

# Research on the Implementation Mode and Evaluation Standard of PI Teaching Method in Vocational Schools

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**Abstract:** The rapid development of economy and the improvement of enterprise employment standards have put forward new requirements and standards for the training of talents in vocational colleges, and promoted the reform of vocational education. Therefore, the Ministry of Education of China has put forward an initiative which called “three teaching reforms”, and the application of PI teaching method is the reform and practice of teaching methods, which can play a positive role in promoting the transformation of teaching mode and the cultivation of innovative talents. Through the analysis and research of PI teaching method, this paper deeply discusses the implementation mode and the basic evaluation standard in vocational colleges, which provides theoretical reference for related teaching reform.

## 1. Introduction

With the rapid development of China's economy, the state and the society have put forward new requirements and expectations for improving the quality and training of vocational education. In order to cultivate the high-level technical talents needed by the society, the teaching methods of vocational education urgently need to be reformed. The research and practice of PI teaching method conform to the call and trend of the national vocational education reform, and is the practice and application of the “teaching method” reform in the “three teaching” reform. It can enable students to participate more in the teaching process and cultivate students' comprehensive ability. Vocational colleges should actively study its most effective implementation mode and evaluation standard.

## 2. Overview of the PI Teaching Method

### 2.1 Concept of PI Pedagogy

PI (Peer Instruction, peer) teaching method is a student-oriented interactive teaching mode founded by American University Professor Eric Mazor in the 1990s and applied to the teaching practice of university physics courses. With the development of related technologies and the optimization of the theoretical system, the implementation of PI teaching method has covered all stages from basic education to higher education<sup>[1]</sup>.

### 2.2 Theoretical Basis for the Implementation of the PI Teaching Method

In the current theoretical research system, the theoretical basis of PI teaching method implementation mainly includes constructivism theory, mixed learning theory and communication social value theory. The application of PI teaching method has changed the phenomenon of one-way transmission between teachers to students and insufficient interaction between students and students in the traditional teaching mode. With the support of information platform, the multiple interaction between students and students and between students and teachers is realized, and the overall

teaching quality has been effectively improved<sup>[2]</sup>.

### 2.3 Basic Process of the Implementation of the PI Teaching Method

After Mazur put forward the theoretical system of PI teaching method, with the continuous expansion of its application scope, a relatively perfect basic process has been formed. Combined with the characteristics and objectives of vocational education, the basic process of PI teaching method application is shown in Figure 1.

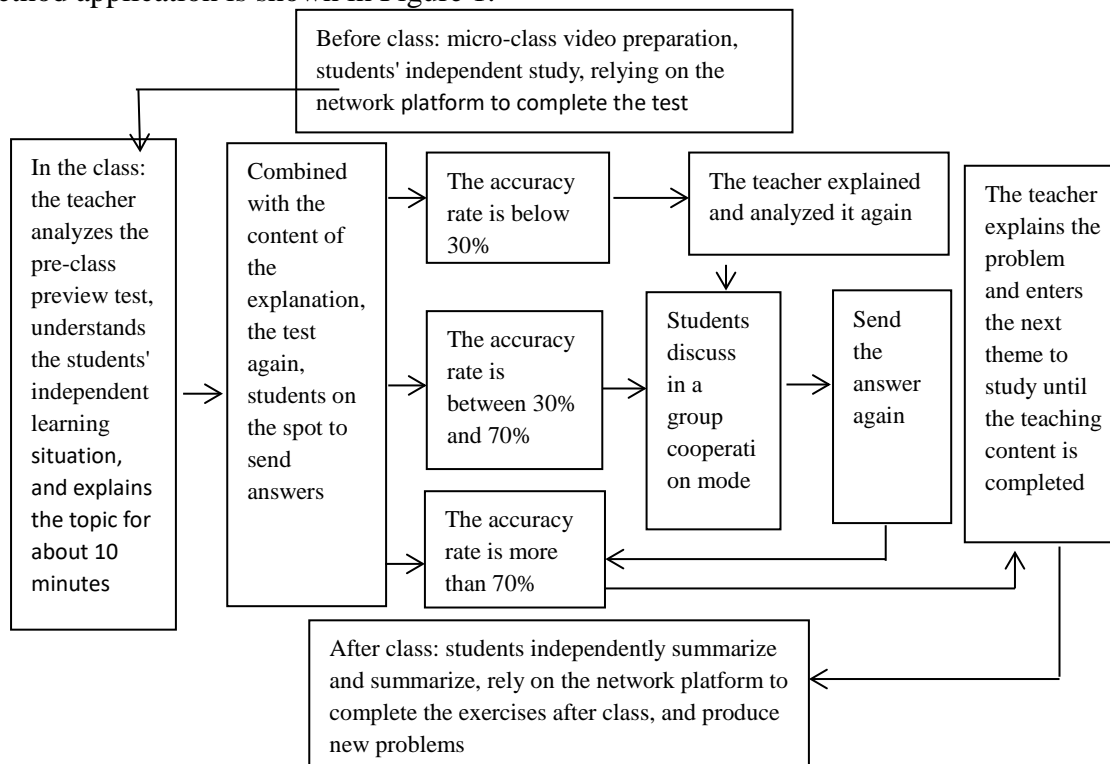


Fig.1 Basic Process of the Application of PI Teaching Method in Vocational Colleges

