including on-campus and off-campus training. School education, or targeted education based on school characteristics and development requirements, can provide teachers with opportunities for interaction and learning, and can create conditions for the development of "dual teacher" teachers. Off-campus education mainly refers to continuing education teachers who participate in national and national training, such as basic education classes, national teacher training classes, professional training classes, etc. Teachers can systematically learn professional knowledge and skills, understand the information and technological frontiers of their professional fields, and improve their theoretical and practical skills. (3) Strengthen school-enterprise cooperation. The school allows teachers to keep abreast of the development trend of the industry and advanced production technology, realize the organic combination of professional theory and production practice, stimulate creativity, and teach high-quality teachers "Teachers need to often engage in production practice in business" so that they can improve their skills. (4) Improve the structure of teachers' academic qualifications and professional qualifications. When hiring teachers, we must consider not only academic ability, but also the ability to promote the diversification of teacher sources. Part-time teachers can be hired from enterprises, institutions and the society.

2.2 The Problems Existing in the Transformation of College Teachers toward the Professional Development of "Dual Teachers and Dual Abilities"

The quality improvement of dual-qualified teachers is generally slow, which prevents the total number of dual-qualified teachers from increasing rapidly. The training of dual-qualified teachers is inseparable from the actual situation of the university, but in terms of the requirements of the University Higher Education Development Law, the school-running rules and the requirements of the developmental dual-qualified teachers. In training, how to evaluate dual-qualified teachers, the implementation of educational practice, and system guarantees are all important factors that affect the training of dual-qualified talents. The structure of dual-qualified teachers is difficult to optimize and progress is slow. In particular, the problem of the existing dual-qualified faculty structure in universities is particularly prominent. The problems facing at this stage are:

(1) It is difficult to unify the evaluation method

The characteristic of the double-qualified teacher school evaluation method is "focus on results". The evaluation method focuses on the various elements of how to become a double-qualified teacher. The realization of the double-teacher qualification standard is the condensed embodiment of the double-teacher evaluation method, which is difficult to be unified. The concept of dual-professional teachers also includes "production, study and research" experience, project application research and actual results obtained, industry and enterprise experience, etc, the basic responsibilities of dual-time teachers.

(2) The effect of education and training is difficult to reflect

Undergraduate education is an education that disseminates advanced and unique professional knowledge and technology to develop applied human resources in local production, construction, management and services. The development of applied human resources focuses on improving applied technical skills. As the leader of applied undergraduate education, dual-qualified teachers

are the main task of cultivating applied human resources. Practical education is the main content of cultivating applied talents. Because when constructing a practical education system, we must follow the laws of students' cognition and professional ability, from simple to complex, from individual elements to comprehensive logical systems. Practical education is a higher requirement for dual-qualified teachers. The specific requirements of dual-qualified teachers are reflected in four aspects: solid basic theoretical knowledge, high-level education, strong professional practical skills, and rich practical work experience, professional team quality requirements. Dual qualification is also a requirement for applied teacher education and applied universities. Strong professional skills and rich work experience are an important guarantee for the practical education and the construction of a practical education system for dual-qualified teachers. However, the participation of dual-qualified teachers in practical education is not high; it does not help improve teachers' professional ability and practical experience, and does not support the development of applied talents.

3. The Status Quo of College Teachers' Professional Development towards "Dual Teachers and Dual Abilities"

3.1 Research Object

The purpose of this research is to investigate the status quo of the professional development of teachers in "dual teachers and dual abilities" majors in colleges and universities. In the process of cultivating the professional ability of "dual-qualified" teachers in colleges and universities, they not only participate in teachers' daily educational activities, but are also closely related to the teachers' living environment. Therefore, in this study, the following factors were considered when selecting the research topic. First of all, considering the research topic "expert training", the research object must be outstanding representatives of "dual-ability expert" teachers, old teachers with specific professional development experience, not new teachers who are just starting to work, and are in "professional development" and are educated Teachers with high age, high professional title and many grades. The second subject is willing to accept and cooperate with researchers in their work and living environment so that they can observe and collect research data in all directions. Third, the research interests are education, student care and noble professional ethics, or want to share relevant information in the field of education

3.2 Investigation Method

This research is mainly aimed at vocational schools and vocational schools in the city, using the "CRP Digital Campus Information Platform" to identify the questionnaires summarized in the "Questionnaire Star" as "dual qualifications" and distribute them to teachers. Some dual-faculty teachers and related administrators have evaluated the current situation of dual-school teachers and dual-school teachers, in order to promote the professional development of teachers' "dual-teacher", and hope to conduct detailed interviews on this to provide reference for the construction of "dual-professional" teaching team.

