

# Teaching Model for Cultivating Interdisciplinary Innovative Talents Based on MDT and OBE Approaches

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**Abstract:** This study explores a teaching model integrating the MDT (Multidisciplinary Team) approach with OBE (Outcome-Based Education) philosophy to cultivate interdisciplinary innovative talents. With literature reviews and theoretical analysis, the research claimed the concepts, features, and synergy between MDT and OBE. The feasibility, advantages, and framework of this combined model were thoroughly discussed. The results indicated that this approach effectively integrated multidisciplinary resources, promoted innovation, and enhanced students' comprehensive abilities in an outcome-oriented manner. The new model provides a novel methodology for training talents to meet the demands of modern society.

**Keywords:** MDT Model; OBE; Interdisciplinary Innovation Talents; Teaching Model; Multidisciplinary Resources

## 1. Preface

### 1.1 Review of Domestic and Foreign Research

In foreign countries, the MDT (Multidisciplinary Team) model has shown strong vitality and remarkable effects in many fields [1]. For example, the close collaboration of multidisciplinary expert teams has provided patients with more accurate and comprehensive treatment programs in medicine [2]. In the engineering field, MDT model also promotes efficient advancements of complex projects and generations of innovative solutions [3]. At the same time, the concept of OBE (Outcome-Based Education) has been

widely recognized and practiced in foreign education systems, emphasizing the teaching arrangement oriented to students' final abilities and achievements [4]. In China, MDT model has gradually attracted attention, especially in some industries with high comprehensive requirements, such as high-end manufacturing, artificial intelligence, and other fields, which are trying to apply [5]. The exploration of OBE in education is also deepening. And based on OBE, some universities have actively carried out pilot teaching reforms [6]. However, the practice and research of combining MDT model and OBE concept to cultivate compound innovative talents are still in their infancy, and fewer relevant successful cases and in-depth studies are displayed.

### 1.2 Research Purpose and Significance

The purpose of this study is to deeply analyze the internal mechanisms and practical effects of the teaching model that OBE based on the MDT model for training compound innovative talents. Through systematic research and analysis, it is expected that a set of scientific and effective teaching models could be constructed to provide useful reference and guidance for educational and teaching practice. Firstly, in the context of the rapid development of science and technology and social change, the demand for compound innovative talents is increasingly urgent. This teaching model can better adapt to the needs of the Times, and cultivate superior talents with multidisciplinary knowledge, innovative abilities, and practical abilities. Secondly, it helps to facilitate the creation of educational ideas and teaching methods, break the boundaries of traditional disciplines, and promote the integration and innovation of knowledge. Moreover, it is greatly significant for improving the quality of

education and the level of talent training, which could provide strong talent support for the development of the country and society. Meanwhile, the new ideas could be utilized as references for talent training in other fields.

## 2. Overview of the MDT Model

### 2.1 Connotation of MDT Model

MDT model is a work model that emphasizes multidisciplinary team collaboration. It is not only a simple gathering of people from different disciplines, but also a mechanism of deep integration and collaborative work. In this model, professionals from different disciplinary backgrounds focus on a common goal, fully develop their professional advantages, and strive together to solve complex problems or complete specific tasks. This model breaks down the barriers of inherent disciplines and improves the exchange and integration of knowledge, skills, and ways of thinking. For example, in a project involving medicine, engineering, and computer science, doctors provide medical expertise, engineers contribute to engineering designs and technical solutions, and computer scientists are responsible for data analysis and the development of intelligent algorithms [7]. Through multidisciplinary team cooperation, more comprehensive, innovative, and effective solutions can be produced.

### 2.2 Features of MDT Model

MDT model has significant interdisciplinarity, integrating knowledge and methods of different disciplines to form an overall perspective of problems and solutions. Collaboration is one of the crucial core features. Team members have complementary characteristics and share resources through close communication and collaboration. It is also systematically considering problems to ensure integrity and coordination of the solution. MDT model is simultaneously dynamic, which team composition and work strategy can be always adjusted according to the progress and needs of the project. This dynamic adaptability enables MDT model to function in different contexts and domains. Furthermore, MDT model also focuses on innovation, encouraging team members to deviate from immanent thinking and propose novel solutions. In the process of cultivating

interdisciplinary and ingenious talents, MDT model can provide students with real multidisciplinary collaborative resources, and cultivate their interdisciplinary mind and teamwork spirit.

## 3. Description of OBE Concept

OBE (Outcome-Based Education) is a learner-centered and results-oriented education concept, which has been widely used in global education reform in recent years. This philosophy highlights guiding educational practice with a clear learning outcome orientation to ensure that students could acquire necessary knowledge, skills and attitudes.

