



**A STUDY ON COLLEGE STUDENTS' COMPETITION
PROMOTING TEACHING REFORM
TAKE THE NEW ENERGY VEHICLE ENGINEERING
TECHNOLOGY MAJOR OF SHANDONG ENGINEERING
VOCATIONAL AND TECHNICAL UNIVERSITY AS AN
EXAMPLE**

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**AN INDEPENDENT STUDY SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE MASTER'S DEGREE OF BUSINESS
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Thematic Certificate

To

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This Independent Study has been Approved as a Partial Fulfillment of the Requirement
of International Master of Business Administration in International
Business Management

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ABSTRACT

The purpose of the study is to provide a pedagogical model that improves students' mastery of theoretical knowledge; Provide a pedagogical reform method to improve students' hands-on skills; Provide an effective learning method to increase students' interest in learning. This paper mainly adopts the method of questionnaire survey and studies the problems of poor mastery of students' theoretical knowledge, weak hands-on practical ability, and low interest in learning in traditional teaching. Using constructivist learning theory and Dewey's pragmatic education theory, the college student competition was integrated into teaching, and the teaching mode and method were reformed.

The sample of this study is the new energy vehicle engineering technology students enrolled in Shandong University of Engineering and Technology in 2021, and two classes were selected, and the college student competition was integrated into the teaching reform as class 1 and the traditional teaching as class 2. By using SPSS software to analyze the results of the questionnaire, the study found that Class 1 had higher average scores than Class 2 with the same theoretical knowledge test scores, significantly enhanced hands-on practical ability, and significantly improved learning interest. It is concluded that the integration of college student competition into teaching affects students' theoretical knowledge, hands-on practical ability, and learning interest. Finally, the results of this study are reflected, discussed, and suggested. For example, it is recommended that teachers specializing in new energy vehicles integrate the content of the automotive technology competition in the teaching process and update the course content promptly; Full consideration is given to the combination of professional practice and theory.

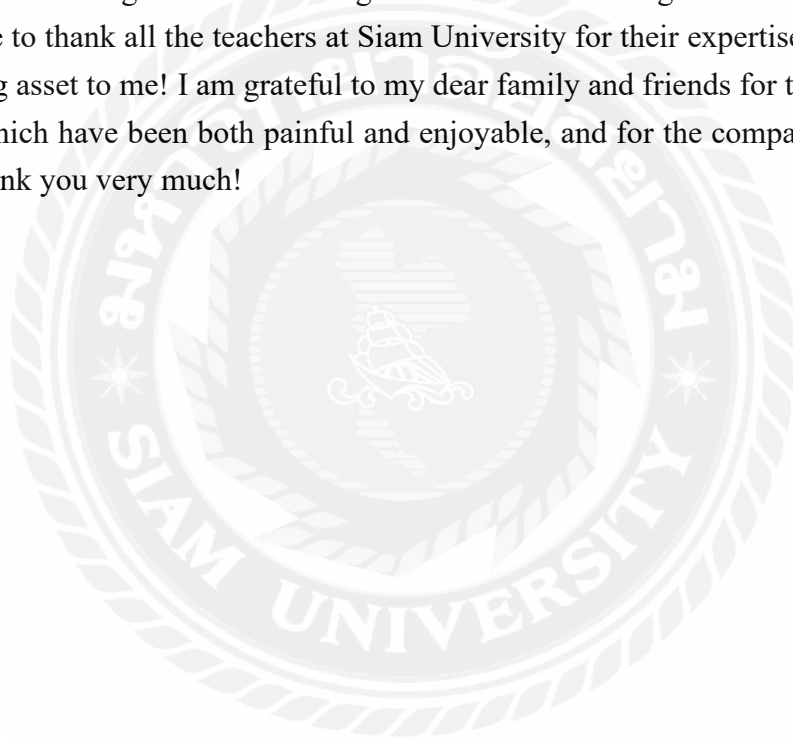
Keywords: college student competition, teaching mode, reform, professional undergraduate

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Declaration

I, Jiang Chengcheng, hereby certify that the work embodied in this independent study entitled “A study on college students' competition promoting teaching reform Take the new energy Vehicle Engineering technology major of Shandong Engineering Vocational and Technical University as an example” is result of original research and has not been submitted for a higher degree to any other university or institution.

JIANG CHENGCHENG

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Jun 1, 2023



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1. Introduction

1.1 Research Background

With the rapid development of China's new energy automobile industry, the talent demand for vocational undergraduate new energy vehicle engineering technology majors is constantly updated, and the form and related concepts of new energy vehicle teaching are also changing synchronously, while the new energy vehicle engineering technology major of vocational undergraduate colleges and universities is disconnected from market demand to a certain extent, and professional teaching lags behind social practice. Traditional teaching has the problems of poor mastery of students' theoretical knowledge, weak hands-on practical ability, and low interest in learning (Jia & Zhang, 2022).

Since 2008, China has held national vocational college skills competitions, and various college student competitions have begun to emerge, which often reflect the needs of the entire job market and social development (Xu, 2021). All kinds of college student competitions are the link between education majors and industry enterprises, vocational undergraduate students can with the rapid development of China's new energy automobile industry, vocational undergraduate new energy vehicle engineering technology professional talent demand is constantly updated, the form of new energy vehicle special teaching and related concepts are also changing synchronously, and the new energy vehicle engineering technology major of vocational undergraduate colleges and universities and market demand have a certain degree of disconnection, professional teaching lags behind social practice. Through various student competitions and vocational skills competitions, the level of professional knowledge and specialized skills are exercised (Lin, 2022).

The jury and judges of various college student competitions are composed of industry experts, university scholars, enterprise elites and business leaders. The evaluation criteria and selected works are more in line with the actual needs of society (Zhong, Liang, & Wang, 2020). Through vocational skills competitions and various student competitions, students and teachers can directly understand the skills needs and weaknesses of enterprises, thus leading the direction of professional setting and curriculum reform in vocational colleges (Zhang & Li, 2022). At present, teachers in vocational colleges and universities have problems with the traditional teaching mode in their teaching, that is, the emphasis on lecturing theoretical teaching, and the neglect of practical teaching; Students pay more attention to whether they pass the theoretical exercise test, and their skills and practical abilities are ignored (Zhang, Chen, Zhang, & Gao, 2022). It is still the traditional teaching concept of "taking teachers as the center, teaching materials as the center, and classroom as the core", which greatly restricts the cultivation of comprehensive ability and the improvement of practical ability of vocational undergraduate students. The holding and development of all kinds of college students' competitions is precisely to emphasize the cultivation of students' practical and hands-on abilities, which has increased the importance of vocational colleges to practical teaching, affected the change of teaching concepts in vocational colleges, and practical teaching links have been paid attention to and developed, so that the

characteristic specialty of vocational colleges can be run.

Foreign countries have issued many policies on various types of college student competitions, and vocational education can be compared with general education in its educational system (Turner, 1960). In the 1960s, South Korea, Japan, Spain, Germany, Britain, France and other European countries joined the World Skills Organization one after another. The Korean government incorporated the skills examination into the vocational education system and called on enterprises, training institutions and individuals to actively participate in vocational education to promote talent cultivation; Japan divides vocational education into pre vocational education and enterprise vocational education, and attaches great importance to improving the sustainable development of vocational talents. Spain, Germany, Britain, France and other European countries attach almost the same importance to skills competitions as general education, and actively guide the establishment of a system of vocational education serving the national (Amsden, 1989).

Through reviewing the literature, it was found that the implementation effect was not particularly good, and many schools were taking up extracurricular breaks to add additional courses to the competition content, and many teachers and students may have some resistance, resulting in the competition promotion teaching model does not achieve the expected goals. Therefore, the content of the competition is combined in the classroom. In the conventional teaching mode, the teaching objectives, teaching focus and difficulties can refer to the requirements of previous years' skills competitions to cultivate students' professional skills and make the classroom course content more close to the needs of social development (Zhang, 2023). Breaking the traditional teaching mode, which is mostly taught by teachers and students learn passively, the competition content and requirements of the student competition are integrated into the regular teaching mode, which does not affect the normal teaching plan, but also increases the learning initiative of students, so as to achieve the purpose of promoting learning through competition (Huang, 2023).