3.3 Survey Sample

This questionnaire was produced on the basis of the first batch of questionnaire star platforms with "dual teachers" and "teachers list" announced by the Municipal Education Department. Using

"digital campus digital information campus", it was successfully identified as "dual teacher type". Teachers at all levels are recognized and issued. The survey lasted for two months. As of the beginning of the data analysis, 130 valid questionnaires had been received. Among them, there are 104 vocational and technical schools, accounting for 75.91% of the total number of teachers successfully recognized by the school as "dual-qualified" teachers. The survey results of this data are highly representative and extensive, and basically reflect the professional development of dual-qualified teachers in most vocational colleges and technical colleges. The questionnaire contains 33 multiple-choice questions, and the content of the questions contains many main parts. 1. The basic situation of teachers. 2. The status quo of "dual qualification" certification standards 3. "Dual qualification" teacher training; 4. Career development planning; 5. Teachers' scientific research ability and level; 6. Issuance and implementation of evaluation mechanisms and incentive measures. In addition, this questionnaire also raises two unresolved subjective issues, mainly to solicit teachers' views and suggestions on teacher training on the status quo of the professional development of "dual-qualified" teachers.

3.4 Data Processing

(1) Choose a model

A selection model includes the distribution of complete data and the distribution of missing data. Therefore, the joint distribution of the two can be expressed as:

$$P(Y, R | \theta, \xi) = P(Y | \theta) \cdot P(R | Y, \xi) \quad (1)$$

Where θ represents the unknown parameter of the complete data population, and ξ represents the conditional distribution parameter of the missing data distribution R of the given complete data. This article can calculate the value of the function by including the Y probability function of all missing data. The maximum probability value is not always analytic, so iterative methods are needed to approximate the estimated value of i . Another problem in choosing a model is that it is very sensitive to the overall format of the distribution function.

(2) Mixed mode model

In the mixed mode model, the entire sample is grouped based on the distribution of missing data. The model can be expressed as:

$$P(Y, R | \theta, \xi) = P(Y | \eta) \cdot P(Y | R, v) \quad (2)$$

Where θ and ξ have the same meaning as in the selection model, n represents the percentage of the population in each missing data set, and v represents the parameter of the complete data distribution under the given data set missing. One disadvantage of the mixed-mode model is that it is difficult to estimate the parameter v that contains the unobserved data set, so it requires extremely strict or unverifiable assumptions. On the other hand, this type of model is not as sensitive to the overall distribution as the selection model.

4. Analysis of Survey Results

4.1 Release and Implementation of the Assessment and Incentive Mechanism

This paper investigates the status quo of the professional development of college teachers toward the "dual-teacher and dual-capable" professional development. Through the questionnaire sorting out the problems existing in the professional development of college teachers toward the

"dual-teacher dual-capable" professional development at this stage, the results are shown in Table 1. :

Table 1: Release and implementation of assessment and incentive mechanism

| | intermediate | advanced |
|---------------------|--------------|----------|
| Dissatisfied | 27% | 28% |
| Very satisfied | 2% | 1% |
| Basically satisfied | 44% | 42% |
| not so satisfied | 7% | 10% |
| Quite satisfied | 19% | 20% |

