



Case teaching study of engineering ethics under the localization background

Weigong CHEN ^{1a}, Liyuan GUO ^{1,b*}, Lihong YUE ^{2c}

¹ School of management engineering, Qingdao University of Technology, Qingdao 266520

² School of mechanical and automotive engineering, Qingdao University of Technology, Qingdao 266520

*Corresponding author.

Email: ^a ch.ylh@163.com; ^b 15903443139@163.com;

^c ch.yuelihong@163.com

ABSTRACT. Under the new engineering concept, the importance of carrying out engineering ethics education for training future engineers is increasingly prominent. The case teaching of engineering ethics with the orientation of cultivating students' practical ability of engineering ethics is an important method of engineering ethics education. However, the value orientation of local teaching case development is vague, and the conservative selection of content makes it difficult for "engineering ethics" to highlight Chinese characteristics. This paper explores the necessity of carrying out case teaching, and in order to ensure the effect of case teaching, the selection of engineering ethics cases should be rooted in the root of the Chinese traditional culture and the spiritual home, and actively develop engineering cross-cultural practice cases that highlight China's responsibility in the new era.

Keywords: engineering ethics; case teaching; local case development; Andersen ethics model;

1 Introduction

Engineering ethics course aims to cultivate students 'high sensitivity to engineering ethics and the ability to analyze complex ethical problems in reality, and cultivate students' sense of professional responsibility and moral sense.

In engineering ethics education, case teaching to cultivate students' engineering ethics practice ability is an important teaching method. However, the domestic "engineering ethics" classroom is still filled with a large number of foreign engineering cases. The vague value orientation of local teaching case development and the conservative content selection, which makes it difficult to "tell", "enter" ears, "heart" "Chinese stories", and difficult to demonstrate "Chinese wisdom".[1] Therefore, we must attach importance to the ethical incentive and constructive role of localization cases in guiding students in the process of coping, thinking and trying to

solve the "Chinese problems", and further strengthen the confidence in the path, theory, system and culture of socialism with Chinese characteristics.

Therefore, the current engineering ethics education is facing more important challenges. The case teaching method should be applied in the engineering theory education, and the high-quality local cases of "Chinese wisdom" should be condensed, so that the ethics education can realize the value shaping of "moistening things silently". Using case teaching method to connect ethical theory and engineering practice, guide students to actively explore research, help students to understand and master engineering ethics knowledge, and shape good engineering ethics and values.

2 The necessity of case teaching in engineering ethics education

It is of great significance to the healthy development of engineering ethics education to clarify the necessity of conducting engineering ethics case teaching under the background of "new engineering" construction in China.

2.1 The case teaching of engineering ethics meets the needs of engineering education to return to practice

In recent years, a common trend of engineering education reform in all countries in the world is the return of engineering education project, the implementation of engineering education reform under the guidance of the big engineering concept, and the case teaching of engineering ethics is an important teaching method to adapt to this reform concept[2].

2.2 The case teaching of engineering ethics meets the needs of "new engineering" talent training

The case teaching of engineering ethics, because it conforms to the engineering reality, takes the guidance of cultivating students' engineering ethics accomplishment and comprehensive ability, and meets the goal requirements of "new engineering" talent training. Students' abilities cultivated in the case teaching of engineering ethics, including the evaluation of environment and information, cross-border thinking, understanding and application of value system, logical thinking and expression, collaborative inquiry, innovative thinking and non-standardized problem solving, etc., are of great value to the realization of the goal of "new engineering" talent training[3].

2.3 Case teaching of engineering ethics has realized the pedagogy transformation of engineering ethics cases

In the process of engineering ethics case teaching, the teacher's main task is to teach "learning", rather than teach "book", the role of the teacher is not a simple knowledge imparting, and should be converted into learning coach, guide and sharing, through

the main teaching link, build learning scene, platform and atmosphere, stimulate and improve the students' interest in learning, guide students to achieve learning goals.

2.4 Case teaching of engineering ethics is an important method of engineering ethics education

In engineering ethics education, the use of case teaching method, taking cases as the carrier, taking the real problems in the cases as the guide, organizing students to read, think, analyze, discuss and refute the cases in different ways, and conduct phenomenal description, problem interpretation and exploratory research on cases, which not only helps students to learn engineering ethical ideas, norms, norms, methods, views, etc., but also helps students learn to identify the manifestations of ethical issues, and recognize and verify the application effectiveness of general theories and skills in specific situations[4].