1.2 Research Problems

First, in traditional teaching, students' theoretical knowledge is poorly mastered and classroom effects are poor.

Second, in traditional teaching, students' hands-on practical ability is weak and their ability to solve practical problems is poor.

Third, in traditional teaching, college students have low interest in learning, and college students often skip classes and are tired of studying.

The above problems are found through CNKI, Weipu.com, Wanfang.com, reading 80 academic journals, 10 dissertations, and 21 conference papers, 10 newspapers, although many scholars have carried out teaching reform, but the teaching results are not particularly good, and the problems solved are still incomplete. In previous teaching reforms, classroom effectiveness and motivation for learning have not improved (Patrick, Hisle, & Kempler, 2000). Through the investigation and research, it was found that the main reasons were the small scale of the competition, the emphasis on elites,

the alienation of competition and education, and other problems that only a few students could really improve through the competition. Gao Fei, Qiao Lirong, & Sun Maojun. Analysis of the learning status results of students in the aerial classroom of college sports technology course. It is proposed that in the current traditional teaching, there are problems such as students' poor mastery of theoretical knowledge and poor classroom effect. Published with a compilation of abstracts of the 12th National Congress of Sports Science (Gao, Qiao, & Sun, 2022). Qin Liya pointed out in the research article on the "high-level" education model of vocational undergraduate under the background of industry-education integration that at present, students have weak hands-on practical ability and poor ability to solve practical problems, which can not only apply what students have learned into practice, but also enable students to discover and solve problems. and published in the Times Automotive Journal (Qin, 2023).

1.3 Objective of the study

The teaching reform of the integration of college student competition into the classroom plays an important role in teaching effect and student learning, and is a way to improve the quality of university teaching.

1.To analysis and provide a teaching mode to improve students' theoretical knowledge and improve classroom effectiveness.

2.To analysis and provide a teaching model teaching reform method, improve students' hands-on practical ability, and improve their ability to solve practical problems.

3. To analysis and provide an effective learning method to increase students interest in learning.

1.4 Scop of the study

This study consulted CNKI, Wanfang Data, Weipu.com, and literature on college student competitions to promote teaching. Through reading 80 academic journals, 10 dissertations, 21 conference papers, and 10 newspapers, constructivist learning theory and Dewey's pragmatic education theory were selected as the guiding theories of this research.

First, the constructivist view of learning and knowledge is used to guide students to integrate into the knowledge learning context of college students' new energy vehicle professional competition, recreate knowledge, and discover their own problems in the process of knowledge reorganization and framework combing, guide students to have a desire for inquiry, and improve their enthusiasm for learning (Mascolo, 2009).

Second, the constructivist teaching concept is used to analyze the teaching reform promoted by teachers from college student competitions, introduce the discipline standards and content of college student competitions into the classroom, let students give full play to their imagination and enthusiasm in the form of competitions, let students independently build knowledge systems, combine theory and practice, and promote and improve theoretical knowledge and practical ability (Johnson., Johnson.,

& Smith. 2014).

In this paper, Dewey's pragmatic educational theory guides the following roles,

Based on Dewey's philosophy of education as life, studying how to introduce the latest industry information of college student competitions into campuses and classrooms can promote the teaching reform of new energy vehicle engineering technology courses (Sleeter & Carmona, 2017). With the rapid development of the new energy automobile industry, traditional teaching methods often cannot keep up with the pace of the industry. However, by setting up competitions related to new energy vehicle technology, formulating competition items and standard requirements, and updating them according to the latest developments in the industry, teachers and students can be informed of the latest requirements for talents in the industry, which prompts them to actively explore and learn the latest developments in related fields.

By bringing the latest industry information to campus and classrooms, students can be stimulated to learn and motivated. Students will be able to realize the strong connection between what they have learned and practical application, enhancing their motivation and practical ability (Sleeter & Carmona, 2017). At the same time, in the process of participating in the competition, students can also cultivate the ability to solve practical problems, teamwork spirit and innovative thinking, which are the core qualities required by the new energy automobile industry.

This study took the 2021 vocational undergraduate new energy vehicle engineering technology students enrolled in Shandong University of Engineering and Technology in China as the research sample, and the research period was from September 2022 to February 2023, and the research period was one semester. A total of two classes are selected, a total of 80 people, 1 class is an experimental class with 40 students, 2 classes are traditional teaching classes with 40 students, the experimental class starts from the combination of college students' skill competition and curriculum as the goal of distribution through the questionnaire star platform, collects questionnaires, studies and understands vocational undergraduate new energy vehicle engineering technology students, in this teaching reform, excavates the conflicts and problems that arise in the process of combining college students' skill competitions and teaching courses. Research on the vocational competition of college students and the specific countermeasures for the combination of classroom teaching and traditional classroom reform, so as to help vocational undergraduate colleges cultivate social successors with sound professional personality, excellent professional ideals, perfect vocational skills and knowledge, and high professional quality, and provide a source of strength for social modernization.

1.5 Research Significance

In the teaching and training of vocational undergraduate colleges, there should be a professional curriculum system to adapt to the social process. The same curriculum system for many years lags behind the progress of society and the development of science and technology and the requirements of students out of school. Professional competition on the content setting, embodies the social and enterprise for talent

requirements, professional skills competition for students' practical ability and creative thinking ability has a great role, to college students' skills to promote teaching throughout the professional undergraduate course teaching process, form a special professional undergraduate course system, promote practice education, efforts to improve college students' learning interest, and professional knowledge use ability, for students' future employment and entrepreneurship under the stage (Luo, Zhang, & Wang, 2023).

With the continuous development and progress of social productive forces, the economic structure has been greatly adjusted, and the society and various industries are made continuous progress. The society needs more high-quality, skilled and research-oriented talents. However, there are still some errors in the teaching mode and orientation of vocational undergraduate universities and the needs of enterprises and society (Zang, Li, & Cui, 2023). It is required that the education mode must keep pace with The Times and timely change in line with the needs of the society, from the traditional teaching mode to the employment and entrepreneurship-oriented mode, so as to cultivate talents who meet the needs of the society. Starting from the market economy with Chinese characteristics and the reality of social system, we should pay attention to the cultivation of students' vocational skills and improve students' creative ability and innovative thinking (Luo, Zhang, & Wang, 2023). The classroom teaching methods of new energy vehicle engineering technology majors will be reformed to cultivate skilled, application-oriented and innovative talents in line with the professional undergraduate program.

1.6 Research framework

Through literature research, it is found that there are three problems in traditional teaching: 1. students' poor mastery of theoretical knowledge, 2. students' weak hands-on practical ability, 3. low interest in learning of college students. Through constructivist learning theory and Dewey's pragmatic education theory, this college student competition integrates into the reform teaching of teaching, solving 1. students' poor mastery of theoretical knowledge, 2. students' weak hands-on practical ability, and 3. low interest in learning of college students.

In this study, the different teaching modes of the two classes were independent variables, namely variable A and variable B, and the dependent variable was students' mastery of theoretical knowledge, 2. students' hands-on practical ability, and 3. university students' interest in learning. Student variable A is teaching reform and variable B is traditional teaching. Class 1 adopts variable A teaching, and college student competition is integrated into the teaching method; Class 2 adopts B teaching and traditional teaching. After a period of teaching time, the analysis and comparison of 3 dependent variables, 1. students' mastery of theoretical knowledge, 2. students' hands-on practical ability, 3. university students' interest in learning, the difference.

