



## REVIEW

# Thoughts about the Innovation of Mathematics Teaching Mode in Higher Vocational Colleges from the Viewpoint of “Task List”

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### ABSTRACT

With the reform of talent demand mode in China, in today's society, the need for talents of enterprises are more inclined to application-type vocational and technical talents, this has created enormous opportunities for the growing of higher vocational colleges which are the incubation base for applied talents, at the same time, it also exposes the practical problems of the backwardness of the current mathematics teaching mode in higher vocational colleges, thus brings unfavorable influence on the implementation of the talent cultivation program in higher vocational colleges, “Task list” is one of the teaching requirements put forward by China's educational reform in the new age, and the important direction for higher vocational colleges to reform the mathematics teaching mode in the new age.

## 1. Introduction

As an important incubation base for applied professional talents in China, higher vocational colleges are important places for supply of professional talent under the background of social talent demand transformation in the new times, higher vocational colleges have been developing greatly by the ever-expanding need for social professional talents<sup>[1]</sup>. But during its development, people are more and more concern about the teaching quality and efficiency, the innovation of the existing teaching mode has become the necessary approach for the development of higher vocational colleges. Especially from the viewpoint of “task list” which was put forward in China's educational reform, the reform of mathematics teaching mode is one of the major tasks of mathematics

teaching in higher vocational colleges<sup>[2]</sup>.

## 2. Importance of the Innovation of Mathematics Teaching Mode in Higher Vocational Colleges

Higher vocational colleges are important component of China's vocational education system and the main place for the export of social professional and technical talents, along with social economy development, the requirement model for talents of social enterprises is constantly changing, in the new period, the demand for talents is more inclined to application-type vocational and technical talents, which lays a social foundation for the development of higher vocational colleges. But the meantime, people attach greater importance to the teaching quality

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and efficiency. As one of the main subjects of higher vocational colleges, mathematics is a very important subject for training students' rational thinking and mathematical thinking, and it has important implications to students' future career work, mathematics courses in higher vocational colleges include calculus, probability theory, mathematical statistics and linear representation, it involves complex teaching content and heavy teaching task, in the applying of mathematics teaching in higher vocational colleges, whether the teaching mode is scientific or not directly determines the efficiency and quality of higher vocational mathematics teaching, what's more, it's related to students' ability to apply mathematics in their future occupation<sup>[3]</sup>. The traditional higher vocational mathematics teaching mode is based on classroom teaching and supplemented by practical activities, there are fewer cases of practical activity teaching courses, and there is a lack of planning and guidance for teaching tasks and students' learning tasks in teaching process, as a result, it is hard to see improvement in the efficiency of higher vocational mathematics teaching. Faced with this practical problem, the reform of mathematics teaching mode has become the primary task of current mathematics teaching in higher vocational colleges, and the necessary approach to raise the quality and efficiency of mathematics teaching. Only by ensuring the scientificity and advancement of the mathematics teaching mode, can we guarantee the mathematics application ability of higher vocational college students in their future occupation, it is also an essential measure to realize the talent cultivation program of higher vocational colleges.

### 3. Conceptual Analysis of "Task List"

"Task list" is a new teaching concept put forward with the deepening of our educational reform in the new age, traditionally, task list is the carrier of information instructions for work or learning, the carrier contains the requirements of purpose and ways for work and study, basic process, resource utilization, periodicity, and quality standards. etc., it is of great significance for the high-quality development of work and study<sup>[4]</sup>. It now has a new interpretation when the "task list" concept was applied to the education system. The study task list is the main form of the current teaching tasks and learning scaffolding, and is an important foundation that supports the implementation of teaching activities and the planning of learning tasks. In the study task list, teachers are required to design scientific teaching objectives and activities on the basis of specific study conditions, so as to inspire students' interest for learning and passion for participation, thus achieve the comprehensive improvement in learning interest, learning efficiency, and

learning quality, develop students' good study habits, help students to grasp approaches of learning, and achieve the overall improvement of quality and efficiency in teaching and learning. This provides guidance for the innovation of mathematics teaching mode in higher vocational colleges, and has important promotional effects to the implementation of the reform of higher vocational mathematics teaching.

