

# Research on the Cultivation and Teaching Management of Double Degree Professionals under the Construction of "New Engineering"

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**Abstract.** New engineering is to cultivate interdisciplinary talents. Compared with the double degree training under the traditional situation, it puts forward some new requirements. Combined with the main problems existing in the dual degree training process, this paper proposes three methods of redefining the dual degree training program, strengthens the teaching process management, organizational security and other problems, and finds effective ways of dual degree management under the new engineering background.

**Keywords:** Cultivation & Teaching Management; Double Degree Professionals; New Engineering.

## 1. Introduction

After the concept of "new engineering" was put forward in 2016, the Ministry of Education organized several "new engineering" seminars and some guiding documents have been issued to encourage colleges and universities to actively explore the "new concept" of engineering education, "new structure" of discipline, the "new model" of talent cultivation, and the "new quality" of education and teaching[1]. Many domestic scholars then participated in the discussion. It is generally believed that "disciplinary cross-review" not only has the ability to solve complex engineering problems by professional knowledge, but also familiar with economic, social and management knowledge, be able to change the shortcomings of traditional engineering majors, and promote the intersection between disciplines. Under this new circumstance, it is important for the double-degree training model of business administration to redefine the training objectives, revise the teaching content and curriculum system, improve the reform of class teaching mode, and strengthen the integration of professional education and general education [2].

## 2. Double Degree Education Mode Discussion

In essence, the construction of new engineering is also to explore a new mode of talent cultivation, and some new majors will appear one after another. Interdisciplinary and cross-boundary integration will be the foothold of the new majors, which stresses the important position of implementing dual degrees in the talent cultivation mode.

In addition to the traditional "1+X" mode, for example, many comprehensive universities use existing teaching resources to open "Business administration + the first major" "law + the first major" "computer + the first major". Shi Jiezhou and Li Yubai's proposed a new model in the article exploration and practice of "Internet +" compound elite talent training mode under the background of "new engineering construction", The new model mentioned in the article "practice" is understood by the author as "X+Y". The university has 7 majors, including Internet of things engineering, computer science and technology, smart grid information engineering, new energy materials and devices, mathematics and applied mathematics, Internet finance, information management and information system, which are divided into two major modules. Students who select their first major in 4 engineering majors can choose one of the three majors in the second module "mathematics and applied mathematics", "finance", "information management and information integration" as the second major to realize the technology + management mode. For students who choose the second module for the first major, they can choose one of the other four engineering majors (the first module) as the second major to realize the mode of management + technology.

For the original major, the integration of "technology + management" or "management + technology" realizes the mode of compound cultivation, and builds a new knowledge system and curriculum system, which is great in the view of author and is looking forward to the results and promotion of the new mode. However, for the "1+X" dual-degree model implemented by more schools at present, we still need to focus on the current situation, analyze existing problems and put forward suggestions for the current dual-degree work.

### **3. Analysis of the Main Problems in Double Degree Work**

#### **3.1 The Training Plan is not Well Designed**

The curriculum setting of the major and the second major is independent of each other. It is a common phenomenon that there are more theoretical sections and less practical sections in the training plan of the second major. In the implementation plan of some schools, there are 30 credits in the theoretical section, 10 credits in the graduation project, and few or no credits in the practical section. The author once found in questionnaire survey on the double-degree of business administration that among 116 students who answered this question, there are 69 people who think that the current curriculum learning has not established a relatively complete subject knowledge system for students, the curriculum setting is unreasonable, the practice course credits are low, students just memorize the textbook knowledge, do not have a deep understanding of knowledge, and the exam-taking education dominates.

#### **3.2 Problems Existing in the Course of Classroom Teaching**

Double degree courses are usually offered on holidays to avoid major subjects. To complete a prescribed course, it is normal to have eight classes in a row on Saturday. Teachers teach in accordance with the conventional theoretical teaching mode, rarely arrange the discussion, project design, teamwork, flipped classroom and other teaching reform mode, on the one hand, students' second major learning foundation is weak and poor organized. On the other hand, the double-degree teaching work is the workload outside the normal teaching. The school does not evaluate. The teacher only needs to complete the required credit tasks, here is no assessment criteria for the after-school Q&A, the course teaching reform, and the students' listening effect and no effective incentive mechanism to supervise teachers and students.