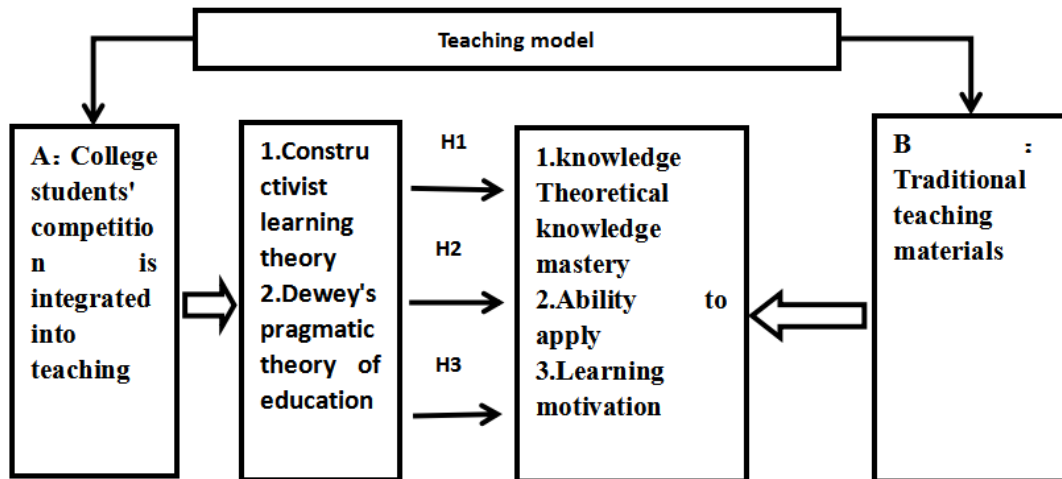


Figure 1.1 Dependent variable argument plot

The basic thinking framework of this teaching reform, and the implementation of the research plan, first of all, because of the socio-economic development and students' physical and mental development vocational undergraduate colleges, the traditional classroom needs to be reformed, the specific reasons are unclear teaching objectives, different teaching evaluation, poor actual classroom learning effect, great utilitarian competition, and elite training. Through constructivist learning theory, Dewey's pragmatic education theory, guiding college student competitions to promote teaching reform, the specific reform ideas are, training goal positioning, teaching quality assessment, reform of training methods, reform of student assessment methods, improvement of teacher ability, specific ways for all students to learn and participate, old students to guide new students, competition content into the classroom, experienced teachers to guide inexperienced teachers (Liu & Wu, 2016). The ultimate training goal is to cultivate high-level, skilled, application-oriented and innovative talents. Social factors affect the ultimate training goal, and the cultivated people will act on the existing social environment (Wu & Xiao, 2020).

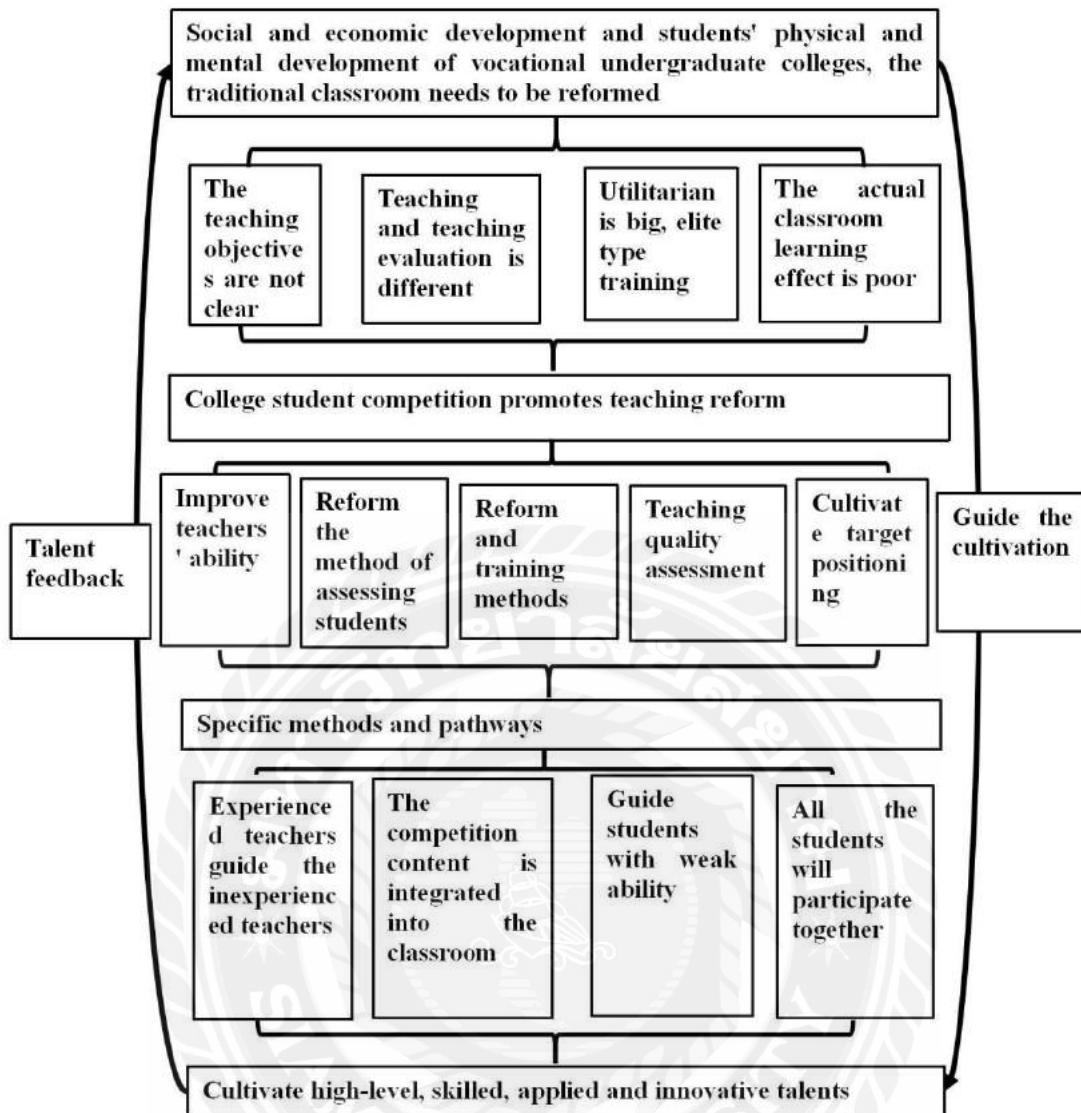


Figure 1.2 Teaching reform process

1.7 Hypotheses

H1: Assuming that there is a reform teaching class 1 and a traditional teaching class 2, there is a significant difference in the final examination, and the academic performance of class 1 is significantly higher than that of class 2.

H2: Assumes that there is a significant difference in the ability of students to apply professional knowledge between class 1 and class 2 of traditional teaching, and the ability to apply professional knowledge in class 1 is significantly stronger than that of class 2.

H3: Assumes that there are significant differences in students' enthusiasm and interest in learning in the reform teaching class 1 and the traditional teaching class 2, and the learning enthusiasm of the first class is significantly higher than that of the second class.

2. Literatures Review

2.1 College student competition

It is proposed in the practice of teaching reform of new energy vehicle technology specialty assisted by competition to promote teaching. According to the changes of the times, there is a huge demand for new energy vehicle technology professionals in the society, and vocational colleges are required to have high practical skills for students. The teaching reform of new energy vehicle technology specialty can take the importance of college student competition as an important means to promote the improvement of teaching quality through college student competition and cultivate new energy vehicle technical talents who meet new requirements, new technologies and new business forms (Li, 2020).

The college student competition is an organized and procedural mass competition in accordance with China's vocational skill standards, following the principles of openness, fairness and justice, and within the scope permitted by Chinese laws and regulations (Chen, 2017). Its main focus is on the participants' operational skills and ability to solve real problems. The definition of a college competition in the dictionary emphasizes its purpose of testing the effectiveness of education or skills in order to improve the skill level of the participants. These competitions are organized by the relevant units and publicly praise outstanding performers.

University competitions in China are classified according to different organizational departments, including national, provincial and municipal competitions (Liu, 2019). This classification structure is designed to provide college students with a multi-level competition platform, allowing them to showcase their skills and knowledge in a specific field and to communicate and compete with other outstanding peers. By participating in student competitions, students have the opportunity to gain practical experience, improve professional skills, and develop problem-solving skills and teamwork during the competition.

In addition, the University Student Competition also provides an effective evaluation tool for Chinese higher education to test the effectiveness of education and training. Through the judging and recognition of the competition, the development of higher education can be promoted and the quality of teaching can be improved. At the same time, these competitions also have a positive impact on the personal growth and career development of participants, providing them with a competitive advantage in entering the job market (Liu & Fan, 2019).

To sum up, the college student competition is an organized and procedural mass competition within the scope permitted by national laws and regulations in accordance with China's vocational skill standards. It focuses on the participants' operational skills and ability to solve practical problems. These competitions are organized to test the effectiveness of education or skills in order to improve the skill level of the participants, and are organized by the relevant units and publicly praised for their outstanding performance. China's university student competitions include national, provincial, and municipal competitions according to the organizational department, providing a platform for college students to display their skills and knowledge, promote the

development of higher education, and promote personal growth and career development (Lin, 2015).