### 4. Significance of Innovation of Mathematics Teaching Mode in Higher Vocational Colleges from the Viewpoint of Task List

Innovation of mathematics teaching mode from the viewpoint of "Task List" is an vital task of teaching in higher vocational colleges in the new period, it has important significance in promoting the implementation of the talent development program in higher vocational colleges, and it is also the essential approach to raise the quality of higher vocational mathematics teaching<sup>[5]</sup>. The significance of the mathematics teaching mode from the viewpoint of "task list" is mainly reflected in the following 3 aspects:

(1) The innovation of mathematics teaching mode from the viewpoint of "Task List" "is the major task of higher vocational colleges teaching. As the education reform in China be deepened ceaselessly, people's awareness of the importance of teaching mode is increasing, whether the teaching mode is scientific or not is also directly linked to the teaching quality. Thus, the innovation of teaching mode has become the major task of current teaching system in China, as the main base for the cultivation of professional and technical talents in China, this is especially true in higher vocational colleges. The implementation of the "task list" concept provides crucial guidance for the innovation of higher vocational mathematics teaching mode, and is very important support for promoting the development of mathematics teaching mode reform in higher vocational colleges.

(2) The innovation of higher vocational mathematics teaching mode from the viewpoint of "Task List" is the necessary way to implement the talent cultivation program in higher vocational colleges. With the continuous development and progress of China's social and economic system, the demand model for talents has changed greatly from the demand for knowledge-based talents to the pursuit of application-type vocational and technical talents, this gradually expands the demand for talent cultivation in higher vocational colleges. In this context, the demand of social enterprises for the professional technology application ability of talents is constantly improving. Higher vocational colleges should not only ensure students ac-

quire basic theoretical knowledge, but also guarantee their knowledge application ability, as a result, the innovation of mathematics teaching mode is the necessary approach to increase students' mathematics application ability, as well as an important foundation for the implementation of talent cultivation program in higher vocational colleges.

(3) The innovation of mathematics teaching mode from the viewpoint of "task list" is the inevitable measure to raise the quality and efficiency of mathematics teaching in higher vocational colleges. With heavy teaching tasks and tight teaching time, the improvement of teaching efficiency and quality has always been an important requirement for teaching in higher vocational colleges<sup>[6]</sup>. The application of the "task list" teaching concept in the innovation of mathematics teaching mode could achieve the planning of teachers' teaching tasks and the guidance of students' learning tasks, and then work out a more standardized and scientific mathematics teaching process. The fully integration of classroom teaching and teaching activities could effectively increase the efficiency and quality of mathematics teaching, and push the comprehensive development and progress of students.

## **5. Principles of Innovation in Mathematics Teaching Mode in Higher Vocational Colleges from the Viewpoint of "Tasks List"**

The principle of scientific innovation must be followed in the reform of mathematics teaching mode from the viewpoint of "Task List", to realize the comprehensive innovation on the basis of principles, raise the quality and efficiency of mathematics teaching, and promote the development and progress of higher vocational college education<sup>[7]</sup>. The principles of innovation of mathematics teaching mode in higher vocational colleges from the viewpoint of "Task List" are mainly divided into the following parts:

### **5.1 Principle of Practicality**

The principle of practicality means that in the innovation of mathematics teaching mode, the teaching mode should keep consistent with practical teaching problems as well as the training goal of higher vocational education. Hence, in the innovation of mathematics teaching mode, we should break through the shackles of traditional teaching mode, pay more attention to teaching activities and practical application teaching on the basis of traditional classroom education, integrate mathematics teaching with professional application and other subjects to achieve the mathematical teaching reform in higher vocational colleges.

### **5.2 Principle of Adaptability**

The principle of adaptability in the reform of mathematics teaching mode means that teaching activities must match students' individualized development and vocational development, the principle status of students must be clarified and highlighted when carry out teaching activities, the core of teaching work is to inspire students' learning interest, increase students' participation and concentration in teaching, and enhance the quality of higher vocational mathematics teaching<sup>[8]</sup>.

### **5.3 Principle of Application**

The principle of application is essential requirement and foundation of higher vocational colleges teaching, it is the certain approach to meet social demand for applied talents in the new age. As the important place for cultivating applied professional and technical talents, higher vocational colleges must implement the principles of application when reforming the mathematics teaching mode, combine with the idea of "task list", take the principle of application as the guideline, increase the arrangement of application training course in mathematics teaching, and strengthen students' mathematics application ability.