### 3.1 Core Contents of OBE

At the center of OBE lies the nature of its focus on learning outcomes. This concept requires educators to design curriculum and teaching activities, preferring on the learners' need to achieve the abilities and results than conventional curriculum content, and teaching methods. OBE involves several key elements: Clear learning outcomes: When implementing OBE, educational institutions demand to set clear learning outcomes for each course. These results should contain three dimensions of knowledge, skills and attitudes, and be in accord with industry standards and social needs. In this way, students can master subject knowledge and develop practical skills and innovative thinking.

Flexible course design: OBE emphasizes flexibility in course plan to serve the needs of different learners. Teachers should design curriculum contents according to learning outcomes and apply various teaching methods to assure students with different learning styles could obtain effective study results.

Continuous feedback and evaluation: In OBE model, evaluation is not only a test of learning outcomes but also feedback on learning process. In continuous evaluation and feedback, teachers can flexibly modify teaching strategies, and students can also participate in concurrently the adjustment for course improvement.

### 3.2 Implementation Points of OBE

Successful implementation of OBE demands the cooperative efforts of educational institutions, teachers, and students. Critical

implementation points include:

**Teacher training and support:** Teachers take an important role in the implementation of OBE. After professional training, teachers can master OBE concepts and methods, and design teaching activities in accord with learning outcomes. In addition, schools should provide necessary resources and support for teachers to facilitate sufficient implementation of OBE.

**Student self-directed learning:** OBE underlines learner initiative and self-direction. Teachers should encourage students to participate in the process of setting learning outcomes, and impel students to develop self-reliant study and exploring ability through projects or case studies.

**Collaboration and resource sharing:** In OBE model, both the collaboration of teachers and resource sharing are essential to improve the quality of teaching. The establishment of academic communities in school could develop experience sharing and common progress among teachers and students.

#### **4. Feasibility Analysis of OBE Application in MDT Model**

In modern education, how to effectively combine MDT (multi-disciplinary team) model with OBE concept to cultivate compound innovative talents for the needs of the Times is a topic that is worthy of in-depth discussion.

##### **4.1 Theoretical Fit**

MDT model is inherently highly consistent with OBE concept. MDT model focuses on collaboration and innovation across disciplines, while OBE emphasizes learner-centered, results-oriented education. The combination of these two models can create positive synergies in the following areas:

**Interdisciplinary perspective:** Multi-disciplinary cooperation of MDT model can provide OBE with abundant disciplinary perspectives and help students understand and solve problems in multiple dimensions, which coincides with the comprehensive development underlined by OBE.

**Personalized learning experience:** The estimation of OBE makes teaching pay attention to individual differences. And diversified resources and methods offered by MDT model can exactly realize similar personalized needs and enhance learning effectiveness.

**Comprehensive ability development:** Through MDT model projects and cases, students can remarkably improve their compositive abilities and adaptability by applying the knowledge and skills from OBE in real situations.

##### **4.2 Practical Advantages**

In practice, implementing OBE teaching in MDT model has obvious superiorities:

**Innovative solutions:** Through multidisciplinary collaboration, students can pullulate more innovative solutions within the OBE framework. This practice can not only improve students' practical skills but also enhance their creativity.

**Strengthened teamwork ability:** The project-based learning provided by OBE has a wide space for practicing teamwork stressed by MDT model. In such a context, students can develop their communication, collaboration, and leadership skills, which are all crucial for devoting to work in the future.

**Dynamic adaptive education:** With the addition of MDT model and OBE, education can be adapted more flexibly to a rapid economic and technological evolution. The needs of the society for compound talents could benefit from this dynamic model better.

In conclusion, applying MDT model and OBE concept for talent training is feasible in theory and also has many advantages in practice. This combination indicates a new direction for education reform and provides a favourable foundation to develop talents with diverse abilities and innovative spirit.

#### **5. Construction of Teaching Model Based on MDT Model to Cultivate Innovative Talents with OBE**

In current global education reform, combining MDT model with OBE concept proposes a new perspective for cultivating innovative talents. The construction of this teaching model requests us to conduct further discussion and design various processes including teaching objectives, contents, methods, and evaluation systems.

##### **5.1 Setting of Teaching Objectives**

The setting of teaching objectives is the core of any teaching model construction. The teaching objectives based on MDT model and OBE should highlight the integration of multidisciplinary knowledge and the

improvement of comprehensive abilities in students. Besides the mastery of academic knowledge, specifically, the goals should include the cultivation of practical application ability and innovative mind. By investigating industry needs and social development trends, we can set capability indicators that could predict future work scenarios, such as interdisciplinary problem-solving ability, team collaboration ability and innovative design ability [1]. These goals could reflect the current social demands for talents while indicating a clear direction for student personalized development.