2.2 Teaching mode

In the teaching process, it is necessary to adhere to the teaching principle of "student-oriented and teacher-oriented", and integrate the rules of skills competition into the professional daily teaching activities. In this way, students can adapt to the rules of skills competition, be familiar with the content of skills competition, and lay the foundation for the development of the teaching mode of promoting learning through competition (Lu, 2023). It is necessary to pay attention to the cultivation of students' vocational ability, actively change the teaching concept, change the traditional teaching mode based on the essential level, aim to cultivate and improve students' practical communication ability, and effectively promote the development and progress of the industry in the construction of regional economic development. The development of the teaching mode of "promoting learning through competition and promoting teaching through competition" can fully conform to Tao Xingzhi's educational concept, effectively ensure the integration of classroom teaching and life-oriented teaching, and improve the overall quality of teaching (Zhang, 2023).

2.2.1 Reform in education

In order to promote learning, to promote the teaching training innovative talents teaching mode status and design, various to meet the needs of society discipline competition greatly aroused students' learning enthusiasm and initiative, not only conducive to the construction of a good learning atmosphere, can improve the students' comprehensive skills quality. By participating in the competition, college students can exchange skills, students can increase cooperation and communication, have the opportunity to show themselves, and enhance the confidence of students. Students can not only sort out and process the knowledge they have learned to apply what they have learned, but also improve their knowledge of thinking and inquiry at a deeper level, so as to achieve the purpose of promoting learning through competition. Teachers can reflect on the problems arising in the teaching by holding competitions for college students, improve their methods, and constantly update the teaching content and reform the teaching methods in the future teaching. The college student competition not only broadens the communication between teachers and students, but also realizes the competition in a real sense (Wang et al., 2020).

He Fugui and Zhang Mei discussed the research on promoting teaching reform in vocational skills competitions. Vocational skills competition is an important achievement of vocational education reform and development, not only a platform for vocational education training, exchange and improvement, but also a channel to display the education and teaching achievements of similar vocational colleges, the competition not only has the role of promoting vocational education system innovation, standardizing vocational skills training, but also has the role of expanding social influence, promoting teaching reform, guiding professional construction and

development (He & Zhang, 2010).

In teaching reform, curriculum reform is an important part. It involves the clarification and determination of teaching objectives, the design and updating of curriculum content, the integration and utilization of teaching resources, and the organization and implementation of teaching activities (Richards, 2013). Curriculum reform should draw on the latest discipline development trends and industry needs, combine subject knowledge with practical application, and cultivate students' ability to solve practical problems and cope with career challenges. By updating and optimizing course content, teaching can better adapt to the development needs of society and provide students with a more challenging and hands-on learning experience.

In addition, pedagogical reform includes innovation and improvement of teaching models. The traditional teaching model is teacher-centered, focusing on the transfer of knowledge and the acceptance of students. Modern teaching models emphasize students' active participation and self-directed learning, advocating inquiry-based learning, cooperative learning, and problem-solving methods (Hoidn & Reusser, 2020). This student-centered teaching model can stimulate students' interest and motivation in learning, and improve their learning effect and creativity.

The reform of teaching methods and teaching resources is also an important part of teaching reform (Anderson, 2002). With the development of information technology, teaching methods and teaching resources have been widely expanded and applied. Teaching can provide richer and more diverse teaching resources and learning environments with the help of advanced technology tools such as multimedia, virtual laboratories, and online learning platforms. This digital and networked approach not only enhances the flexibility and interactivity of teaching, but also meets the needs of students for personalized learning.

2.2.2 Traditional teaching mode

Traditional teaching refers to traditional teaching methods and teaching models, which usually include the process of teacher-centered knowledge transfer and passive acceptance by students. Here are some of the characteristics and methods of traditional teaching:

Teacher-centered: In traditional teaching, teachers usually play a leading role, responsible for teaching and transferring knowledge in the classroom. Teachers usually prepare classroom handouts and lesson plans, and explain and demonstrate knowledge in class (Du & Ding, 2020).

Passive receptivity of students: In traditional teaching, students usually play the role of passive recipients. They acquire knowledge primarily by listening to lectures and taking notes, and less involved in class discussions and interactions. **Textbook-based:** Traditional teaching often relies on textbooks as the main teaching resource. Teachers follow the content and order of the textbooks, and students need to read the textbooks to gain knowledge. **Notes and exams:** In traditional teaching, students often need to take notes to record the teacher's explanations and pass exams to assess their mastery of knowledge (Xia, 2019).

In summary, the traditional teaching of universities has the lack of personalized

learning, insufficient interaction and participation, lack of practice and application, limitation of evaluation and insufficient integration of technology. In the end, students have poor mastery of theoretical knowledge, weak hands-on practical ability, and low interest in learning of university students, and the existence of these problems puts forward the need to reform traditional teaching to better meet students' learning needs and cultivate their comprehensive ability.

2.3 Guiding theory

2.3.1 Constructivist learning theory

Constructivist learning theory, Piaget first proposed constructivist learning theory, which was later supplemented and improved by many experts and scholars, and applied to teaching practice. The basic views of this theory mainly include the view of students, learning, knowledge and teaching. The constructivist view of the student holds that the learning process is not the passive transmission of knowledge by the teacher to the student, but the process of the student actively constructing the knowledge system in the mind, which cannot be replaced by others. The constructivist teaching philosophy holds that teachers should be able to extract knowledge from students' minds and integrate it with new knowledge, thereby promoting the reorganization, transformation and transformation of knowledge (Hu, 2021). Teaching should also create a good teaching environment and atmosphere to provide students with problem-solving tools and support to improve their self-directed problem-solving skills. In the research and analysis of this paper, the guiding role of constructivist learning theory in promoting teaching reform in college student competition mainly has the following two points.

First, use the constructivist view of learning and knowledge to guide students to recreate knowledge and improve their enthusiasm for learning in the knowledge learning context of college students' new energy vehicle professional competition. Second, the constructivist teaching concept is used to analyze the teaching reform promoted by teachers from college student competition, and introduce the rules and standards and content of college student competition into teaching, so that theoretical knowledge and practical ability promote and improve each other Dewey's pragmatic theory of education .

2.3.2 Dewey's pragmatic theory of education

First, education is growth. Education should respect the law of physical and mental development, because students' mental activities are based on instinctive activities, education makes psychological functions continue to grow and develop, and students should have a process of full growth and development (Hu, 2021).

Second, education is life, and school is society. Education is life itself, education in small things in everyday life, not preparation for future life. School education should be closely linked to students' actual lives and students' life experiences.

Third, education is the continuous transformation of experience. Experience is the result of the interaction and mutual influence between individuals themselves and the surrounding environment of life. Individuals themselves are not only affected by the

environment, but they also can interfere with the changes in the surrounding environment. The generation of experience is a continuous process without an end goal, so the development of education is the continuous growth of individual experience (Gu, 2019).

In this paper, Dewey's pragmatic educational theory guides the following roles. Based on Dewey's philosophy of education as life, it connects learning with practical problems, focusing students' learning on problem-solving and applying knowledge. In new energy vehicle engineering technology education, teachers can guide students to research and explore practical problems, and encourage them to use the knowledge and skills they have learned to solve related problems.

2.4 Master of theoretical knowledge and practical ability

In 2019, the impact of university students' participation in competitions on the application of professional knowledge was studied. The findings suggest that competition participants demonstrate a higher level of understanding and application of expertise than non-participants. The competition provides students with an opportunity to practice and apply their professional knowledge, motivating them to combine the theoretical knowledge they have learned with practical problems, and develop their problem-solving skills and innovative thinking (Yang & Zhou. 2017). This study provides strong evidence to support the positive impact of student competition on the ability to apply professional knowledge by promoting teaching reform. Students who participate in the competition need to apply the professional knowledge they have learned to solve practical problems, which forces them to think deeply and explore to translate theoretical knowledge into practical application. Through communication and interaction with other competitors, students are also able to draw new ideas and approaches from different perspectives and experiences. This hands-on learning experience not only strengthens students' professional knowledge, but also improves their ability to apply and innovate.

