

Research on the All-dimensional, Whole-chain and Full-scenario Team Mentorship Cultivation Mechanism: Practical Exploration Based on Master of Finance Talent Training

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Abstract: Teaching teams constitute the basic organizational form of modern talent cultivation and curriculum teaching, and the construction level of university teaching teams serves as a core indicator for measuring the developmental maturity of corresponding disciplines. How colleges and universities build teaching teams, comprehensively innovate education models, exert educational functions and accomplish cultivation objectives has long been a critical issue consistently emphasized in both theoretical research and practical reform of education and teaching. Taking the improvement of cross-disciplinary knowledge application capacity, comprehensive practical competence and innovation & entrepreneurship capability as the core cultivation objectives for Master of Finance students, this study constructs an all-dimensional, whole-chain and full-scenario team-based education mechanism driven by the coordination of six faculty teams, namely the ideological and political construction team, teaching team, research-technology integration team, industry-education integration team, innovation and entrepreneurship team, as well as the academic and science competition guidance team. The realization paths of the education mechanism are presented in matrix form, and the control loop of the cultivation goal realization matrix is further analyzed, so as to ultimately realize the coordinated advancement of financial discipline development and the cultivation quality of applied Master of Finance talents.

Keywords: Education Mechanism; Team-based Talent Cultivation; Full-Scenario Teaching Model

1. Introduction

Teaching teams constitute the basic organizational form of modern talent cultivation and curriculum teaching in universities. The development level of a university's teaching teams serves as a vital metric for evaluating the advancement of its disciplines, and also acts as a critical channel to upgrade teaching standards and guarantee the quality of talent cultivation. How higher education institutions can construct teaching teams, comprehensively innovate education models, exert educational functions and realize cultivation objectives has long been a key issue attracting consistent attention in both theoretical research and practical reform of education and teaching [1].

The application of team concepts to education dates back to the mid-1950s, originating from team teaching (also known as small-group or collaborative teaching) implemented at primary and secondary schools in the United States. After the 1970s, team teaching was gradually introduced into university education. In the late 1990s, Chinese universities began to establish teaching teams and launch relevant practical explorations. In 2007, the Ministry of China's Education launched the Undergraduate Teaching Quality Project, in which the development of teaching teams was identified for the first time as a new measure and core construction project to improve university teachers' literacy, teaching capacity and overall education quality. As the most grassroots teaching organization, teaching teams play an extremely important role in educational research, refining teaching content, innovating teaching methods, and substantially boosting talent cultivation quality [1].

Existing literature has analyzed the vital role of team-based education from multiple dimensions, including teaching team construction, team model design, integration of teaching and research, multi-dimensional collaboration, university-enterprise cooperative teaching teams, and supervisor team systems. Yang et al.

proposed a talent cultivation framework combining “teaching teams and learning teams”, which integrates one-to-one, one-to-many and many-to-many interaction modes to eliminate drawbacks arising from exclusive adoption of the one-to-one model [2]. He et al. argued that an innovative team structure built on “renowned experts + key research bases + core disciplines” facilitates strong resource integration and optimized resource allocation, and a pyramid-shaped personnel echelon better supports collaborative innovation among team members and sound development of talent pools [3]. Other scholars have explored joint supervision models of supervisor teams. By carrying out supervisor exchange and training, establishing well-structured supervisor teams and perfect supervisor training systems, they constructed a joint tutoring mechanism for postgraduate supervisors, adopting a multi-pronged cultivation mode of “supervisors + research project groups + teams” [4-6].

