

## Training Mode of Interdisciplinary Talents in Finance Based on Fr-Cdio Concept

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**Abstract:** In the context of the belt and road initiative, the continuous deepening of financial cooperation between China, Mongolia and Russia, and the increasing international financial level in China, the development of China's financial industry is faced with severe challenges such as supply side reform, emerging new trends, and urgent expansion of business skills. In order to ensure the rapid development of China's financial industry and the stable operation of financial order, it is urgent to cultivate high-quality interdisciplinary talents in finance. Therefore, at present, the reform of application-oriented undergraduate colleges and universities should meet the needs of the development of the times. Under the FR-CDIO concept in the new era, the training mode for interdisciplinary talents in finances should be explored, such as optimizing curriculum, stimulating students' learning potential, actively carrying out school enterprise cooperation, strengthening the comprehensive strength of teachers, comprehensively improving the financial compound talents training ability, so as to meet the needs of the rapid development of our society for financial talents.

### 1. Introduction

As China's financial industry continues to move towards internationalization, the demand for financial talents is growing day by day, especially for the interdisciplinary talents in finance with excellent theoretical basis and outstanding practical ability. According to the Medium and Long Term Plan for the Development of Financial Talents disclosed by the PBC, CBRC and CSRC, calculated by annual growth rate of 3.5%, the number of employees in the financial industry in China will reach 5.15 million by 2020 [1]. However, in terms of the current market satisfaction of financial talents in China, the supply and demand side of financial talents are not connected. On the one hand, as the exporter of talents, colleges and universities, under the background of constantly expanding the enrollment scale, are relatively quantitative in the cultivation of financial talents, and lack of personalized cultivation of high-end interdisciplinary talents, which leads to the oversupply of general financial talents and the downward trend of employment rate of financial professionals. On the other hand, with the constantly changing development trend of financial industry, financial enterprises need more high-level financial talents with outstanding comprehensive ability to meet the needs of enterprise development and reform. Nevertheless, at present, there is less supply of interdisciplinary talents in finance, which can not meet the needs of enterprises, so enterprises have to cultivate in-house, thus reducing the development speed of international innovation businesses such as private banks. It is thus clear that the current financial industry is particularly urgent for interdisciplinary talents in finance with management ability, professional ability, financial service ability and innovation ability, and the lack of demand for interdisciplinary talents in finance has seriously restricted the development pace of China's financial industry, which has affected the effect of China's financial industry in invigorating the real economy.

Based on this, in this paper, on the basis of CDIO education concept, combined with OBE curriculum design theory, the FR-CDIO training mode for the interdisciplinary talents in finance is constructed, trying to develop a set of feasible and reproducible and transformable financial talents training mode to adapt to the education transformation period, which is applied to the talent training practice of application-oriented undergraduate colleges and universities, so as to improve the talent

training quality of financial skill-oriented colleges, to solve the structural imbalance between supply and demand of financial talents, improve the employment rate of graduates of colleges and universities, do a good job in linking the demand for talents of colleges and enterprises, and contribute to the development of China's financial market.