A study published in 2020 by Qi and Wang looked at the impact of college students' participation in competitions on learning motivation and performance. The results show that college students' participation in competitions can stimulate their enthusiasm for learning and improve their motivation and interest in learning. The study also found that competitions provide a challenging and stimulating learning environment that encourages active participation in learning and develops problem-solving and teamwork skills (Qi & Wang. 2020). This study provides strong evidence to support the positive impact of student competition on learning motivation in promoting teaching reform. Students who participate in competitions usually put in more time and effort because they are interested in the results of the competition and want to achieve good results through hard work. The competition provides a clear goal and challenge that stimulates students' intrinsic motivation and desire to learn independently. In addition, the competition provides a platform for students to demonstrate and verify the knowledge and skills they have learned, enhancing their self-confidence and motivation to learn.

2.5 Professional undergraduate

In the thinking and exploration of the talent training mode of vocational undergraduate education, proposed that we should stick to the professionalism of vocational undergraduate education, and develop courses based on the working system rather than the academic system, which requires that the curriculum and practical skills must be unified, and the curriculum system must be based on the construction of comprehensive vocational ability, which not only reflects the undergraduate level of vocational undergraduate education, but also deepens the study of technical and theoretical knowledge, It also requires the training of technological innovation ability and research practice ability. This tells us that the professional undergraduate major must adhere to professionalism and deepen technical theory rather than academic nature. College students' competitions focus on practicality, professionalism and deepening technical theory, and introduce college students' competitions into the classroom. Teaching reform based on college students' competitions is an important way to develop vocational undergraduate education (Yang, 2022).

In terms of talent training, vocational undergraduate colleges and universities should adhere to the core values of vocational education, be guided by strengthening the characteristics of practical education, and deepen the integration of industry and education and school-enterprise cooperation to achieve effective results of collaborative education, and strive to create high-level results (Eryong & Li, 2021). Student competitions play an important role in combining theory and practice in vocational undergraduate education. The cultivation of professional work ability must be based on a rich tacit knowledge base and achieved through practical activities in a real professional work environment.

To this end, the talent training of vocational undergraduate colleges and universities should adhere to the integration of industry and education, and strengthen cooperation with enterprises. Jointly build an experimental training base and explore an innovative education model combining engineering and learning, so that students can fully contact real work practices (Qiu, 2021). Through the combination of project-based courses characterized by vocational situations and technology applications and typical college student competitions, students can broaden their horizons, accumulate practical experience, and highlight the vocational attributes of vocational undergraduate education.

In addition, vocational undergraduate colleges and universities should also focus on cultivating students' innovation ability and practical ability. By encouraging students to participate in scientific research projects, innovation and entrepreneurship competitions, etc., they can stimulate their innovation potential and cultivate the ability to solve practical problems (Shi & Wang, 2017). At the same time, it provides rich practical opportunities, such as practical training and enterprise project cooperation, which allows students to carry out practical operation in a real professional environment and combine the knowledge learned with practical application.

In summary, the educational philosophy of vocational undergraduate colleges and

universities should keep pace with the times, adhere to the essence of vocational education, pay attention to strengthening the characteristics of practical education, deepen the integration of industry and education and school-enterprise cooperation, promote the organic integration of theory and practice through college student competitions, and promote the overall improvement of students' professional quality and practical ability (Xing & Tao, 2014). This educational model will lay a solid foundation for students' employment and career development.

3. Research Methodology

This paper mainly adopts quantitative research methods, mainly by designing research experiments, controlling the research environment, issuing questionnaires, collecting data, using SPSS to analyze the data, and draw research conclusions.

3.1 Selection of research methods

This study of college student competition to promote teaching reform, through the study of some literature summary, college student competition to promote teaching reform, reform is an educational method, teacher Hu Yaru's master's research thesis in Nanjing Normal University, from the perspective of competition promotion of learning, the middle vocational "catering service... The biggest innovation of the competition to promote the teaching reform is to introduce the competition model into the classroom, so that every student can enjoy the benefits brought by the competition, improve students' professional ability through various forms of competition, and create new teaching goals, teaching methods and methods under the promotion of learning by competition (Hu, 2021). In the study and research on the current situation and existing problems of the practical training teaching of vocational "Food Service and Management" course, the method of questionnaire was adopted. Mr. Li Weixing published in the journal "Times Auto" to promote teaching to help the practice of new energy vehicle technology teaching reform, emphasizing the application of skill competition in the teaching reform of new energy vehicle technology, integrating competition into the classroom, and promoting learning through practice and personal experience.

Li Huijun's master's research thesis at Guangdong Technical Normal University, Exploration and Application of the Teaching Model of Graphic Design in Secondary Vocational Schools, mentioned that the main advantage of the teaching mode is that it can enable students to quickly change their roles, from student status to professional worker status, stimulate students' interest in learning, and overcome the state of separation of study and work as soon as possible. Due to the general lack of interest in learning, students' self-confidence can also be improved during the competition process. By participating in the vocational skills competition and analyzing the key points in the competition, vocational colleges can effectively promote the reform of the school's teaching mode. Students use the knowledge they have learned to consolidate their professional skills, exercise their willpower and professionalism (Li 2018). In the research, the graphic design major of secondary vocational schools uses the teaching

mode of competition to promote learning, and adopts the method of questionnaire. This approach assumes that students can gain a deeper understanding and mastery of knowledge through practical participation and practical activities.

Lu Zhongwei's master's research thesis at Changchun Normal University, *Experimental Research on the Impact of School Competition on the Effect of High School Physical Education Teaching under the Concept of "Promoting Learning by Competition"*, mentioned that under the guidance and supervision of teachers, based on modular teaching method, the learning content is divided into multiple parts, and competition activities with strong relevance are designed for each part of the learning content. At the same time, the students' learning outcomes are checked in the form of competitions between teams at each stage. The application of competitions allows students to effectively experience competition and cooperation, and the classroom atmosphere is more democratic and harmonious, which is conducive to cultivating students' collective awareness, cooperation consciousness and competition consciousness. These factors enhance students' interest in learning sports, improve the teaching effect of physical education, and ultimately achieve the purpose of completing teaching tasks and achieving teaching goals (Lu, 2022). Under the concept of "promoting learning through competition", Lu Zhongwei combined with experimental research on the impact of school competition on the effect of high school physical education, and adopted the research method of questionnaire. The questionnaire was tested for reliability and validity.

Specific research methods regarding the promotion of teaching and learning by student competitions may vary depending on the research of different fields and disciplines. Some common research methods may include qualitative research, quantitative research, case studies, experimental design, etc. Which methods to use may need to be decided depending on the research question, the way data is collected, and the analytical needs. This study adopts the form of questionnaire, distributes and retracts questionnaires, and analyzes the structure of questionnaires, which is a quantitative research method, so this paper mainly adopts quantitative research methods.

3.2 Sampling and sample sie

1. Design research experiments, mainly based on Shandong University of Engineering and Technology, admitted in 2021, new energy vehicle engineering technology, vocational undergraduate majors as the research object, select the students of this major into experimental reform class and traditional teaching class, a total of 80 people, 40 people in each class, experimental reform class to carry out the reform of the teaching mode with the theme of college student competition.

2. This study used SPSS for quantitative research and analysis, and conducted questionnaires in Shandong Province, Shandong Vocational and Technical University of Engineering, and new energy vehicle engineering major. A total of two questionnaires were issued. Before the teaching reform, one time was issued as a preliminary understanding of the situation before the study, and after the teaching reform, one time was issued. After the teaching reform research, the situation was

analyzed and compared. There were 40 students in Class 1 and 40 students in Class 2, a total of 80 students. The questionnaires were distributed twice through the questionnaire star platform, a total of 160 questionnaires were distributed twice, and 160 questionnaires were recovered, with an effective rate of 100%.

3.3 The design of the inquiry volume

This study mainly uses the questionnaire used by Yuan Chenran in 2022 "Research on the Practice of Middle-level Computer Science Based on the Concept of "Promoting Learning by Competition", on the basis of which some content modifications have been made, and the questionnaire is divided into two departments, the first part of personal information, including classes. grade, major, gender, etc.; The second part of students' subjective attention to teaching and self-learning knowledge, including learning interest, learning enthusiasm, professional knowledge application ability, etc. This scale uses a five-point scale (1 - strongly disagree, 5 - strongly agree).