Scholars have further conducted in-depth research on team education mechanisms, proposing structured collaborative research team frameworks based on intra-team coordination to achieve organic linkage and maximize synergies of diverse advantageous resources [7,8]. Against the profound impact of artificial intelligence on the education industry, some researchers put forward an organized human-machine collaborative scientific research and innovation model. A macro framework of “data-driven governance – intelligent decision-making – dynamic regulation” was constructed at the system level, while a micro quadruple role system for human-machine collaboration was designed to clarify the division of labor between humans and intelligent systems. From a technical perspective, retrieval-augmented generation (RAG), the ReAct reasoning framework and multi-agent systems were leveraged to develop a dynamic construction and regulation system for human-machine collaborative teams, advancing innovations in human-machine relationship research and team construction theory [9].

Regarding the design of realization matrices for educational goals, educators and scholars have systematically investigated the correlation between competency objectives of talent cultivation and corresponding teaching modes, tools and paths. Dai et al. integrated cultivation objectives, implementation approaches and

practical outcomes within a unified realization matrix. Taking the matrix as a systematic variable, they constructed a control model for curriculum system teaching reform based on the realization matrix, and established a theoretical framework for both quantitative and qualitative analysis of curriculum systems and teaching reform [10]. Lu et al. developed a three-dimensional matrix collaborative training model for innovative medical talents, featuring three interwoven threads of “theoretical knowledge”, “scientific research innovation” and “practical skills”. The model adheres to the joint cultivation philosophy of supervisor groups, facilitating a shift from homogeneous single-track training to comprehensive training highlighting distinctive strengths, and forms a new systematic framework for cultivating innovative medical talents [11]. Oriented to students’ psychological preferences and learning interests, Zhang et al. built a three-dimensional matrix cultivation system, which ultimately achieves four layers of competency development for students: basic skills, professional expertise, application capabilities and practical innovation capacity [12].

Several studies have focused on full-scenario teaching models, which cover theoretical instruction, case-based practical teaching, simulated training and curriculum assessment scenarios. The full-scenario framework integrates four dimensions — comprehensive competency development, whole-space learning, full-coverage curriculum design and whole-process cultivation chains — into educational goal systems, learning spaces, curriculum forms and all teaching segments [13]. Driven by advances in information technology, the “campus intelligent brain” concept was proposed to realize full-scenario transformation of education and teaching. Its applications include supporting personalized learning within large-scale teaching via artificial intelligence, evaluating students’ comprehensive literacy based on heterogeneous big data, innovating training modes for teachers’ professional growth, and upgrading intelligent campus management [14].

In summary, most existing relevant research and practical explorations focus on the boosting effect of a single type of faculty team on talent cultivation, such as pure teaching teams, integrated teaching-research teams and university-enterprise collaborative teams, or

confirm the value of student teams in practical curriculum instruction. Differentiated from prior fragmented research, this study centers on the holistic disciplinary development of finance. Through standardized team operation covering all teaching segments, it constructs an all-dimensional, whole-chain and full-scenario team cultivation mechanism to elevate the training quality of applied Master of Finance professionals.

2. Functions of All-Dimensional, Whole-Chain and Full-Scenario Team-based Talent Cultivation

In terms of daily teaching work, teaching organizations supported by team-based education facilitate communication and collaboration among team members in teaching practice, and advance teaching reform and academic research. In the field of teaching research and reform, the team cultivation model generates sustained effects on curriculum development, textbook compilation, teaching methodology reform, and the design of practical innovation activities. For faculty echelon construction, this model brings together disciplinary leaders, academic pioneers, young and middle-aged backbones with diverse disciplinary backgrounds and age distributions, realizing the mentorship effect of senior members passing on experience to junior colleagues.

3. Constituent Elements of All-dimensional, Whole-chain and Full-Scenario Team-based Talent Cultivation

Guided by disciplinary development orientation and talent cultivation objectives, six types of faculty teams are established, including the ideological and political construction team, teaching team, research-education integration team, industry-education integration team, innovation and entrepreneurship team, and student academic competition guidance team. All teams adopt a dual-leader management system: college administrators in charge of education serve as general persons-in-charge of all teams, while professional professors take charge of specific teams. Each team is structured with reasonable scales and balanced age, educational background, professional title and academic origin distributions. Professional teachers join 2 to 3 teams based on their strengths and expertise, focusing on fulfilling

educational duties and supporting talent cultivation targets of respective teams.