## **2. The definition of Fr-Cdio training mode for the interdisciplinary talents in finance**

CDIO represents four stages of conception, design, implementation and operation. It is mainly based on the whole life cycle from product R&D to product operation, in which students can learn the theoretical knowledge, practical experience and various abilities of Engineering in an active, practical and organic way between courses [2]. The idea of OBE (Outcomes-based Education) focuses on results-oriented education, emphasizes the ability as the basis of teaching, and determines the ability of the industry according to the needs of the occupation, which plays an important role in defining the education and training objectives [3]. FR-CDIO in this paper refers to the combination of CDIO Engineering Education Concept and OBE curriculum design system, integration of financial talents training objectives, development of personalized training plan, highlighting the contribution and relevance of courses to training objectives with OBE reverse curriculum design, strengthening practical and innovative training with CDIO Engineering Education Theory, and evaluating students' learning efficiency with dynamic teaching quality evaluation system, and strengthening the differential training to promote the all-round ability improvement of students. In order to cultivate FR-CDIO interdisciplinary talents in finance, on the basis of training students' professional theoretical knowledge, professional skills, professional ethics cultivation, team cooperation ability, communication ability and innovation practice ability, the curriculum is constantly optimized, and different curriculum maps are set for different students based on the evaluation results of dynamic learning effect, to achieve the training goal of improving students' ability in an all-round way. Compared with the traditional financial personnel training mode in colleges and universities, the most prominent feature of FR-CDIO is to train students in the form of "backward induction". First of all, the expected learning effect and the final training goal of the students are defined, and then the curriculum plan that conforms to the development goal is formulated, and the dynamic curriculum evaluation system is finally implemented. On this basis, the final curriculum content preparation work is carried out, so that the curriculum design is closely around the "expected learning results" and the evaluation scheme. Through the connection of "expected learning results", the curriculum standards, curriculum objectives, curriculum content and curriculum evaluation are organically combined, thus forming the FR-CDIO training mode for interdisciplinary talents in finance.

## **3. Training positioning of interdisciplinary talents in Finance**

### **3.1 Training of professional and basic abilities**

Professional and basic abilities include theoretical knowledge and professional skills. Interdisciplinary talents in finance should not only have excellent theoretical basis, but also be proficient in financial skills and operation. In different situations, they should fully incorporate professional knowledge to analyze financial phenomena, skillfully use professional knowledge and technical skills to solve financial problems, so as to form a huge knowledge system and master skills to be competent for future jobs. The professional and basic ability training of interdisciplinary talents in finance mainly includes the following aspects:

Correct outlook on life, values, political literacy, noble professional ethics, professionalism, rigorous working attitude, team spirit, outstanding innovation ability and responsibility ability;

Good learning ability, communication ability, writing ability and execution ability, proficiency in English and other second languages and modern internet tool operation technology under the background of global integration;

A solid theoretical knowledge reserve including not only the basic knowledge and theory of finance, but also the basic knowledge and research methods of related disciplines that are inseparable from the financial specialty, so as to broaden the theoretical reserve of professional knowledge;

Solid professional skills, mastery in the basic operation skills of various sub industries in the financial field, such as the basic operation processes of banking, international exchange settlement, securities and Futures and derivatives trading, investment and financial management, Internet Finance and other sub industries, so as to further combine professional theoretical knowledge with practice, and mastery in the work processes and characteristics of various sub industries in the financial field in practice;

Outstanding management ability and decision-making ability that can accurately grasp the direction in team cooperation and guide the team to solve key problems;

Keen insight, sensitivity to national financial policies and international economic development, ability to analyze financial information, understanding current financial hot issues and outstanding issues of China's financial development and reform;

Strong innovation ability and research ability, application of innovative ideas to financial research to promote the development of financial industry.

### **3.2 Cultivation of personal abilities**

Personal abilities are a comprehensive improvement based on professional and basic abilities, mainly including analysis ability, logical thinking ability, innovation ability, interpersonal communication ability, etc. The cultivation of personal ability should be individualized according to the characteristics of different students. By arousing curiosity, students are guided to improve financial sensitivity, analyze and solve financial problems, have the courage to innovate, take risks, and strengthen interpersonal skills in team cooperation.

### **3.3 Cultivation of value orientation**

The correct value orientation is conducive to stimulate students' learning autonomy and self-confidence, establish the correct outlook on work, money and values, so that they can work more responsibly. The cultivation of value orientation includes all around development of moral, intellectual, physical, aesthetics and labor education. On the basis of training their professional abilities and personal abilities, students are strengthened to coordinate the development of ideology, morality and professional ability, and are guided to be highly consistent in ideology, knowledge and ability, so as to meet the needs of the development of innovative application-oriented high-end interdisciplinary talents in finance.