In this study, questionnaires were distributed through the questionnaire star platform, and the document survey data were collected by Excel software and imported into SPSS-26 software for statistical analysis. Through group comparative study, class 1, class 2, students' learning situation. The mean value and standard deviation were tested to determine the students' learning initiative and the ability to use professional knowledge. A t-test was used to determine the influence of students on learning motivation, application of knowledge and final final exam scores under different teaching modes.

Table 3.1 Questionnaire reliability scale

	Questionnaires	Cronbach's Alpha	N of Items
Appendix A	Pre-study situation questionnaire	0.824	10
Appendix B	Pre-Studisitou Ation Quisty Naile	0.805	15

Using SPSS software, the overall reliability of the entire questionnaire was analyzed, and the results can be seen in Table 5.1, Appendix A Pre-study situation questionnaire, a total of 14 items, excluding the basic information of the first 4 items, and 10 valid questionnaire information, Cronbach's Alpha, is 0.824. Appendix B Pre-Studisitou Ation Quisty Naile, a total of 19 questions, minus the basic information of the first 4 items, and 15 valid questionnaire information, Cronbach's Alpha, 0.805. Both of these values reach above 0.8. This indicates that the reliability of both questionnaires is high.

Table 3.2 Questionnaire validity table KMO and Bartlett's Test

Questionnaires			
Appen dix A	Pre-study situation	Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.882

	questionnaire	Bartlett's Test of Sphericity	Approx. Square df	Chi- 4301.841
			Sig.	45 0.000
Appen dix B	Pre- Studisitou	Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.814
	Ation Quistyu Naile	Bartlett's Test of Sphericity	Approx. Square df	Chi- 5561.786
			Sig.	91 0.000

The test of questionnaire validity is defined by statistician Kaiser (1974) on whether different KMO values can be factorically analyzed. According to the results in Table 5.2, the KMO value of the Pre-study situation questionnaire is 0.882, the KMO value of Pre-Studisitou Ation Quistyu Naile is 0.814, so there are excellent factors, and the probability sig value of Bartlet's sphericity test is 0.000, and the significance of the Significant Level** $p < 0.01$, below the level of 0.001, indicates that this study questionnaire is suitable for factor analysis.

3.4 Collection of data

Because the author is a teacher of new energy vehicle engineering at Shandong University of Engineering and Technology, in the survey of promoting teaching reform in this college student competition, two classes were selected to carry out teaching reform and traditional teaching research. In this study, through the questionnaire star platform, a total of two questionnaires were distributed, before the teaching reform, one was distributed as a preliminary understanding of the situation before the study, after the teaching reform, it was distributed once, as a teaching reform research, the situation analysis and comparison, 40 people in one class, 40 people in 20 classes, a total of 80 people, two questionnaires were distributed through the questionnaire star platform, 80 questionnaires were distributed once, a total of 160 questionnaires were distributed twice, and 160 questionnaires were recovered, with an effective rate of 100%.

3.5 Analysis of data

This study requires importing SPSS software for statistical analysis, distributing questionnaires through the questionnaire star platform, collecting data from file surveys using Excel software, and importing SPSS software. Through group comparison research, class 1, class 2, the learning situation of classmates. The questionnaire for this study used a Likert five-point scale (1 - strongly disagreed, 5 - strongly agreed). Analysis and research, including learning interest, learning enthusiasm, professional knowledge application ability, views on the promotion of teaching by college student competition, view of classroom knowledge integration college student competition, etc., through SPSS analysis in different teaching modes, Likert The average and standard deviation of the five-point scale are determined, the students' learning interest and

hands-on practical ability are determined, the mastery of theoretical knowledge is analyzed using the final exam score, and the average score of the reform class and the traditional class is compared to determine the mastery of theoretical knowledge.

4. Finding

As can be seen from Table 1, students majoring in new energy vehicle engineering technology are relatively enthusiastic about the teaching reform promoted by competition. According to the descriptive results of class 1 and class 2 before the current reform, the average value is higher than 3.9, and the students of the two classes look forward to the college student competition to promote the teaching reform. Based on analysis of the mean, the lowest score appears in "Professional skills competition instructors will conduct special competition training in their spare time". The higher score value appears in "Teachers' teaching knowledge and skills are often updated in line with the content of the competition", "I will be more interested when real competition events are explained as cases in class", "Do you hope to integrate the relevant information of professional competitions into the usual teaching process?". Therefore, the questionnaire before the reform reflects that the two classes are full of enthusiasm and expectation for the college students to promote the teaching reform.

Table 4.1 Competition promotes descriptive statistics of students before teaching reform

Items	class	N	Mean	SD	Interpretation
1. Do you know what races are related to the new energy vehicle technology major, and whether do you know the relevant races	Class 1	40	3.56	0.73	High
	Class 2	40	3.44	0.75	High
2. I will take the initiative to participate in the new energy vehicle engineering and technology competition	Class 1	40	3.42	0.79	High
	Class 2	40	3.55	0.72	High
3. I have a relatively clear understanding of promoting learning through competition	Class 1	40	3.48	0.81	High
	Class 2	40	3.56	0.81	High
4. Compared with the traditional teaching methods, I prefer to promote learning through competition	Class 1	40	3.57	0.85	High
	Class 2	40	3.59	0.75	High
5. Through "promoting learning through competition", I am very interested in the new energy vehicle engineering and	Class 1	40	4.22	0.75	High

technology courses	Class 2	40	4.16	0.78	High
6. The teacher mentioned the new energy vehicle engineering technology professional competition before the course began and encouraged us to take an active part in it	Class 1	40	4.53	0.82	High
	Class 2	40	4.54	0.77	High
7. Professional skills competition instructors will conduct special competition training in their spare time	Class 1	40	2.57	0.85	High
	Class 2	40	2.56	0.83	High
8. Teachers' teaching knowledge and skills are often updated in line with the content of the competition	Class 1	40	4.83	0.74	High
	Class 2	40	4.86	0.73	High
9. I will be more interested when real competition events are explained as cases in class	Class 1	40	4.46	0.71	High
	Class 2	40	4.57	0.73	High
10. Do you hope to integrate the relevant information of professional competitions into the usual teaching process?	Class 1	40	4.54	0.73	High
	Class 2	40	4.56	0.75	High
<hr/>					
Total					High

As can be seen from Table 2, the evaluation results of students majoring in new energy vehicle engineering technology on the teaching reform promoted by competition are obvious. After a period of teaching reform, the descriptive results of the survey in class 1 and Class 2 showed that the average value was higher than 4.3, and the evaluation comparison of the students in the two classes was very obvious. Based on the analysis of the mean value, in question 2". Through "this period of learning", I am very interested in the new energy vehicle engineering technology course' The difference between Class 1 and Class 2 is relatively large, class 1 average 4.42, class 2 average 3.65, question 4"Through "this period of learning", I have strengthened my initiative and interest in learning new energy vehicle engineering and technology related courses' The average of class 1 was 4.67, and class 2 was 3.79. Therefore, the questionnaire after the reform reflects that the two classes promote the teaching reform for college students, including class 1, with more learning interest and enthusiasm than class 2. H3 Assuming that reform class 1 and traditional class 2, there are significant differences between students in learning interest, and class 1 is significantly higher in

learning enthusiasm than Class 2. The H3 assumption holds true.