Specifically, centering on core elements of curriculum-based ideological and political education as well as major-specific ideological guidance, the ideological and political construction team organically integrates value guidance, knowledge imparting and competency cultivation into the whole process of teaching. Focusing on curriculum and textbook development, the teaching team sustains steady improvement of teaching quality by constructing first-class courses and textbooks. Taking disciplinary development as its core, the research-education integration team boosts major construction through high-level research projects, top-tier academic papers and high-quality social services. With the "five-dimensional collaboration" mechanism (university-enterprise, university-local government, inter-university, university-industry association, cross-border cooperation) as its core element, the industry-education integration team improves students' practical innovation capacity. Oriented to practical teaching and the second classroom, the innovation and entrepreneurship team links research projects and academic achievements with students' comprehensive practice and entrepreneurship activities. Relying on high-quality teacher-student communities as its core element, the academic competition guidance team encourages students to participate in various competitions for practical innovation training, so as to effectively strengthen students' ability of knowledge application and innovative thinking.

4. All-Dimensional, Whole-Chain and Full-Scenario Team-based Talent Cultivation Mechanism

Aiming to address practical dilemmas in cultivating practically-oriented innovative talents, this study takes the improvement of interdisciplinary knowledge application capacity, comprehensive practical ability, as well as innovation and entrepreneurship capacity as core talent cultivation objectives. Driven by the coordinated operation of six faculty teams (the ideological and political construction team, teaching team, research-education integration team, industry-education integration team, innovation and entrepreneurship team, and academic science competition guidance team), the collaborative talent cultivation goals are

thoroughly implemented. The design of the all-dimensional, whole-chain and full-scenario team-based talent cultivation mechanism is illustrated in Figure 1.

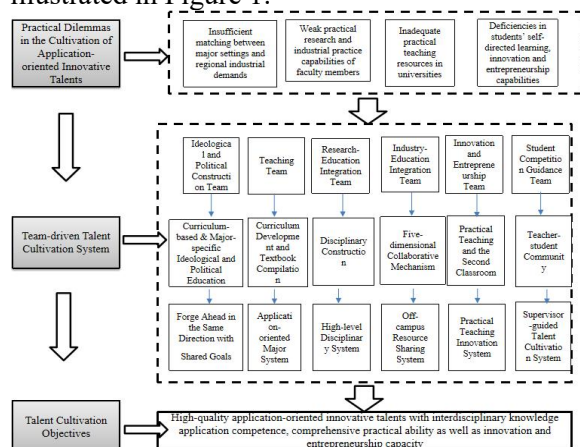


Figure 1. All-Dimensional, Whole-Chain and Full-Scenario Team-based Talent Cultivation Mechanism

5. Design of the Realization Matrix for All-Dimensional, Whole-Chain and Full-Scenario Team-based Talent Cultivation Mechanism

Based on outcome-based education theory, outcome-based education focuses on the effectiveness of teaching implementation and serves as a valuable developmental orientation guiding educational and teaching reform. The cultivation standard realization matrix links cultivation objectives with curricula, which acts as an effective approach to carry out educational and teaching reform. Integrating the two theories can facilitate the exploration of a teaching reform method that comprehensively takes three factors into account: cultivation objectives, realization approaches, and implementation effects (learning outcomes).

Taking cultivation standards as one-dimensional coordinate and realization approaches as another coordinate, the two coordinates together form a two-dimensional space, namely the design space for talent cultivation programs that connects cultivation standards and realization approaches. If learning outcomes are further introduced as an additional coordinate, a three-dimensional space can be constructed (Figure 2).

