WHIOCE PUBLISHING PTE. LTD.
PROVIDING
FIRST-CLASS SCIENTIFIC INFORMATION
FOR TOP SCHOLARS

2026 Volume 4, Issue 4
Contemporary Education Frontiers
ISSN:3029-1879 (Online)
ISSN: 3029-1860 (Print)

Research on the Teaching Reform and Practice of the "Safety Economics" Course

Xueming Fang*, Jie Liu, Daohang Wang
School of Public Safety and Emergency Management, Kunming University of Science and Technology, Kunming 650000, Yunnan, China

Author to whom correspondence should be addressed.

Abstract: In response to the problems existing in the traditional teaching model of the Safety Economics course, this study, guided by the outcomes-based education (OBE) philosophy, establishes a course teaching case database aligned with social development and technological frontiers, diversifies teaching methods and forms, designs a teaching model oriented toward student competency cultivation, grounded in theoretical knowledge, and supplemented by ideological and political education elements, and constructs a whole-process diversified evaluation and assessment mechanism. These reforms broaden and deepen the scope of teaching content and improve teaching quality and effectiveness.

Keywords: Safety economics; Outcomes-based education; Teaching reform

Online publication: April 26, 2026

1. Introduction

Outcomes-based education (OBE) is a student-centered curriculum development philosophy oriented toward expected learning outcomes and implemented through backward design. It is also one of the core concepts embedded in engineering education accreditation standards [1]. Innovation in course teaching based on the OBE philosophy is not only a requirement for professional accreditation, but also an important approach to improving the quality of engineering talent cultivation [2].

Safety economics is a discipline that investigates the laws governing the relationship between safety activities and economic activities. Grounded in economic theory and oriented toward safety-related fields, it provides theoretical guidance and practical foundations for safety economic activities [3]. The Safety Economics course is a required professional foundation course offered in safety engineering and related majors at universities. The basic concepts, theories, and methods covered in the course provide essential preparation for students' graduation design projects and theses [4]. However, because the course is interdisciplinary, theory-intensive, complex in its research focus, and strongly oriented toward engineering applications, students often encounter difficulties learning it. Consequently, after completing the course, many students have acquired only basic theoretical knowledge and are unable to apply it effectively in engineering practice, making it difficult to meet employers' competency needs in related sectors.

2. Main problems in traditional safety economics teaching

2.1. Some teaching cases are outdated

In previous Safety Economics courses, some case studies were outdated, making it difficult for students to connect theoretical knowledge learned in class to real-world contexts. The field of safety economics changes rapidly, with new policies, theories, and technologies emerging continuously. Outdated teaching cases fail to reflect these changes, which may lead students to perceive a disconnect between course content and practical application, thereby reducing their motivation to learn.

2.2. Teaching forms are insufficient for cultivating students' professional interest

Traditional Safety Economics instruction is dominated by lecture-based, infusion-style teaching, in which teachers transmit knowledge in a one-way manner while students learn passively. This approach offers limited opportunities for active participation and reflection, and its benefits are therefore constrained. Given the diverse and complex content of safety economics, classroom lectures alone are insufficient to cover the course comprehensively. To cultivate professional interest among safety engineering students, more diversified and practice-oriented teaching models should be explored.

2.3. Ideological and political education is insufficiently aligned with the goal of cultivating first-class talent with national commitment and humanistic literacy

Traditional course design may be overly theoretical and specialized, while insufficiently emphasizing ideological and political education and the cultivation of humanistic literacy. Cultivating talent with a strong sense of national commitment and sound moral character requires greater attention to students' ideological and political education, guiding them to establish correct values and worldviews, develop patriotism and a collectivist spirit, and enhance their sense of social responsibility and mission. In traditional Safety Economics teaching, the transmission of isolated knowledge points often takes precedence, while ideological and political elements are either insufficient or inserted abruptly. As a result, knowledge transmission and value guidance are not fully integrated, which undermines the construction of a holistic educational framework and the implementation of the fundamental task of fostering virtue through education.

2.4. Assessment of students' learning outcomes lacks comprehensiveness

Traditional teaching primarily relies on attendance and final examinations as the core assessment methods. This approach has certain limitations and cannot comprehensively evaluate students' learning outcomes. Although final examinations can test students' knowledge, they often focus on memory and comprehension, making it difficult to accurately assess students' ability to apply knowledge and their innovative thinking. Attendance records can reflect students' participation in class, but they rely excessively on momentary performance and quantitative indicators, while neglecting students' long-term knowledge accumulation and individual development. Therefore, assessment in Safety Economics should be more diverse and comprehensive to better evaluate students' knowledge level, practical operational ability, teamwork ability, and innovative thinking, thereby promoting students' all-round development and improving teaching quality.

3. Teaching reform of the safety economics course based on the OBE philosophy

In view of the characteristics of the Safety Economics course and the problems identified in its teaching process, this paper proposes an OBE-based teaching model and explores teaching reform for the course.

3.1. Development of course teaching cases aligned with social development and technological frontiers

Concretized teaching is a method that conveys abstract concepts that are difficult to understand through concrete objects or

methods. It enables students to connect specific examples to theoretical knowledge and apply that knowledge integratively to practical problems [5]. Case-based discussion teaching is one form of concretized teaching. Driven by cases, it not only helps students better understand complex disciplinary content but also stimulates their learning interest, and it is consistent with the emphasis on practical teaching in the context of emerging engineering education [6].