## 3. Discussion on the Implementation Mode of PI Teaching Method in Vocational Colleges

### 3.1 Innovate the Concept of Teaching and Learning for Teachers and Students

Although PI teaching method can play a positive role in promoting the reform of vocational education, it needs teachers and students to innovate and change at the concept level. Complex source of vocational college students, poor learning foundation and insufficient interest in learning are common problems in teaching reform. In the implementation of PI teaching method, it is necessary to improve students' awareness of independent learning, and teachers should make full use of information technology to prepare before class, transform teaching methods, and improve the awareness of innovative teaching.

### 3.2 Optimize the Curriculum and Teaching Content

In the specific application of PI teaching method, the improvement of curriculum system and the optimization of teaching content organization are also the important contents of pre-class preparation, which are the basic conditions for the in-depth implementation of teaching mode reform. Vocational colleges should first strengthen the PI teaching application of the overall requirements, deepen the fusion, to industry and professional skills innovative talents training target as the basic guidance, the learning objectives and learning content decomposition, abandon teaching materials and traditional teaching mode, appropriate into the practice of the content of the training, and the content in appropriate form in micro class video and classroom exercises, for students to learn play a good guiding role.

### 3.3 Basic Support for the Implementation of PI Teaching

The implementation of PI teaching method has fundamentally changed the traditional indoctrination teaching mode, but in the specific implementation process, it needs the support of software, hardware and other aspects. This requires the management level of vocational colleges, teachers and students to be fully prepared to ensure that teaching activities can be sustained and stable<sup>[3]</sup>. The supporting conditions for the implementation of the PI pedagogy are shown in Table 1.

Table 1 Basic Supporting Conditions for the Implementation of the PI Teaching Method

	school	teacher
Before class	Network learning platform construction, micro-class production equipment and software	Clear the teaching objectives, optimize the teaching content, micro-class production, upload, problem design
In class	Students answer the equipment and program design	Classroom organization and optimization, according to the results analysis of students to promote the teaching process
after class	Construction of a new evaluation system	The evaluation results are used to analyze the teaching process to provide a reference for the next teaching organization

### 3.4 Change the Dominant Position of Students

The subject transformation of students in the learning process is the core of the implementation of PI teaching method and an important guarantee to ensure the effectiveness of the application of teaching methods. In order to realize the change of students' subject status, it is necessary to start with the pre-class micro-class video design, and design the content from the perspective of students to stimulate students' psychological needs for knowledge exploration, so as to improve students' interest in learning. In the offline classroom teaching activities, pay attention to the effectiveness of group discussion, through reasonable grouping, realize the excellent students to lead poor students, guide students to have in-depth discussion. Teachers only need to do a good job of discussion time, goals and discipline requirements, try to ensure the main status of students in the discussion.

### 3.5 Optimize the Homework Link after Class

The implementation of PI teaching method optimizes the homework link, which transforms the homework exercises to the mobile teaching platform, which can directly complete most of the homework content by using mobile phones, changing the disadvantages of the traditional boring homework mode. Teachers can make the overall analysis of the teaching situation and students' learning situation according to the background data, and optimize the subsequent teaching process until students complete all the learning tasks<sup>[4]</sup>.

## 4. Construction of PI Teaching Method Evaluation Criteria in Vocational Colleges

### 4.1 Clarify the Orientation of the Evaluation Criteria

Teaching methods should have corresponding evaluation standards, and ensure that the basic orientation of evaluation standards is combined with the goal of talent training. The basic guidance of the implementation of PI teaching method evaluation standards in vocational colleges should be supported by the training system of students' core literacy, and decomposed into different teaching links according to the core literacy, so as to ensure the deep embodiment of the guiding role. The integration of the core literacy and the PI teaching method evaluation system is shown in Table 2.

Table 2 Integration of Core Literacy and PI Teaching Method Evaluation System

Evaluation process	Evaluation content	The corresponding core literacy connotation
Pre-class evaluation	Evaluation of preview effect and theoretical knowledge mastery degree evaluation	Humanistic heritage, learn to learn
In class evaluation	Knowledge mastery and application evaluation, communication ability evaluation, and innovation consciousness evaluation	Scientific spirit, learning to learn, healthy life, responsibility

After-class evaluation	Knowledge application ability evaluation and innovation ability evaluation	Responsibility, practice and innovation
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## 4.2 Design of the Evaluation Module

Taking the implementation requirements of PI teaching method as the starting point, comprehensively considering the orientation of vocational colleges and talent training objectives, it is suggested to design the evaluation module as shown in Table 3. In this way, students can be fully mobilized to participate in various teaching links through the allocation of points, and practice should be actively carried out to ensure that the teaching effect meets the requirements of talent training in vocational colleges.

