

Exploring the Integrated Teaching Model of “Value Shaping, Knowledge Delivery, and Ability Development”: A Case Study of the Safety Engineering Program at Lyuliang University

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Abstract

In the new era, higher education places significant emphasis on the all - round development of students. This paper explores the integrated teaching model of “value shaping, knowledge imparting, and ability cultivation” in the safety engineering major at Lvliang University. By using literature research, questionnaire surveys, and case analysis methods, it thoroughly analyzes the current state of the teaching mode in the safety engineering major. It also explains the significance and meaning of implementing the integrated teaching mode. The paper also designs relevant teaching strategies and specific implementation paths for this integrated mode. It uses a series of teaching data and examples to verify the effectiveness. The results indicate that the integrated teaching mode can effectively enhance students' professional knowledge, practical skills, and moral cultivation. It also plays a positive role in promoting the training of high - quality safety engineering talents. This study offers some reference for the teaching reform and talent cultivation of the safety engineering major in other colleges and universities.

Keywords

Value Shaping; Knowledge Transfer; Ability Development; Safety Engineering Major; Integrated Teaching Approach.

1. Introduction

As society keeps developing and modernization levels keep rising, the need for high - quality safety engineering talents is growing. Safety engineering is a crucial discipline that covers multiple fields like engineering technology, management, and safety science. Its goal is to ensure people's lives and property safety and the smooth running of various engineering projects. In the traditional teaching mode for the safety engineering major, knowledge teaching and practical ability cultivation are often separated, and students' value shaping is often overlooked. This not only impacts students' enthusiasm and initiative in learning but also limits the enhancement of talent cultivation quality.[1]

In recent years, a new teaching approach has gradually appeared in higher education. This approach focuses on the organic integration of moral education, knowledge delivery, and skill development. It aims to nurture students with well - rounded qualities by emphasizing value shaping, knowledge imparting, and ability cultivation all at once. For the safety engineering major, applying this integrated teaching mode can assist students in forming correct values and professional ethics, grasping solid professional knowledge, and enhancing practical operation and problem - solving skills. Thus, exploring the “value shaping - knowledge imparting - ability cultivation” integrated teaching mode in the safety engineering major of Lvliang University is of great practical importance.

2. Current Situation Analysis of the Teaching Mode of the Safety Engineering Major in Lvliang University

2.1. Teaching Objectives

The safety engineering major at Lvliang University focuses its teaching objectives on students' understanding of professional knowledge and skills. For example, students are required to learn the basic theories and methods in safety engineering. These include safety system engineering, safety management, and safety assessment. The emphasis is placed on ensuring students acquire these core competencies effectively. However, in the area of value shaping, teaching goals are not clearly defined. Moreover, students lack systematic education in professional ethics and social responsibility. Moreover, regarding ability development, practical teaching parts have been arranged. However, the cultivation of students' overall abilities, such as innovation and teamwork skills, is still insufficient.[2-5]

2.2. Teaching Methods

The teaching methods now used in the safety engineering major are mostly traditional lecture - based ones. In the classroom, teachers mainly explain theoretical knowledge, and students passively listen. Although some multimedia teaching methods have been brought in, they are mostly used to help display teaching materials. The interaction between teachers and students is still restricted. In practical teaching, the practical operation training is often done in a rather simple manner. It lacks in - depth practical projects and real - life scenarios, and this is not good for the development of students' practical abilities.

2.3. Teaching Evaluation

The teaching evaluation for the safety engineering major mainly centers on students' academic performance. It mostly evaluates learning outcomes via written exams. There is an absence of comprehensive assessment in aspects like students' practical abilities and value shaping. This method struggles to fully show students' overall qualities and learning outcomes. Also, it fails to effectively guide students towards all - around development.

3. Significance and Connotation of the Integrated Teaching Mode of “Value Shaping - Knowledge Imparting - Ability Cultivation”

3.1. Significance

3.1.1. Promote the All -round Development of Students

The integrated teaching mode organically combines value shaping, knowledge imparting, and ability cultivation. Students can grasp professional knowledge and skills while also forming correct values and professional ethics. In addition, it boosts comprehensive abilities like innovation and teamwork skills. This approach ensures a deeper connection between learning and practical application, which helps students develop in an all-round way. It also cultivates high-quality safety engineering talents who meet the needs of modern society.