The development of course teaching cases aligned with social development and technological frontiers involves two key aspects: content selection and timeliness. In terms of content selection, representative and instructive cases should be selected from social hotspots and frontier fields of science and technology, covering multiple dimensions of safety economics, such as environmental safety, cybersecurity, and food safety. These cases can guide students to gain a deeper understanding of both the principles and practices of safety economics. In addition, such case development must keep pace with the times by updating content and forms in a timely manner to adapt to the changing social and technological environment. New cases should be collected, organized, and introduced regularly. Collaboration with industries and enterprises should also be strengthened to jointly conduct case research and practical activities. In this way, course resources can be continuously enriched, enabling students to access the latest developments in safety economics and cultivate their ability to adapt to social change and technological innovation.

3.2. Diversification of teaching methods and forms

To enrich the teaching methods and forms of the Safety Economics course, diversified methods should be adopted, including but not limited to case analysis, group discussion, field investigation, and role-play. Through case analysis, students can gain an in-depth understanding of how safety economics principles are applied in real contexts and develop problem-solving ability. Group discussion can promote interaction and intellectual exchange among students and deepen their understanding of course content. Field investigation enables students to understand the status quo and practices of relevant fields more intuitively and strengthens their practical ability. Role play allows students to experience decision-making processes in safety economics in simulated scenarios, thereby enhancing the interest and participatory nature of learning.

Second, modern technological tools, such as multimedia teaching, online resources, and virtual experiments, should be fully employed to enrich teaching forms. Multimedia teaching can vividly present case scenarios through images and videos, thereby improving the intuitiveness and appeal of learning. Online resources can expand course content by introducing more real-time information and domestic and international cases, broadening students' horizons and expanding their knowledge. Virtual experiments can simulate real situations and enable students to undertake safety- and economics-related practices in virtual environments, thereby cultivating practical operational ability. Through such diverse teaching methods, students' learning interest can be stimulated, and the course's attractiveness and effectiveness can be enhanced, thereby better promoting the cultivation of students' comprehensive literacy and practical ability.

3.3. Design of a teaching model oriented toward competency cultivation, grounded in theoretical knowledge, and integrated with ideological and political education

In instructional design, the fundamental task of fostering virtue through education should be upheld. Around Kunming University of Science and Technology's important 70-year development history, spiritual inheritance, mission, and future development, and in light of the university's ethos and distinctive characteristics, a curriculum-based ideological and political education scheme suitable for Safety Economics teaching should be refined. Major issues such as national security, economic development, and social stability should be incorporated into course content to help students understand the intrinsic relationship between national security and economic development and deepen their awareness of national development strategies. In case analyses and practical projects, students should be guided to explore how safety economics theories can be applied to solve real problems, thereby cultivating their critical thinking and problem-solving abilities. In classroom teaching, students should be encouraged to reflect on the ideological and political factors underlying major issues such as national security and social harmony, and to analyze problems from ideological and political perspectives,

thereby improving their political literacy and overall qualities. Relevant extracurricular reading and seminar tasks should also be assigned to guide students to focus on the practical application of safety economics in areas such as national security and social stability, thereby enhancing their sense of social responsibility and national commitment. Through these approaches, ideological and political education can be effectively integrated into Safety Economics teaching, promoting students' all-round development and cultivating socialist builders and successors with comprehensive moral, intellectual, physical, aesthetic, and labor development.

4. Conclusion

Teaching reform and the exploration of Safety Economics were carried out in line with the OBE philosophy, with an emphasis on student-centered education. Teaching objectives suitable for professional talent cultivation were constructed; a course teaching case database aligned with social development and technological frontiers was established; teaching methods and forms were diversified; a teaching model oriented toward student competency cultivation, grounded in theoretical knowledge, and supplemented by ideological and political education elements was designed; and a whole-process diversified evaluation and assessment mechanism was established. These reforms expanded the breadth and depth of teaching content and improved teaching quality and effectiveness.

Disclosure statement

The authors declare no conflict of interest.

References

[1] Tian Y, Ma LZ, Liu XT, 2023, Reform and Exploration of Design Courses for Civil Engineering Majors Under the OBE Model. Industrial & Science Tribune, 22(1): 3.

[2] Yang L, 2023, Research on the Reform of the Road Survey and Design Course Based on OBE Under the Background of Emerging Engineering Education. Scientific Consult, 2023(5): 113–115.

[3] Ma HP, Wu C, 2014, Research on the Core Principles of Safety Economics. China Safety Science Journal, 24(9): 5.

[4] Zhao L, Guo ZG, 2022, Exploration of Ideological and Political Construction in the Safety Economics Course. The Guide of Science & Education, 2022(15): 119–121.

[5] Zhang ZY, Huang WJ, Ling L, et al., 2022, Teaching Reform of the Principles of Communication Course Based on OBE Under the Background of Emerging Engineering Education. Journal of Mudanjiang College of Education, 2022(11): 97–99.

[6] Wang W, Zhang SX, Zhang H, et al., 2022, Teaching Reform and Practice of Cybersecurity and Law Enforcement Led by Disciplinary Competitions. Theory and Practice of Education, 42(12): 54–56.