Table 4.2 Descriptive statistics of students after the competition is promoting the teaching reform

Items	class	N	Mean	SD	Interpretation
1. Compared with the traditional teaching methods, I prefer to promote learning through competition	Class1	40	4.56	0.53	High
	Class2	40	3.54	0.75	High
2. Through "this period of learning", I am very interested in the new energy vehicle engineering technology course	Class1	40	4.42	0.59	High
	Class2	40	3.65	0.72	High
3. Through the "this period of learning", I have improved my knowledge of the new energy vehicle engineering and technology courses	Class1	40	4.31	0.51	High
	Class2	40	3.76	0.81	High
4. Through "this period of learning", I have strengthened my initiative and interest in learning new energy vehicle engineering and technology related courses	Class1	40	4.67	0.75	High
	Class2	40	3.79	0.73	High
5. In the "this period of learning", I will complete the internal tasks on time	Class1	40	4.23	0.65	High
	Class2	40	4.16	0.64	High
6. In the "this period of learning", I will take the initiative to participate in the communication and discussion	Class1	40	4.63	0.81	High
	Class2	40	4.54	0.77	High
7. Compared with the traditional teaching methods, I think it is worth the time spent based on the teaching method of promoting learning through competition	Class1	40	4.27	0.65	High
	Class2	40	3.86	0.73	High
Total					High

Before and after the teaching reform, Analysis of 2 individual class scores, Through the comparative analysis of the average scores of the theoretical examinations in class 1 and class 2 before and after the reform, The average score of class 1 before the reform was 70.27, The average score of Class 2 was 72.03, The difference in

average grades between the two classes is not particularly large, Average scores are close to each other, After the teaching reform, The average score of class 1 was 72.02, The average score of class 2 is 82.01. The average score difference between the two classes is nearly 10 points, It shows that the teaching reform has an obvious effect on promoting the students' academic performance, H1 assumes that reform class 1 class and traditional class 2, Students had significant differences in the final exams, And class 1 is obviously higher than class 2. The H1 hypothesis holds.

Before and after the teaching reform, 2 individual class practice scores comparison, reform before 1 class average of 75.27, 2 class average of 74.03, two class average difference is not special, after the teaching reform, class 1 average of 75.01, 2 class average of 88.02. Two class average is nearly 13 points, the teaching reform for students' academic effect, H2 hypothesis reform class 1 and traditional teaching class 2, students have significant differences in professional knowledge use ability, and class 1 obviously than 2 practical ability. The H2 hypothesis holds

Table 4.3 Comparison of Microteaching Perceptions among Students from Different Family Backgrounds

	Group	N	Mean	SD	t	sig
Before the reform, the theory test scores	Class 1	40	70.27	8.94	1.8	0.00
	Class 2	40	72.03	8.20		
After the reform, the theory test scores	Class 1	40	82.01	16.65	10.67	0.00
	Class 2	40	72.02	8.19		
Before the reform, hands-on test scores	Class 1	40	75.27	7.74	5.8	0.00
	Class 2	40	74.03	8.20		
After the reform, hands-on practice test scores	Class 1	40	75.01	15.45	10.67	0.00
	Class2	40	88.02	9.13		

In summary, H1 assumes that the reform class 1 and traditional class 2, students in the final exam are significantly different, and class 1 is significantly higher than class 2. The H1 assumption holds true. H2 hypothesis reform class 1 and traditional class 2, students have significant differences in professional knowledge utilization ability, and Class 1 is significantly better than Class 2; H2 hypothesis is true. H3 hypothesis reform class 1 and traditional class 2, students have significant differences in learning interest, and class 1 is significantly more motivated than Class 2; H3 hypothesis is true.

5. Conclusion and Recommendation

5.1 Conclusion

The research on the promotion of teaching reform of college student competition takes the new energy vehicle engineering technology major of Shandong University of Engineering and Technology as an example, in this study, by controlling the independent variables, college student competition is integrated into the classroom and traditional teaching, and experimental classes and traditional teaching control classes are set up, in the process of reform, the focus is that the content of college student competition is integrated into the classroom, updating classroom knowledge, old students lead new students, experienced teachers lead inexperienced teachers and other methods, for students, poor mastery of theoretical knowledge, weak hands-on practical ability, The study sample was 40 people in two classes, and the research period was from September 2022 to February 2023, and a semester-long study was conducted, and two questionnaires were distributed, 80 questionnaires were distributed at a time, a total of 160 copies, and the recovery rate was 100%. The results were analyzed using SPSS software and conclusions were drawn.

1. The teaching reform of integrating college student competition into the classroom has an obvious effect on improving students' theoretical knowledge. It can provide an effective teaching mode for future teaching, improve students' theoretical knowledge and improve classroom effectiveness. After the teaching reform, the average score of the reform class was about 11 points higher than the average score of the traditional teaching class after analyzing the same exam and the same test in two classes. It proves that the reform has an obvious effect on improving students' theoretical mastery ability.

2. The teaching reform of integrating college student competitions into the classroom has obvious effects on improving students' hands-on practical ability. It can provide a teaching mode teaching reform method for future teaching, improve students' hands-on practical ability, and improve their ability to solve practical problems. In the same disassembly and assembly training exam, the average score of the reform class is about 10 points higher than the average score of the traditional teaching class. It proves that the reform has an obvious effect on improving students' hands-on practical ability. After the teaching reform, the questionnaire of two classes was analyzed, "I will take the initiative to participate in the new energy vehicle engineering and technology competition". The average score of the answers in the teaching reform class and the traditional teaching class is obviously different, and the students of the teaching reform class who actively participate in the competition practice are obviously higher.

3. The reform of integrating college student competitions into the classroom has obvious effects on increasing learning interest. For future teaching, it provides an effective learning method and improves students' interest in learning. Analyze the reformed questionnaire, in which "Compared with the traditional teaching methods, I prefer to promote learning through competition" and "Through "this period of learning", I am very interested in the new energy Vehicle Engineering Technology "reform experimental class and traditional teaching class, answer the average score value, get

the result, students prefer teaching reform, college student competition promotes reform, and has a clear effect on increasing interest in learning.

Before the implementation of the reform, the college student competition promoted teaching reform, and the students responded to the questionnaire questions, "Do you know what the competitions are related to the new energy vehicle technology major", "I will take the initiative to participate in the new energy vehicle." Engineering and Technology Competition" answers are low, proving that most students do not understand the competition. "Compared with traditional teaching methods, I prefer to promote learning through competition", "Through "promoting learning through competition", I am very interested in the engineering and technology course of new energy vehicles" The answer results are relatively high, the students are more looking forward to reform, and eager to learn more theoretical knowledge, looking forward to getting more practical opportunities, and hope that the knowledge explained by the teacher is close to the competition, and the technology is updated in time. The results of the survey conducted for the first time prove that the idea of college students promoting teaching reform is relatively high in the expectations of students, and students are expected to be very receptive to such teaching reform. And the two classes, theoretical learning scores, hands-on practical ability, learning scores are not much different, providing reliable conditions for subsequent reform.

To sum up, the integration of college student competition into the reform of teaching is important for improving students' mastery of theoretical knowledge, improving classroom effectiveness, improving students' hands-on practical ability, improving their ability to solve practical problems, and improving students' interest in learning. Has a positive effect. It can provide an effective teaching reference model for future teaching, combine the knowledge learned in the classroom with practical problems, cultivate students' innovative thinking and practical ability, and promote the common progress of students and teachers.

5.2 Recommendation

As an active learning and communication platform, the student competition can promote teaching reform to a large extent. First, students participate in practical activities through competitions, combining what they have learned in the classroom with practical problems. This practice can enhance students' application and problem-solving skills, and cultivate their innovative thinking and practical ability.

1. Encourage innovation and entrepreneurship: Student competitions can be a platform to foster innovation and entrepreneurship among students. Schools can encourage students to participate in competitions and provide support and resources to help them realize their innovative ideas and entrepreneurial projects.

2. Promote a variety of assessment methods: Traditional examination assessment methods do not fully reflect students' abilities and potential. It is recommended to introduce diversified assessment methods, such as project reports, group discussions, practical internships, etc., to more comprehensively evaluate students' comprehensive literacy.

3. Provide practical opportunities: The learning of theoretical knowledge is only part of education, practice can help students apply what they have learned to practical situations, and develop practical operation and problem-solving skills. It is recommended that schools establish cooperative relationships with enterprises and social organizations, and provide opportunities such as internships, practical training, and field trips so that students can participate in practice.

The research level of this paper is affected by various aspects. The research scope mainly takes Shandong Engineering Vocational and Technical University, the professional undergraduate students of new energy vehicle engineering and technology major, as examples. To achieve good results in a short period of time, it is suggested that the scope of research can be expanded and more samples can be selected. The research data in China are relatively rich, so it is suggested that the research can be expanded to other countries. Similar research methods are adopted to summarize the successful cases of college students' competition to promote teaching reform, and to absorb the experience to improve the research. This case was selected this time because I am familiar with Shandong Engineering Vocational and Technical University, and I well understand the professional undergraduate new energy vehicle engineering technology major. However, the data obtained in this study also have some deviations, which may have an impact on the research project. The timing of this research is relatively short, the sample size is relatively small, and my research ability is limited, and my analysis ability is limited. I suggest to provide successful cases of foreign college students' competition to promote teaching reform, and learn from the experience to improve my research.