## **4. Problems in the current financial talents training mode in colleges and universities**

At present, although colleges and universities actively respond to the guidance of national policies and vigorously cultivate financial talents that meet the needs of market development, the market satisfaction of financial talents still needs to be improved, especially the serious lack of interdisciplinary talents in finance. Through in-depth analysis of the current financial talents training mode in Colleges and universities, there are several outstanding problems as follows:

### **4.1 The vague goal of training of professional talents**

First of all, in the context of the rapid development of the Internet, new forms of Internet Finance continue to burst out. Financial practitioners should not only master traditional professional skills, but also strengthen the learning of computer, network information, financial regulations and other skills to better adapt to the job. However, according to the results of 2016 undergraduate major filing and examination and approval issued by the Ministry of education, most colleges and universities still maintain the original financial professional plan and do not open Internet Finance and financial science and technology majors. Because Internet content, computers, big data technology and other teaching contents are only integrated into the training process of financial

majors, the training objectives of new financial talents under the internet background are not clear enough. Students are not comprehensive enough about the operation mode and professional skills of financial new formats, and then they can not finish the work requirements of new financial enterprises well when they take the job. Secondly, by comparing the training modes of financial talents in domestic and foreign colleges and universities, it is found that the training of financial talents in foreign well-known universities is generally divided into academic and practical types. The cultivation of academic financial talents focuses on the research ability and analysis and solution ability of students; the cultivation of practical financial talents focuses on financial skills, practical ability and comprehensive ability. Both types of talents need to learn rich professional theoretical courses, but there are obvious differences in the cultivation of personal abilities. In contrast, in the training mode of financial talents in colleges and universities in China, there is a lack of division for different objectives, especially for the training of interdisciplinary talents in finance, which is not obviously different from the training plan of general financial talents, and ignores the training objectives of personal ability and value orientation for interdisciplinary talents in finance.

#### **4.2 Unreasonable curriculum setting**

Currently, most colleges and universities follow the principle of broadening the basic knowledge and enhancing the theoretical knowledge in curriculum setting, and carry out all the subjects closely related to the financial field. Although the traditional curriculum model covers a large number of professional theoretical knowledge, it lacks pertinence and is disconnected from the demand for compound talents in the financial industry in the new era. Especially for the cultivation of Internet Finance and financial science and technology, the traditional financial courses offered by colleges and universities have little relevance to the new financial formats. Students majoring in finance can't master the integration skills of Internet technology and financial industry well, while students majoring in computer only master computer skills, but are lack of financial professional knowledge. As a result, the theoretical knowledge and practice of students are divorced, and their comprehensive skill level is not high, which leads to the inability to meet the financial market demand for interdisciplinary talents in finance.

#### **4.3 Insufficient training of students' self-study and teamwork abilities**

At present, the development of financial industry is changing rapidly, and new financial instruments are constantly derived. Therefore, financial practitioners must have strong learning ability to adapt to the changes of economic environment. However, most colleges and universities usually take examinations for talent cultivation, and the contents of examinations are relatively fixed, which makes students form the habit of rote learning, almost neglecting the process of understanding and analysis and the ability of self-study. When it is necessary to use the learned knowledge in the job, it is difficult to really use it, which leads to the serious lack of professional knowledge reserve and the lack of self-learning ability of financial talents. In addition, under the current training mode in colleges and universities, students rely more on rote learning and lack the spirit of team learning and common goal achievement, which is not conducive to the formation of team spirit and communication and coordination ability; in the teaching process, team cooperation projects are so few that students lack the opportunity of team running in, thus lacking the sense of team cooperation. In the work of financial institutions, financial transactions rely more on team cooperation, so there is an urgent need for compound talents with team spirit, strong decision-making power and management ability.