Under the cultivation standards of talent training objectives for Master of Finance students, the realization approaches of the all-dimensional, whole-chain and full-scenario team-based talent cultivation are presented in the form of a matrix (see Figure 3). The rows of the matrix represent cultivation standards, and the columns stand for

the implementation paths of team-based education. The value of each matrix element reflects the implementation effect of applying the designed realization paths to a specific cultivation standard, namely learning outcomes, which is measured on a five-point scale. This matrix not only correlates cultivation standards with realization paths, but also quantifies the completion degree of such correlation. On this basis, a quantitative measurement of the achievement degree of training objectives under the all-dimensional, whole-chain and full-scenario team education model can be realized.

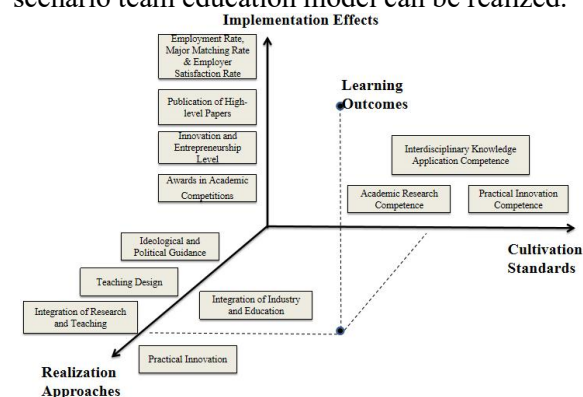


Figure 2. Three-dimensional Space Diagram of the All-dimensional, Whole-chain and Full-scenario Team-based Talent Cultivation Mechanism

	Interdisciplinary Knowledge Application Competence	Academic Research and Practical Competence	Practical Innovation Competence
Ideological & Political Team			
Teaching Team			
Research-Teaching Integration Team			
Industry-Education Integration Team			
Innovation & Entrepreneurship Team			
Academic Competition Guidance Team			

Figure 3. Realization Matrix of the All-Dimensional, Whole-Chain and Full-Scenario Team-based Talent Cultivation Mechanism

6. Analysis of Control Loop for All-Dimensional, Whole-Chain and Full-Scenario Team-based Talent Cultivation Mechanism

The control loop for cultivating application-oriented innovative talents consists of cultivation objectives, team-based talent cultivation realization matrix, social demand evaluation feedback and other components (see Figure 4). It has two core functions: first, dynamically adjusting cultivation objectives and standards; second, driving the whole control system to fulfill cultivation objectives based on the deviation between cultivation standards and social demand evaluation results.

The control loop sets talent cultivation

objectives in accordance with university and college positioning, major orientation, social demands and educational resource conditions. Diversified social demand evaluation is carried out through tracking graduates' employment and career development (by establishing a graduate database), assessments from enterprises and other employers, professional accreditation, and evaluations by educational administrative departments at all levels. The output of talent cultivation objectives is measured and assessed via the cultivation objective evaluation matrix. The talent cultivation model is adjusted and cultivation reform is promoted based on the deviation matrix and the difference matrix of diversified social demand evaluations.

Supported by the all-dimensional, whole-chain and full-scenario talent cultivation mechanism, the education system for Master of Finance students targets established talent cultivation objectives, conducts regular inspections on social demand evaluations, and integrates the implementation paths of the team-driven system into the whole training process, thereby realizing effective control over the all-dimensional, whole-chain and full-scenario talent cultivation mechanism.

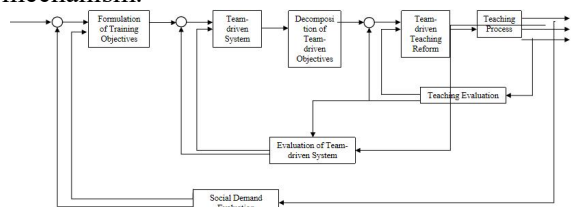


Figure 4. Control Loop of the All-Dimensional, Whole-Chain and Full-Scenario Team-based Talent Cultivation Mechanism

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