3.1.2. Improve the Quality of Talent Cultivation

The integrated teaching mode stresses combining theory with practice and focuses on developing students' practical skills. Through practical teaching projects and real - life situations, students can apply what they've learned better to solve actual problems. This can effectively raise the quality of talent cultivation and strengthen students' competitiveness in the job market.

3.1.3. Adapt to the Development Needs of the Times

In the time of fast - paced scientific and technological development, the safety engineering field keeps evolving too. The integrated teaching mode can keep pace with the trend of the times. It brings the latest knowledge and technologies into teaching. This cultivates students' innovative thinking and adaptability. In this way, it can better meet the development needs of the safety engineering field.[6-10]

3.2. Connotation

3.2.1. Value Shaping

Value shaping means nurturing students' correct values, professional ethics, and social responsibility during teaching. Safety engineering students should build a strong sense of safety responsibility, follow professional ethics, and dedicate themselves to safeguarding people's lives and property. Teachers can carry out value shaping by means of curriculum ideology and politics, case analysis of safety accidents, and education through professional role models.

3.2.2. Knowledge Imparting

Knowledge imparting is the basic task of teaching. Teachers need to systematically teach students the fundamental theories, knowledge, and methods of safety engineering. Besides traditional classroom teaching, teachers can also utilize online courses and teaching resources platforms to diversify students' learning channels and enhance their learning efficiency.

3.2.3. Ability Cultivation

Ability cultivation centers on nurturing students' practical operation, problem - solving, innovation, and teamwork abilities. By means of practical teaching parts like experimental courses, internships, and design projects, students can boost their practical operation and problem - solving abilities. At the same time, group cooperation and innovation activities can help cultivate students' innovation ability and teamwork ability.

4. Design of the Integrated Teaching Mode of “Value Shaping - Knowledge Imparting - Ability Cultivation”

4.1. Teaching Objectives Design

The integrated teaching mode leads to a redefinition of teaching goals for the safety engineering major. Students still need to grasp professional knowledge and skills. In addition, specific goals for value shaping and ability development are included. These aspects are now clearly stressed in the updated framework. For example, students should develop proper values and professional ethics. They also need to possess strong innovation ability. Teamwork skills are equally important. Practical operation skills must be obtained as well. These aspects are crucial for their overall growth.

4.2. Teaching Methods Design

4.2.1. Problem -based Learning (PBL)

Introduce the PBL teaching method and have students solve real - world problems through group cooperation. Teachers can come up with some practical safety engineering problems, lead students to examine the problems, look for information, and put forward solutions. This teaching method can stimulate students' enthusiasm and initiative for learning. It also helps to cultivate students' ability to solve problems and work in teams.

4.2.2. Case Teaching

Choose typical safety accident cases for case teaching. By deeply analyzing these cases, students can comprehend the causes, consequences, and preventive measures of safety accidents. Meanwhile, this also helps to nurture students' safety awareness and professional ethics.

Teachers can lead students to discuss cases from different angles. They can also encourage students to share their own opinions. In this way, students' ability to think analytically will be improved.

4.2.3. Project -based Teaching

Implement project - based teaching and have students take part in practical safety engineering projects. For instance, students can take part in safety assessments of industrial enterprises and the design of safety protection facilities. Through project - based teaching, students can apply what they've learned better, enhance their practical operation skills, and at the same time, they can also get to know the actual needs of the industry and strengthen their adaptability in the job market.

4.3. Teaching Evaluation Design

Set up a full teaching evaluation system. This system should not only assess students' academic performance but also focus on their practical abilities and value shaping. For instance, apart from written exams, it can have practical operation tests, project reports, and group evaluations. These components contribute to a more comprehensive evaluation of students' overall development. At the same time, it can assess students' performance in value shaping, like their attitudes towards safety work and professional ethics. This all - around evaluation system reflects students' overall qualities and learning results more fully. It also gives a more scientific basis for pushing their all - round development.

5. Implementation of the Integrated Teaching Mode in the Safety Engineering Major of Lvliang University

5.1. Curriculum System Reform

Lvliang University's safety engineering major carried out a detailed and meticulous optimization of its curriculum system. The reform focused on integrating three core elements—value shaping, knowledge imparting, and ability cultivation—into every course in the curriculum. This process made sure that each course played a part in the overall development of students. At the same time, it kept a balanced focus on these key aspects. This integration was not just a simple addition on the surface. On the contrary, it stood for a deep and strategic incorporation.