#### **4.4 Lack of motivation for college-enterprise cooperation**

Due to the limitations of teaching cost and conditions, most of the financial training bases in colleges and universities are so simple, basically stay in the practice teaching link of traditional banking business, and cannot fully simulate the financial industry business, such as new format financial business, international financial derivatives business, hall marketing business, etc., that students do not have a deep understanding of the real operation process of the financial industry.

Some colleges and universities try to alleviate this dilemma through college-enterprise cooperation, and enhance students' practical ability and professional skills through internship and other ways. However, due to the particularity of risks in the financial industry, most financial institutions can only provide simple clerical work for internship students who fail to really involve in financial business. Students only have theoretical financial knowledge but lack practical ability, thus inhibiting the cultivation of interdisciplinary talents in finance.

#### **4.5 Relatively weak teacher resources**

With the role of the financial industry becoming increasingly prominent, the number of students who apply for the financial major is increasing every year in China. However, the number of college teachers teaching in financial major is not increasing significantly, thus the gap between teachers and students is increasing, which affects the quality of financial talents training [4]. Additionally, according to the experience of financial teachers in colleges and universities, the proportion of double-professionally-titled teachers is relatively low, most of them teach directly after graduation, so they are lack of working experience in the financial industry and practical experience in the cultivation of students' professional skills in the financial industry, and they can't comprehensively impart professional skills that meet the current needs of the market, thus reducing the comprehensive training efficiency of interdisciplinary talents in finance.

### **5. Countermeasures and suggestions for the training mode of interdisciplinary talents in finance based on Fr-Cdio concept**

The outstanding advantage of applying FR-CDIO concept to solve the problems existing in the current training mode of interdisciplinary talents in finance in colleges and universities is that the curriculum plan can be designed in the way of "backward induction" to solve the problems such as unclear objectives and insufficient practical ability training of the traditional mode. The dynamic evaluation model is used to optimize the curriculum in real time, so as to promote the formation of a replicable and sustainable mode for the cultivation of interdisciplinary talents in finance. The specific countermeasures and suggestions are as follows:

#### **5.1 Defining the training objectives of interdisciplinary talents in Finance**

The talent training objectives should be formulated in combination with the with the FR-CDIO concept. Different types of demand indicators for interdisciplinary talents in finance that meet the market demand should be selected based on the financial talent training objectives of OBE education concept and CDIO talent training objectives,, and specific training objectives should be divided in terms of ideology, knowledge and ability. The curriculum under this goal should be classified and evaluated. The contents of professional courses, skill courses, practice courses and thesis writing should be respectively corresponding to the expected training goals of thinking, knowledge and ability. The relevance and connection between courses should be fully considered, and the courses should be carried out in a reasonable order, and the teaching plan should be adjusted according to the dynamic evaluation results to ensure the completion effect of talent training objectives. The gap between learning achievements and objectives should be analyzed in combination with dynamic evaluation results, and the talent training objectives should be revised in combination with the actual ability of students, so as to achieve the matching effect of talent training objectives with the output of interdisciplinary talents in finance and the development of financial market.

#### **5.2 Optimizing the structure of specialized courses**

In terms of theoretical knowledge, the current curriculum should be optimized to break the knowledge boundary between disciplines. The professional knowledge of finance, Internet, computer and science and technology should be integrated with the concept of FR-CDIO to establish discipline connection. The advantages of Internet, computer and financial science and technology should be used to support the theoretical knowledge of finance, so as to lay a solid

theoretical knowledge system for the cultivation of interdisciplinary talents in finance. In view of the talent training goal set up in the early stage, the personalized specialized course structure should be set up to form the relevance support between the core specialized courses and the basic courses, so as to avoid the problems of the scattered and non connected basic courses, thus stimulating students' continuous learning interest and learning ability. In the course effect evaluation, the early evaluation results should be combined to comprehensively evaluate the learning effect of this series of courses.