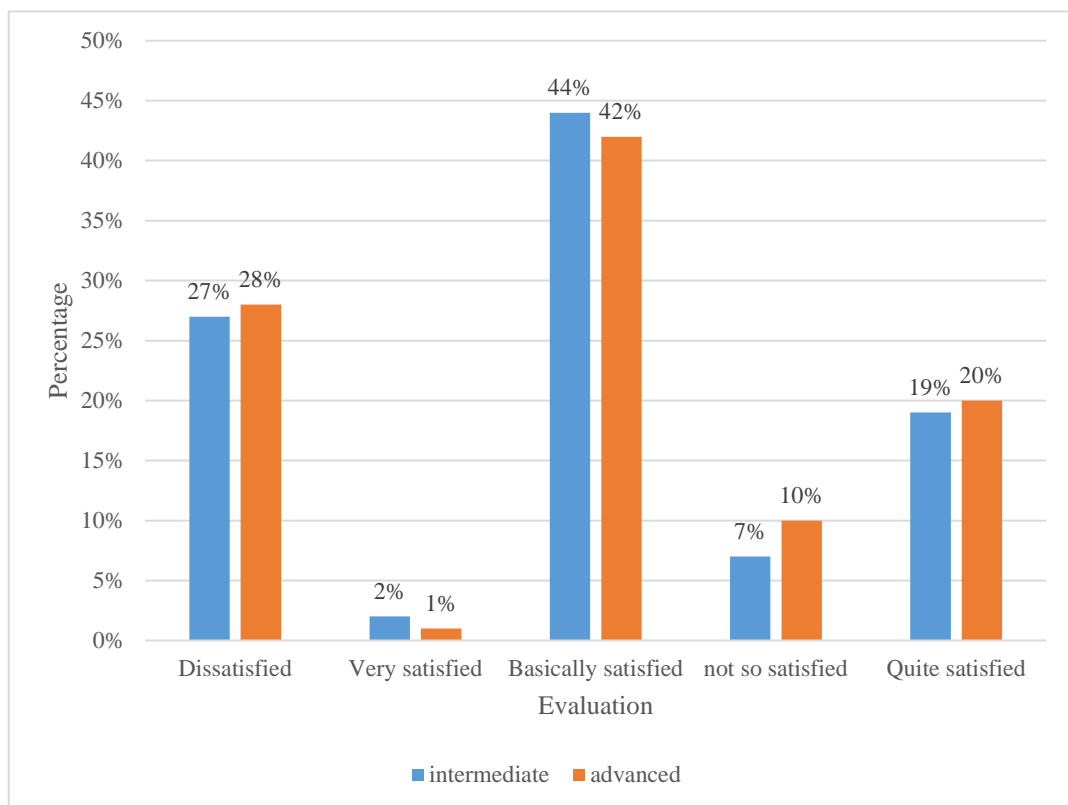


Figure 1: Release and implementation of assessment and incentive mechanism

It can be seen from Figure 1 that 44.26% of the teachers said they were "basically satisfied" with the school's "dual teacher" teacher daily management system, 26.92% said they were "not very satisfied", and 19.23% said they were "relatively satisfied".

4.2 The Degree of Difficulty of Professional Scientific Research and Education and Teaching Research for "Dual-Professional" Teachers

This paper investigates the status quo of the professional development of college teachers toward the "dual-teacher and dual-ability" professional development. By sorting out the questionnaires, the current problems in the professional development of college teachers toward the "dual-teacher and dual-ability" professional development are obtained. The results are shown in Table 2. :

Table 2: The degree of difficulty of professional scientific research and education and teaching research for "dual-professional" teachers

| | Intermediate | Advanced |
|---|--------------|----------|
| The qualification system for double-qualified teachers is imperfect | 21% | 2% |
| The double-qualified teacher training system is not perfect | 2% | 1% |
| The incentive system for dual-qualified teachers is not sound | 44% | 42% |

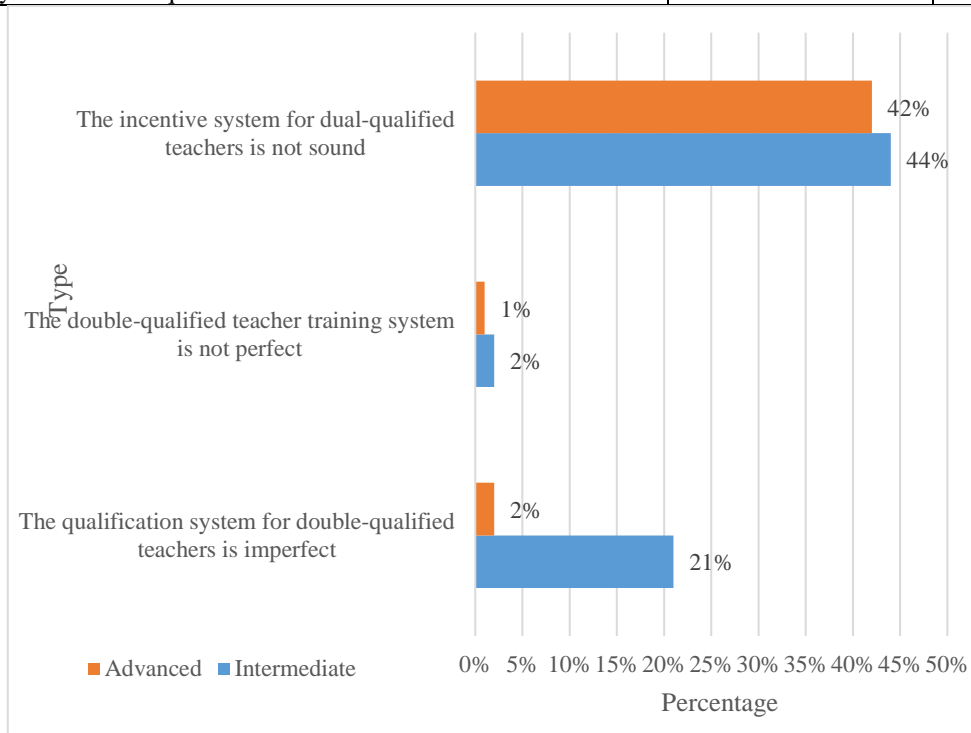


Table 2: The degree of difficulty of professional scientific research and education and teaching research for "dual-professional" teachers

It can be seen from Figure 2 that the current problems in the development of dual-teacher dual-capable teachers as long as the teacher incentive system is not perfect, accounting for about 44%, and then the dual-qualification certification system is imperfect.

5. Conclusions

This article focuses on the transformation of college teachers toward the professional development of "dual-teacher and dual-ability" under the perspective of system innovation. After analyzing the relevant knowledge and theories, the current situation of dual-teacher dual-ability teacher training is investigated, and then the survey results are carried out. The analysis and conclusion show that 44.26% of teachers are "basically satisfied" with the school's existing "dual-qualified" teacher daily assessment management system, 26.92% are "not very satisfied", and 19.23% are "relatively satisfied".

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