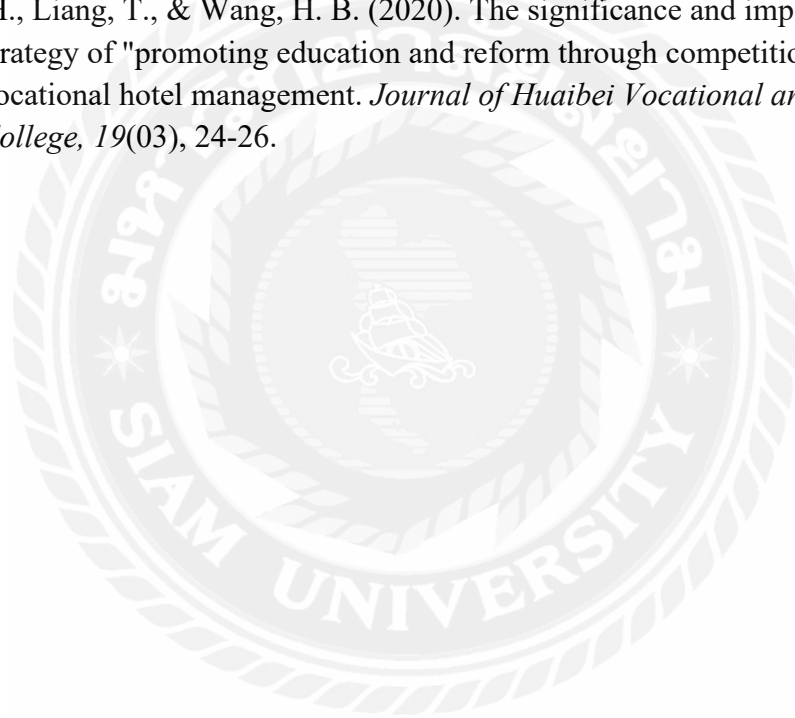
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Appendix

Appendix A: Questionnaire on student situation before the teaching reform

A Study on College Student Competition for Promoting Teaching Reform Take the new energy Vehicle Engineering technology major of Shandong Engineering Vocational and Technical University as an example

Dear students,

shalom! Thank you very much for taking the precious time to fill in the questionnaire, which is a project related to new energy vehicle engineering

College student competition to promote teaching reform, the implementation of the current student questionnaire, this volume is anonymous, please rest assured to fill in.

The survey can help us understand the " college students competition to promote teaching reform research

Take Shandong University of Engineering Vocational and Technology as an example of teaching

Form and effect, in order to make the corresponding teaching reform of this course. I hope you will answer according to the actual situation,

1 Gender: [single choice]

- man
- woman

2. Grade

3. Class name:

4. Are you majoring in new energy vehicle engineering and technology?[single choice]

- yes
- deny

Entry status and entry motivation

5.Do you know what the competitions are related to the new energy vehicle technology major [single choice]

Know anything about the relevant game

- is very unclear
- NK
- uncertain
- clear
- as clear as a bell

6.I will take the initiative to participate in the new energy vehicle engineering and technology competition

[single choice]

- is very disagreeing
- disagree
- uncertain

- agree
 - is very much in agreement
7. I have a relatively clear understanding of promoting learning through competition [single choice]
- A strongly disagrees
 - B disagree
 - C uncertain
 - D agree
 - E very much agrees
8. Compared with traditional teaching methods, I prefer to promote learning through competition [single choice]
- A strongly disagrees
 - B disagree
 - C uncertain
 - D agree
 - E very much agrees
9. Through "promoting learning through competition", I am very interested in the engineering and technology course of new energy vehicles [single choice]
- A strongly disagrees
 - B disagree
 - C uncertain
 - D agree
 - E very much agrees
10. Through this competition to promote learning, I have strengthened my initiative in learning courses related to new energy vehicle engineering and technology [single choice]
- A strongly disagrees
 - B disagree
 - C uncertain
 - D agree
 - E very much agrees
11. Professional skills competition instructors will conduct special competition training in their spare time [single choice]
- is very disagreeing
 - disagree
 - uncertain
 - agree
 - is very much in agreement
12. Teachers' teaching knowledge and skills are often updated in line with the content of the competition [single choice]
- is very disagreeing
 - disagree
 - uncertain
 - agree

is very much in agreement

13. I will be more interested in real events in class [single choice]

is very disagreeing

disagree

uncertain

agree

is very much in agreement

14. Do you want to integrate the relevant information of professional competitions into your usual teaching process?[single choice]

is very disagreeing

disagree

uncertain

agree

is very much in agreement



Appendix B: Questionnaire on student situation after teaching

reform

A Study on College Student Competition for Promoting Teaching Reform Take the new energy Vehicle Engineering technology major of Shandong Engineering Vocational and Technical University as an example

Dear students,

shalom! Thank you very much for taking the precious time to fill in the questionnaire, which is a project related to new energy vehicle engineering

College student competition to promote teaching reform, the implementation of the current student questionnaire, this volume is anonymous, please rest assured to fill in.

The survey can help us understand the " college students competition to promote teaching reform research

Take Shandong University of Engineering Vocational and Technology as an example of teaching

Form and effect, in order to make the corresponding teaching reform of this course. I hope you will answer according to the actual situation,

1 Gender: [single choice]

man

woman

2. Grade

3. Class name:

4. Are you majoring in new energy vehicle engineering and technology?[single choice]

yes

deny

Entry status and entry motivation

5. Do you know what the competitions are related to the new energy vehicle technology major [single choice]

Know anything about the relevant game

is very unclear

NK

uncertain

clear

as clear as a bell

6. I will take the initiative to participate in the new energy vehicle engineering and technology competition[single choice]

is very disagreeing

disagree

uncertain

agree

is very much in agreement

7. I have a relatively clear understanding of promoting learning through competition [single choice]

- A strongly disagrees
- B disagree
- C uncertain
- D agree
- E very much agrees

8. Compared with traditional teaching methods, I prefer to promote learning through competition [single choice]

- A strongly disagrees
- B disagree
- C uncertain
- D agree
- E very much agrees

9. Through "promoting learning through competition", I am very interested in the engineering and technology course of new energy vehicles [single choice]

- A strongly disagrees
- B disagree
- C uncertain
- D agree
- E very much agrees

10. Through "promoting learning through competition", I have improved my knowledge of new energy vehicle engineering and technology courses [single choice]

- A strongly disagrees
- B agree
- C uncertain
- D agree
- E very much agrees

11. Through this competition to promote learning, I have strengthened my initiative in learning courses related to new energy vehicle engineering and technology [single choice]

- A strongly disagrees
- B disagree
- C uncertain
- D agree
- E very much agrees

12. In "promoting learning by competition", I will complete the tasks on time [single choice]

- A strongly disagrees
- B disagree
- C uncertain
- D agree
- E very much agrees

13. In the "promoting learning through competition", I will take the initiative to participate in the communication and discussion [single choice]

- A strongly disagrees
- B disagree
- C uncertain
- D agree
- E strongly agrees

14. Compared with traditional teaching methods, I think it is worth the learning based on competition [single choice]

- A strongly disagrees
- B disagree
- C uncertain
- D agree
- E strongly agrees

The role of teachers in "promoting learning through competition"

15. The teacher mentioned the new energy vehicle engineering technology professional competition before the course began and encouraged us to actively participate in [single choice]

- is very disagreeing
- disagree
- uncertain
- agree
- is very much in agreement

16. Professional skills competition instructors will conduct special competition training in their spare time [single choice]

- is very disagreeing
- disagree
- uncertain
- agree
- is very much in agreement

17. Teachers' teaching knowledge and skills are often updated in line with the content of the competition [single choice]

- is very disagreeing
- disagree
- uncertain
- agree
- is very much in agreement

18. I will be more interested in real events in class [single choice]

- is very disagreeing
- disagree
- uncertain
- agree
- is very much in agreement

19. Do you want to integrate the relevant information of professional competitions

into your usual teaching process?[single choice]

- is very disagreeing
- disagree
- uncertain
- agree
- is very much in agreement