Practice course is an important way to cultivate students' professional skills, team cooperation ability and personal ability, and also the main way to test the effect of the combination of theory and practice. Therefore, it is necessary to increase the class hours of practice course, highlighting the significant characteristics of interdisciplinary talents in finance different from ordinary financial talents. In view of the problems such as low opening level of practice courses and no significant effect in the current training mode of interdisciplinary talents in finance, colleges and universities are suggested to carry out practice courses in the form of combining cognitive practice, simulation practice, skill competition, enterprise practice, international exchange and other forms to solve the problem of poor opening effect.

### **5.3 Stimulating students' self-study and team cooperation abilities**

Students mainly study by themselves and team learning, and teachers guide learning methods and organize learning situations under the FR-CDIO concept which is more suitable for cultivating compound talents with learning ability and team spirit. The course content under the FR-CDIO concept can guide students to complete a specific topic or part of the learning content independently. Through the form of team cooperation, students are divided into study groups to prepare the teaching content in groups in advance, so that they are guided to think actively, search actively for relevant professional knowledge, summarize the core ideas of materials, and then their self-study ability and group cooperation ability are promoted. In the group cooperation, each student participates in the whole process and communicates with each other, which helps to promote their communication and coordination ability, so that they can complete their learning objectives with a positive and optimistic attitude towards work, and then achieve the value orientation training objectives.

### **5.4 Actively carrying out college-enterprise cooperation**

In terms of the shortage of high-end financial talents in the current financial market, there is still a big gap between the interdisciplinary talents in finance trained by colleges and universities and the real practical talents needed by the society. Therefore, it is one of the most effective measures to actively promote college-enterprise cooperation and truly meet the talent requirements for enterprise development. By signing strategic cooperation agreements, targeted talent delivery agreements, and internship risk commitments, colleges and universities can get mutual trust with financial enterprises so as to make students' internship work closer to economic business and enhance students' practical ability and professional skills. Moreover, colleges and universities can build simulation practice bases together with enterprises to carry out students' practical courses with simulation business processes, and then cultivate financial talents with excellent professional theory and practical ability.

### **5.5 Strengthening the comprehensive strength of teachers**

The improvement of the comprehensive strength of the teaching staff is an important prerequisite to enhance the quality of the training of financial talents. The teacher team required by FR-CDIO concept should not only have a strong knowledge reserve, but also have the ability to guide and stimulate students' all-round potential. Therefore, teachers of training interdisciplinary talents in finance should improve their comprehensive strength through three aspects. First, broaden the scope of knowledge and enrich the knowledge system. In the context of the rapid spread of Internet information, knowledge in the field of finance is integrated with other disciplines, which makes the subject of finance more complicated. Teachers must constantly enrich their own knowledge reserve,

and study interdisciplinary contents on the basis of firmly mastering professional knowledge, so that they can guide students in an all-round way. Second, constantly improve their own teaching ability and quality. Their divergent thinking and innovative ability should be cultivated. Knowledge should be imparted to students from multiple perspectives to cultivate their innovative consciousness and creative thinking. Third, actively improve their own quality. Teachers should constantly enrich themselves, update their knowledge reserves, broaden their knowledge, optimize their knowledge structure, and better train excellent talents through self-study, advanced study, participation in academic exchange forums and online learning.

## **6. Conclusion**

In this paper, through the analysis on the training positioning orientation of the interdisciplinary talents in finance in colleges and universities, firstly, it is found that there are some problems in the current training mode, such as the vague goal of professional talents training, the unreasonable curriculum setting, the lack of students' self-study and teamwork abilities, the lack of motivation for college-enterprise cooperation, and the relatively weak teacher resources. Then, FR-CDIO concept is used to solve the problems in the current talent training mode in colleges and universities. Finally, five aspects of defining the training objectives of interdisciplinary talents in finance, optimizing the structure of specialized courses, stimulating students' self-study and team cooperation abilities, actively carrying out college-enterprise cooperation and strengthening the comprehensive strength of teachers are put forward to perfect the financial talents training model so as to meet the needs of developing interdisciplinary talents in finance.

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