#### **3.3 Double Degree Education Lacks Effective Teaching Organization**

##### **3.3.1 Professional Guidance for Students is Generally Inadequate.**

During the period of studying double degree, students generally receive insufficient study guidance of the second major. On the one hand, because double-degree students come from all majors of the university, it is difficult to organize and manage them. On the other hand, part-time head teachers know little about students' learning conditions, interests and hobbies[3], or even about other majors. As a result, students can obtain the corresponding learning guidance neither from the double degree teachers, nor from the original professional teachers. The learning process of students is very hard and blind, and in-depth research on the second degree training program and learning methods is not enough. Therefore, some students lack interest in the learning process and cannot continue to complete their studies. Although some students choose double degrees according to their interests, they cannot deal with the relationship between major and minor in the learning process, and do not estimate the difficulties they encounter or overestimate their ability, unable to adapt to the great learning intensity, ultimately resulting in having to give up the double degree of study [4].

##### **3.3.2 Weak Organizational Safeguards.**

At present, there are few universities with double degree education that clearly have double degree management rules and appoint special personnel to manage them. Some schools are affiliated with the office of academic affairs, some schools are managed by each college, and some are managed by adult education, etc., there is no special rules and regulations suitable for double-degree students, no

corresponding teacher assessment, performance system, no reward and punishment system for students. More class teacher part-time escrow double degree classes. Due to the lack of professional management and supervision, double-degree classes have vague concepts, poor cohesion and strong mobility, which are inconvenient for management. As a result, teachers and students hold a weaker attitude towards double degree than the original professional teaching, the teaching management process is lax, and the organizational guarantee measures are weak.

## **4. Strengthen the Measures and Exploration of Double Degree in Business Administration**

### **4.1 Reform the Training Plan, Re-Optimize the Curriculum, Reasonably Design the Teaching Content**

In view of the professional integration idea, the second degree needs to study the learning characteristics and technical methods of major courses in the course setting, and how to infiltrate and supplement the concepts, methods and tools of management disciplines into other professional thinking and methods, so as to realize the cross-integration of knowledge between disciplines. To be specific, from the perspective of education teaching resource sharing and the connection between course teaching, double degrees should be integrated into the course teaching system instead of becoming a system alone. The idea of system engineering may achieve better results.

Method one: When the talent training plan is set up, the length of schooling is extended for one year. For example, when Qing Hua University sets up the double-degree system, it is to complete the learning tasks of two disciplines and majors at the same time and obtain the qualification of two bachelor's degrees within the five-year undergraduate program. In this way, there is enough time for the arrangement of dual-degree courses, and the cultivation plan can fully consider the integration of knowledge of the two majors, the involvement of humanities and management thinking and methods. The second degree course is designed between the general education program education and the professional elective course. The method of education general education knowledge system + interdisciplinary knowledge system + core professional knowledge completely solves the situation that two majors are relatively independent.

Method two: Clarify the concept of "+", Peking University Guang Hua school of business administration dual degree, for example, its training scheme set is based on principle of economics, management and marketing—three categories of economics management as the foundation, together with innovation management and business management courses, combined with case teaching, comprehensive business plan book, to strengthen the study, cognition and practice of administration course. Such a training program is more characteristic and attractive. Therefore, the author suggests that basic platform courses (25%), technology and methods (20%), professional courses (35%), practice class (20%) should be taken into account in the setting of training programs. Especially for subjects with a large number of theoretical settings, it is suggested that the new education teaching mode combined with course learning and project learning can be adopted when the practical teaching setting is insufficient. For the double degree of business administration, we should especially strengthen the management case study, market research design, enterprise sand table simulation, and other research and practical courses.

Methods three: Order-oriented training, according to social needs, professional needs, develop interdisciplinary talents in related industries, set business administration + professional mode based on demand.