3 Review of the current situation of the local teaching case development of engineering ethics

3.1 Problems and causes existing in the local case development of "engineering ethics"

In the "engineering ethics" class in many universities, the cases used still follow the cases developed by European and American scholars. Although the situations and theories described in these "foreign" cases provide some analytical examples and ethical principles for Chinese students to learn engineering ethics knowledge, they cannot solve all the practical problems facing the current engineering practice and reform in China.

It makes the teaching of "engineering ethics" divorced from the realistic needs and cultural soil of facing Chinese engineering practice.

Due to the lack of first-hand professional practice of engineers or real information on the operation and management of engineering enterprises, they can only copy the problems of foreign cases and process and edit the relevant domestic media materials and data materials. This kind of local case without Chinese cultural home and rational basis can not truly reflect the discourse reality, context concern and value expectation of contemporary Chinese engineering practice, and it is difficult to strengthen students' value identity and cultural confidence in the teaching of "engineering ethics".

Lack of theoretical consciousness of inheriting and carrying forward Chinese excellent traditional culture in the development of local cases.

Neglect to think about and explore the importance and positive significance of the new national system in contemporary China's engineering practice from the civilization tradition of "home and one country". The technological breakthrough to the sig-

nificance assessment, which spans more than half a century of engineering construction, highlights the inheritance of the national spirit and the promotion of innovation.

3.2 Thoughts on the local case development of "engineering ethics"

In the development of local cases, it is necessary to take root in the national discourse and cultural tradition of Chinese engineering practice, base on the living world and spiritual home of the Chinese, attach importance to and realize "political identity, family and country feelings, cultural literacy, constitutional awareness of the rule of law, moral accomplishment, etc., and optimize the ideological and political content supply of the curriculum[5]."

4 The specific implementation of case teaching in engineering ethics education

4.1 The specific implementation of case teaching in engineering ethics education

Most engineers who get caught up in ethical issues are not because of bad character, but because they don't realize that the problem they are facing is an ethical one, that is, they lack the ability to discern engineering ethics. In view of this, engineering ethics awareness needs to be gradually cultivated through systematic learning and practice, and engineers who lack engineering ethics often make unethical decisions and behaviors without realizing it[6]. To cultivate the awareness of engineering ethics is to improve students' sensitivity and ability to identify engineering ethical issues, as well as cultivate their consciousness and initiative in dealing with various ethical issues in engineering practice[7].

4.2 Encourage students and teachers to participate in case preparation and evaluation

Students are encouraged to participate in the consulting activities of enterprises and institutions, and give feedback to the latest actual department dynamics of students, so as to reduce the strangeness of students after employment[8].

4.3 Use the Arthur Andersen ethical model to analyze the cases

The Andersen ethics model is an effective ethical boosting model that allows individuals engaged in ethical judgments to take effective ethical action in several different ways. First, by proposing specific ethical positions, individuals can be helped to establish a framework suitable for them to obtain legitimate ethical outcomes. Secondly, through the Andersen ethical model, the discussion on ethical issues can be effectively focused on concrete principles, thus making the ethical judgment process more efficient.

4.4 Case teaching methods should be diversified

The complexity, multi-angle and multi-level of engineering ethics cases determine that students should not only analyze problems from a single perspective[9], but also understand events in all aspects from different positions, change their eyes, and solve conflicts and conflicts.

Case teaching can be realized through various forms, such as: scenario simulation, debate competition, flipped classroom and so on. Students adopt the role-play model to simulate the case scenarios. Teachers ask solutions to real ethical problems in engineering cases, students divide groups to discuss and have heated debates with groups that play different roles, and finally form a solution.

4.5 Timely feedback on the case teaching effect

Teaching feedback can improve students' decision-making ability to face engineering ethics problems and strengthen their sense of ethical responsibility[10].

5 Conclusion

Engineering ethics education requires universities to follow the development trend closely and aspire to cultivate innovative and outstanding engineering talents. Case teaching is an important means to carry out engineering ethics education. In addition, the local teaching case development must be rooted in Chinese engineering practice of national discourse and cultural tradition, based on the Chinese life world and spiritual home, the Chinese traditional culture of national consciousness, cultural beliefs, value core, theory logic discourse system into a kind of Chinese elements of engineering ethics "discourse".

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