Table 3 Design of The PI Teaching Method Evaluation Module

Evaluation module	Evaluatorm	Evaluation content	Score	Proportion in total score
Group discussion and evaluation	Group classmate	Participate in the group discussion and discuss the effectiveness	20	10%
After-school homework evaluation	Teacher, platform	Job completion degree and accuracy rate	20	10%
Semester test evaluation	teacher	Master and application of theoretical knowledge	100	50%
Evaluation of practical ability	School-enterprise cooperation platform	Practical application ability	30	15%
Ideological and moral evaluation	teacher	Ideological and moral cultivation	20	10%
Student self-evaluation	student	Learning attitude and self-cognition	10	5%

## 4.3 The Embodiment of the Evaluation Result Orientation

Taking the reform of PI teaching method in the course of Advertising Practice of Hainan Vocational University of Science and Technology as an example, the relevant survey results in the implementation process are shown in Figure 2:

(1) Survey of the correct rate of students' answers before and after the discussion

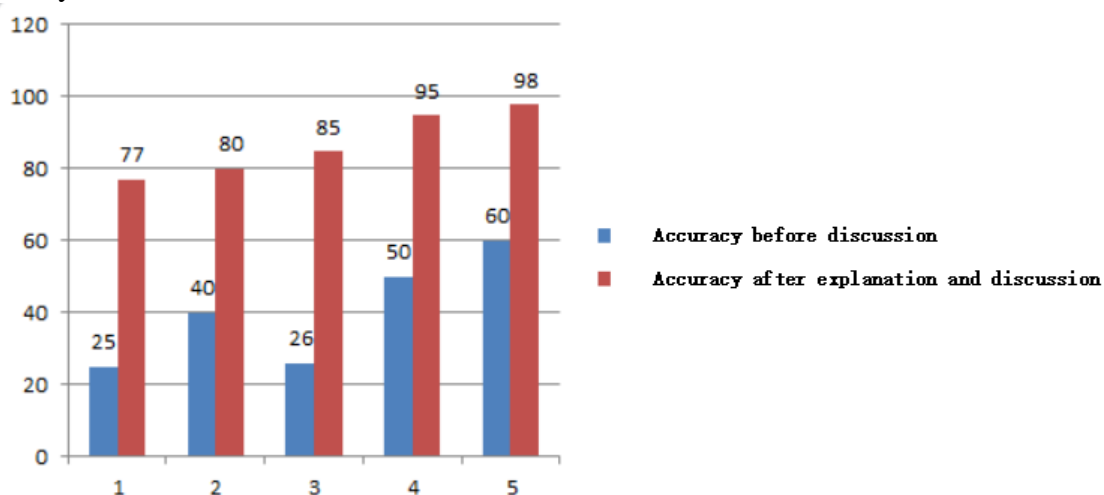


Fig.2 Answer Accuracy Before and after the Discussion Process

According to the data, through the implementation of PI teaching method, teachers can explain the problems in the process of students 'preview. Through group discussion, students' understanding and application of knowledge can be better improved, the accuracy of answering questions has increased significantly, and good classroom teaching results have been achieved<sup>[5]</sup>.

(2) Survey of students' cognition and acceptance of PI teaching

Taking marketing and professional course teaching as an example, the 4-level method and the PI teaching method question-and-answer platform were used to investigate students' actual cognition

and acceptance. A total of 100 questionnaires were issued and 100 valid questionnaires were recovered. The statistical results are as shown in Table 4.

Table 4 Survey of Students' Cognition and Acceptance of PI Pedagogy

	Strongly agree	Very agree	agree	disagree
It can improve my interest in learning	15%	40%	32%	13%
It can deepen my understanding of knowledge	12%	38%	45%	5%
I would like to actively participate in the group discussion	20%	36%	40%	4%
Distracting me from my study	6%	12%	24%	64%
The effect of the discussion needs to be improved	18%	25%	33%	24%
The PI teaching method should continue to be used	4%	44%	38%	14%

Through the analysis of the survey results, the implementation of PI teaching method can be accepted by the majority of students, and good results have been achieved in the teaching activities, but there are also some problems, which need to continuously improve the implementation mode.

## 5. Conclusion

Vocational colleges to carry out the PI teaching method in the concrete implementation process, should be given priority to with college level overall planning, with project construction as the basic operation mode, build in charge of the teaching leadership, professional course teachers, counselors, comprehensive project team, adhere to the students as the subject of the teaching mode, draw lessons from modern education theory, build perfect implementation mode and evaluation standard. In the specific implementation process, we should pay attention to the observation and analysis of problems, so as to better avoid adverse factors, fully reflect the application effect of PI teaching method, and play a positive role in promoting the improvement of teaching quality and the reform of education system in vocational colleges.

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