## **6. Countermeasure Study on the Innovation of Mathematics Teaching Mode in Higher Vocational Colleges from the Viewpoint of "Tasks List"**

When innovating the mathematics teaching mode from the viewpoint of "task list", vocational colleges have to face the practical problems in current teaching mode, on this basis, through the formulation of task list, scientific teaching mode and innovative countermeasures are adopted to ensure the smooth implementation of the innovation of mathematics teaching mode, and to ensure the teaching task list is formulated scientifically.

(1) Optimize the mathematics teaching content with the formulation of task list as the guidance. The mathematics teaching content in higher vocational colleges is complex, and there is an imbalance between students' learning tasks and the teaching hours setting. This is reflected in the fact that in mathematics teaching, it takes about 240 lessons to complete the teaching of calculus, probability theory, mathematical statistics and linear representation, however, the mathematics teaching hours in some higher vocational colleges are usually 120 hours or even less, this caused the inconformity between teaching hours and actual teaching contents<sup>[9]</sup>. Therefore, in the process of teaching mode innovation, higher vocational colleges should

reform the ideas of mathematics teaching, innovate and optimize the mathematics teaching content, and condense the teaching content by formulating the teaching task list, to achieve the balance between the content and teaching hours arrangement of mathematics teaching, and raise the quality of mathematics teaching. For instance, focuses on occupational demands in the arrangement of mathematics teaching of different career directions, reduce unnecessary mathematics course content to achieve the purpose of lean education, enhance students' professional mathematics application ability as well as the quality of teaching and application talents.

(2) Ensure the balance between classroom teaching and practical application teaching in the formulation of task list, strengthen the students' mathematics application ability. As the bases for professional talents cultivation, higher vocational colleges should put more stress on students' practical ability of the subjects they learned instead of the theoretical basis. Especially when carry out the innovation of teaching mode from the viewpoint of "task list", it is necessary to implement the principle of application and increase the arrangement of the application practical course. The arrangement of application practical courses will not only enhance and develop students' mathematics application ability, but also change the reality that the boring traditional mathematics classroom teaching is hard to arouse students' learning interest by means of mathematics training, raise students' passion for teaching participation through diverse courses training arrangements, ensure the innovation and development of mathematics teaching mode under the guidance of "task list", urge and lead the students to complete learning tasks on the premise of improve mathematics teaching quality, and complete teaching tasks. For example, increase the course arrangements of training courses, adopt the seven-three teaching mode, the training course arrangement accounts for 70% of the course arrangement, integrate the mathematical theories into practical training to increase students' theoretic knowledge. The arrangement of theoretical courses accounts for 30% of the total course's arrangement, mainly focusing on solving problems and explaining theoretical knowledge points in students' practical training, to achieve the secondary reinforcement and consolidation of students' mathematical knowledge, and strengthen teaching quality.

(3) Clarify and highlight the reaching subject status of students when formulate the "task list", respect the individualized development of students. With the further implementation of the teaching reform in China, students should be regarded as the subject of teaching activities has become the important foundation of current development

of education and teaching in China. Higher vocational colleges should also clarify and highlight students' teaching subject status in the reform of mathematics teaching mode from the viewpoint of "task list", what's more, it is necessary to clarify the actual role of the auxiliaries and the guides. Respect the students' individualized development and independent thinking ability in teaching, individualization and independence is also the basic definition of talents in the new era<sup>[10]</sup>. As a result, in the reform of higher vocational mathematics teaching mode, the formulation of teachers' teaching task list must be based on the individualized development of students and the cultivation of independent thinking ability, with the scientific guidance and assistance in the process of teaching, provides support for the professional development of students, and provides guarantee for the improvement and enhancement of students' comprehensive professional ability. For instance, the task list should be made according to students' different career development direction. Combine mathematics teaching with students' career development and career application to increase teaching effectiveness, especially in the cultivation of students' professional ability, it is necessary to give full play to teachers' professional guidance and professional quality training ability, enhance students' professional ability, raise their professionalism, and push their overall development and progress.

## 7. Conclusion

The innovation of mathematics teaching mode in higher vocational colleges from the viewpoint of task list is a necessary method to push the development of higher vocational colleges and raise the quality and efficiency of mathematics teaching, and also an inevitable measure to develop students' interest in mathematics study. The scientific formulation of "task list" could optimize the teaching process and enhance students' mathematics application ability, it is also a certain way to implement the talent development program of higher vocational colleges.

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