### **4.2 Teaching Process Management**

#### **4.2.1 Strengthen Daily Teaching Management**

Establish the double degree teaching quality monitoring mechanism and ensure the teaching quality, the teaching order of double degree majors should be managed referred to the teaching order management method of the first major. Strictly check the formulation and implementation of the

teaching plan, curriculum outline, teaching calendar and teaching tasks. Standardize the procedures for teachers to transfer and suspend classes, strictly check attendance, strictly enforce classroom and exam discipline, and ensure the teaching quality of double-degree majors by strengthening the management of daily teaching order. Establish and improve the system of students' participation in teaching evaluation, establish and improve the system of leaders listening to lectures, experts listening to lectures and so on, find out the problems in the teaching process of double degree and pay attention to the double-degree education management problems raised in the evaluation of students and teachers, and timely solve the problems encountered by middle school students and teachers in double-degree teaching. Strengthen the daily teaching order of double degree through rigid management.

#### **4.2.2 Strengthen the Reform of Classroom Teaching Methods**

Double degree teaching should pay more attention to the combination of learning and thinking, advocate heuristic, inquiry-based, discussion, participatory teaching, to help students learn how to study Mooc, flipped classroom, Live q&a mode of zhihu.com should be introduced, and the reform of examination methods should be strengthened to promote students' interest in learning and enhance the learning effect. In the future, students will learn knowledge, not by the teacher to tell students what is the correct knowledge, but by the teacher's guidance, by thinking understanding, exploring themselves to achieve. At the same time choosing teachers who master a wide range of knowledge or cross-disciplinary knowledge as double-degree teachers can also strengthen the effect of classroom teaching.

#### **4.2.3 Guidance of Practical Courses**

Especially effective guarantee undergraduate's graduation thesis quality, in the process of writing double degree thesis, it is necessary to emphasize the combination of knowledge in double degree and major. Therefore, innovative entrepreneurial project guidance mode is recommended. Using the project+ team+ major + integration to complete the graduation thesis. This combination of idea, method, means and platform is the effective guarantee to improve the quality of double-degree undergraduate's graduation thesis.

### **4.3 Implementation of Organizational Safeguards**

It is recommended to set up a special teaching and research institution to select relatively fixed teachers and teams to carry out this long-term and professional work to improve the level of compound talent training in schools.

#### **4.3.1 In terms of Organizational Structure, a Teacher Team, a Full-Time Teaching Manager and a Head Teacher Shall be Set Up.**

The teacher team should be responsible for: the formulation of talent training program, the selection and recruitment of teachers, the designation of relevant rules and regulations, the quality standards of classroom teaching, examination, practice links, graduation design and other teaching links of and whole-process supervision, student performance assessment, evaluation; student class management (student credit substitution and conversion, graduation qualification examination and daily attendance, student awards and the organization of various activities) and other work. Double degree teaching management full-time administrative personnel are responsible for standardizing the teacher mediation course system, the assignment and arrangement of teaching tasks, the collection and subscription of teaching materials, the management of funds, and the payment of teachers' remuneration.

#### **4.3.2 Establish Incentive Mechanism**

Current double degree teaching resources are not very sufficient. Teacher is also from the various related disciplines to temporarily carry out the double degree education, teaching time is holiday, teaching requirement is high, more consideration should be given to the teachers' hard work, so the corresponding incentive system should be established to improve the teachers' activity to reform classroom teaching and practice teaching.

### 4.3.3 Establish the Class Head Teacher System

At the beginning of the establishment of the class, the head teacher can timely strengthen the publicity of double degree education, so that students can have a full understanding of double degree courses. Secondly, it is helpful to equip double-degree course classes with head teachers who not only know professional knowledge but also have certain management ability to guide students to select courses and study majors. It can not only reduce the blindness of students in course selection, but also timely answer the doubts of students in professional learning, promote the teaching quality and management level of double degree education.

## 5. Conclusion

The author has been engaged in teaching management and has held discussions with students for many times during the three years of dual degree work. I have learned that students are still very satisfied with the establishment of dual degree. I hope the school can offer more double degree majors for students to choose. It is also proposed that in the design of professional talent training, students are given too few opportunities to practice, and it is hoped that the teaching implementation management research will continue to line up and continue to promote the implementation of this work.

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