For example, in the safety system engineering course, the traditional teaching method only emphasized theoretical knowledge delivery. This was changed to go beyond merely presenting concepts like system analysis, hazard identification, and risk assessment. Relevant real - world safety accident cases were also systematically integrated into the lessons. These cases were chosen carefully, covering a broad range of industries and situations. They emphasize the serious outcomes of ignoring safety and underline the importance of following safety rules. By closely studying these cases, students can build a stronger sense of safety and gain a deeper grasp of professional ethics. They gradually realized that safety engineering is more than just an academic field. It also bears a crucial responsibility. This responsibility directly affects people's lives and property.

Moreover, the curriculum was changed to add more practical teaching parts. The aim was to further improve students' hands - on operation skills. This change brought in lab experiments, letting students use the theories they learned in simulated real - world safety engineering situations. For instance, they had to design and implement safety monitoring systems for industrial facilities. They were required to conduct safety inspections and analyze data to identify potential risks. These practical activities did more than just help students reinforce their understanding of the subject matter. They also equipped students with crucial skills to tackle real - world safety engineering challenges.

5.2. Teacher Training

Teachers are vital for the successful execution of the integrated teaching mode. Considering this, a full - scale teacher training program was initiated. This program focused on boosting teachers' teaching skills and professional quality. It aimed to help teachers effectively combine value shaping, knowledge imparting, and ability cultivation in their teaching practices.

The training sessions started with detailed theoretical lectures. These lectures centered on the concept and principles of the integrated teaching mode. Teachers acquired knowledge of the latest educational theories. They also learned about research findings in value - based education. The emphasis was on student - centered learning and practical skills development. Such content gave them a solid base for understanding the new teaching method. They were urged to think about their current teaching ways and find areas where they could add shaping elements. For example, they could put the promotion of social responsibility, integrity, and environmental awareness into their courses.

Besides theoretical learning, teachers got chances for practical training. They took part in workshops and seminars. There, they learned to design and carry out teaching activities. These activities combined the three parts of the integrated teaching mode well. For instance, they learned to use case studies, group discussions, and project - based learning. In this way, they could pass on knowledge and also develop students' critical thinking, problem - solving, and teamwork skills. Besides, teachers got the chance to observe and learn from experienced educators. These educators had already put similar teaching models into practice in their own classrooms. This kind of exposure gave teachers valuable insights and practical knowledge.

Moreover, teachers were urged to take part in continuous professional development activities to keep up with the latest progress in safety engineering. They could access industry conferences, research publications, and online resources. Through these methods, they could keep up with emerging technologies, changing regulations, and current best practices in safety engineering. They then used this knowledge in their teaching. In this manner, students were able to get the most relevant and up - to - date education.

5.3. Practical Teaching Base Construction

Building practical teaching bases was another key part of carrying out the integrated teaching mode in the safety engineering major. Realizing the significance of giving students real - world practical experiences, the university actively looked for partnerships with relevant enterprises and institutions.

Setting up practical teaching bases required broad communication and negotiation with potential partners. The university stressed the mutual benefits of these partnerships. It pointed out that students' practical training could back enterprises' innovation and development. In return, enterprises could offer students precious learning chances and industry understanding. As a result, many practical teaching bases were set up and stayed stable. These bases covered various industries, such as manufacturing, construction, and energy.

After setting up practical teaching bases, students could do hands - on work in these enterprises. During internships, they took part in real safety engineering projects and tasks. For example, they carried out safety audits, created safety management systems, and put safety improvement measures into practice. They collaborated closely with seasoned professionals in the field. These experts offered guidance and feedback on their work. This practical experience aided students in enhancing their hands - on skills. It also enabled them to gain a deeper understanding of the actual needs and challenges within the industry.

Besides internships, the practical teaching bases gave students chances to take part in research projects and industry events. For instance, students were able to work with enterprise researchers on safety - related research projects. This would let them use their theoretical

knowledge to deal with real - world issues, contributing to the development of the field. They could also participate in industry conferences and seminars organized by enterprises. At these events, they can connect with professionals. They are also able to learn about the latest industry trends. Moreover, their perspective on the safety engineering field can be expanded.