### 5.2 Teaching Content Organization

The organization of teaching content should differ from conventional discipline arrangement and emphasize the organic integration of different disciplines. Courses can be designed in a modular manner, combining subject knowledge, practical skills, and innovative approaches. For example, an engineering and designing course could contain mechanical engineering, computer science, and art and design in a project-driven way, in which students learn and apply this knowledge in real conditions [2]. In the teaching activities of Thoracic surgery, teachers of anatomy, physiology and pathophysiology from basic medicine cooperate with professional clinicians from hospitals to conduct teaching, which completely makes students study and understand medical expertise in logic. Subsequently, operation skills courses would assist students in applying previous knowledge to practice. This organizational form improves the flexibility of the curriculum, meanwhile, it encourages students to realize knowledge conversion and innovation in multidisciplinary collaboration.

### 5.3 Selection of Teaching Methods

Under the framework of MDT model and OBE, the choices of teaching methods should be student-centered, interactive, and effective. Project-based learning (PBL) and problem-oriented learning (POL) are recommended teaching methods because they can exercise student composite abilities in real problem-solving. Methods such as teamwork, case analysis, and simulating experiments can also be combined to enhance student sense of

participation and practical operation abilities [3]. Prevalent technologies including AR (Augmented Reality), VR (Virtual Reality), MR (Mixed Reality), and XR (Extended Reality) could be applied in teaching activities. These methods stimulate student interest in learning as well as promote the development of their abilities to collaborate and innovate in a multidisciplinary context.

### 5.4 Teaching Evaluation System

The evaluation system is an important component to ensure the teaching effect. Teaching evaluation systems based on OBE should pay attention to student process development and outcome performance. Traditional examinations can unilaterally evaluate student mastery of knowledge, while the synthetical evaluation system including various forms should be implemented such as project reports, team presentations, and personal reflection [4]. This evaluation system gives a composite picture of student learning progress, additionally, provides teachers with feedback to optimize teaching strategies. What's more, peer review and self-assessment should be incorporated to develop students' critical thinking and self-reflection skills.

### 6. Conclusion

In the process of exploring the teaching model of using OBE to cultivate compound innovative talents based on MDT model, we deepen the understanding of these two concepts, moreover, put forward some practical construction schemes.

By combining the advantages of MDT and OBE, this study contributes to constructing an innovative talent training model, which is goal-oriented and aims to promote the development of comprehensive competencies in a real learning environment through multidisciplinary collaboration. The diversified designs of teaching content and method and the synthetical evaluation system are all distinct characteristics of this new model and offer a promising development prospect to students. The implementation of the model not only improves the quality of education but also provides valuable experience for future education reform.

### References

[1] Peng Lulu. Research on the development

- path of deep integration of rural culture and tourism under the background of rural revitalization [J]. *Journal of Agricultural Economics*, 2024(8).
- [2] Zhang Jing. Research on the development path of rural cultural tourism from the perspective of rural revitalization -A case study of Zhashuping Village in Jianshi County [J]. *Journal of Wuhan Polytechnic Institute of Technology*, 2022, 34(4):58-61.
- [3] Li Yitong, Li Yeqi. Study on the predicament and path of rural culture construction from the perspective of rural revitalization -A case study of Qingdao, Shandong Province [J]. *Chinese Journal of Civil Culture*, 2024(5):0066-0068.
- [4] Wang Hongxia. Research on the integration path of rural cultural tourism under the background of rural revitalization [J]. *Changjiang Series*, 2022(3):77-79.
- [5] Huang Huiqun, Yu Fangzhu. Research on high-quality integrated development Path of Rural Culture and Tourism under the background of Rural Revitalization -A case study of Ma 'an Town [C]// *Proceedings of the 4th Seminar on Digital Education and Training of Iron and Steel Industry*. 2024.
- [6] Yin Na, Peng Huan. Research on the path of Promoting the deep integration of culture and tourism from the perspective of rural revitalization: A case study of Luojiaba Ancient Town in Xixiang County [J]. *Travel survey*, 2023(10):7-9. DOI: 10.3969/j. i SSN. 1004-3292.2023.19.003.
- [7] Xu Jiajing. Research on high-quality integrated development Path of Rural Culture and Tourism under the background of Rural revitalization [J]. 2020. DOI:10.12217/ J. 1009-5071.2020.34.013.
- [8] Jin Yu. Research on the development path of Cultural Tourism in Liujiacao Village, Xianning, Hubei [D]. *Central China Normal University*, 2023.
- [9] Su Jiadong. Cultural empowerment "Intangible Cultural heritage +" to promote rural revitalization: A case study of Rizhao City, Shandong Province [J]. *Northern economic and trade*, 2019(2):3. DOI: CNKI: SUN: GFJM. 0.2019-02-023.
- [10] Camino F A, Parba F J, Tagoon M D T, et al. Stomach content analyses of lizard species from Mindanao Island, Phyllomedusa: Philippines [J]. *Journal of Herpetology*, 2023. the DOI: 10.11606/issn 2316-9079. V22i1p63-68.