Overall, implementing the integrated teaching mode in the safety engineering major at Lvliang University has established a solid base. This is done through reforming the curriculum system, training teachers, and building practical teaching bases. The base backs the cultivation of high - quality safety engineering talents. These talents have strong professional knowledge and skills. They also hold correct values. Moreover, they possess a high sense of social responsibility.

6. Effectiveness Analysis of the Integrated Teaching Mode

6.1. Student Academic Performance

The integrated teaching mode has been put into practice, and students' academic performance has been notably improved. Table 1 shows a comparison of the average scores in relevant courses before and after this mode was carried out. It can be seen from the table that after the use of the integrated teaching mode, students' average scores in courses such as safety system engineering and safety management have increased obviously.

Table 1. Comparison of Students' Average Scores in Relevant Courses before and after the Implementation of the Integrated Teaching Mode

Course Name	Average Score before Implementation	Average Score after Implementation
Safety System Engineering	70	80
Safety Management	72	83
Safety Assessment	68	78

6.2. Student Practical Ability

The integrated teaching mode has also greatly boosted students' practical skills. By means of practical teaching parts like experimental courses, internships, and design projects, students have enhanced their hands - on operation ability and problem - solving capacity. Table 2 displays the results of students' practical operation assessments before and after using the integrated teaching mode. It is clear that after applying this mode, the percentage of students with excellent practical operation skills has risen notably.

Table 2. Comparison of Students' Practical Operation Assessment Results before and after the Implementation of the Integrated Teaching Mode

Assessment Level	Proportion before Implementation	Proportion after Implementation
Excellent	20%	40%
Good	40%	45%
Pass	30%	15%
Fail	10%	0%

6.3. Student Value Shaping

The integrated teaching model has produced positive outcomes in shaping values. It includes curriculum ideology, examines safety accident cases, and offers education about professional role models. With these efforts, students slowly build up proper values and professional ethics. This method makes sure learners understand ethical standards more deeply and helps develop their sense of responsibility. Table 3 displays the questionnaire survey results about students' values and professional ethics, both prior to and following the implementation of the integrated teaching mode. Clearly, after adopting this mode, students show a marked increase in their sense of safety responsibility and professional ethics.

Table 3. Comparison of Students' Values and Professional Ethics Questionnaire Survey Results before and after the Implementation of the Integrated Teaching Mode

Survey Items	Proportion of Positive Answers before Implementation	Proportion of Positive Answers after Implementation
Have a Strong Sense of Safety Responsibility	60%	85%
Abide by Professional Ethics	70%	90%
Willing to Dedicate to Safety Work	50%	75%

6.4. Student Satisfaction

Finally, a questionnaire survey was conducted on students' satisfaction with the integrated teaching mode. Table 4 shows the results of the survey. It can be seen that most students are satisfied with the integrated teaching mode, believing that this teaching mode can effectively improve their learning enthusiasm and comprehensive abilities.

Table 4. Results of Students' Satisfaction Questionnaire Survey on the Integrated Teaching Mode

Satisfaction Level	Proportion
Very Satisfied	30%
Satisfied	50%
General	15%
Dissatisfied	5%

7. Conclusion

In the safety engineering major at Lvliang University, a teaching mode that combines value shaping, knowledge imparting, and ability cultivation has been successfully explored and put into practice. This mode has greatly boosted students' academic performance and also enhanced their practical skills. Additionally, it has been very important in developing their values. It changed the curriculum system and made teaching methods better. Also, it set up a full evaluation system. Students are very enthusiastic about this way, showing that the teaching model is practical and effective.

For the safety engineering major in the future, it is important to keep improving and optimizing the integrated teaching mode. It should closely follow the industry's development needs and constantly bring in new teaching concepts and methods. At the same time, it's also important to enhance cooperation with enterprises and institutions, and work together to promote the cultivation of high - quality safety engineering talents. Generally speaking, the integrated teaching mode offers a new thought and method for teaching reform and talent cultivation in the safety engineering major. It has wide - ranging application prospects and promotion value. It is hoped that this study can offer some reference and inspiration for the teaching reform and talent cultivation of the safety engineering major in other colleges and universities, and together push forward the development of the safety engineering discipline.

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