Chapter 9
Teaching Ethics to Engineering Students in India:
Issues and Challenges

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ABSTRACT

Most engineering colleges in India have integrated ethics courses into their curriculum for the reason that students may develop an ethical ability to engage in sound decision making. However, there are differences noticed in defining the concept of "ethics" by the engineering students and the teachers who teach them ethics. Often, it is observed that students' positions with regard to ethics courses are egoistic pragmatism while the teachers follow idealistic pragmatism. This ideological difference makes teaching ethics to engineering students a difficult task and thus undermines the effectiveness of the ethics course. The major objective of this chapter therefore is to examine the extent to which the "gap" can be merged and make the students more ethically responsible. It also helps to achieve more job satisfaction for teachers. Finally, the chapter discusses some suggestions to make engineering students more ethically sensible.

INTRODUCTION

Little research has been done on the ethical dilemmas faced by teachers who teach ethics to engineering students. Due to globalization, the importance of ethics has been increasing in the engineering profession. Often our society bestows special privileges and status to professionals including engineering professionals, which are not given to "ordinary" people. It has been argued that engineering is a responsible profession and thus responsibility is bestowed on engineers. They have certain responsibilities toward society among others. To increase their awareness of their social responsibilities, the All India Council for Technical Education (AICTE) has taken initiatives by adding the course of "Professional Ethics" to the engineering curriculum (http://www.aicte-india. org/downloads/mugtextiletechnology.pdf). Most engineering colleges in India therefore have adopted Professional Ethics or Engineering Ethics as part of their curriculum so that students may develop an ethical ability to engage in sound decision-making.

However, there is a difference in defining the concept of ethics by teachers and students. What is "acceptable" for students is "unacceptable" for teachers and vice versa. For example, helping one's friend to copy in the examination hall may be considered as ethically right by students, but not by the teachers. It is based on the huge gap between teachers' and students' understanding of the definition of the term "engineering." For most engineering students, "Engineering" is only a means to get a good salaried job. The teachers who teach Professional Ethics or Ethics in engineering education define "Engineering" as a means to ensure the safety, health, and well-being of the society. Unless this ethical explanatory gap is closed, the major objective of preparing young engineers to be socially responsible and ethically sensitive will be worthless. It is also supported by the students' attitude that they do not need to study any humanities courses, because these disciplines are unimportant for designing, developing, or manufacturing an engineering product. Moreover, there are engineering students who believe that they know what "ethics" is and what is "ethically right or wrong," and so there is no need to study an Ethics course. This type of attitude makes teaching human values and ethics to engineering students a tedious job. Thus, the major objective of the chapter is to examine the extent to which the so-called gap can be merged and thereby make the students more ethically responsible. To understand this gap, it is important to analyze the various issues and challenges faced by teachers who teach Ethics.

STATE OF THE ART

The need for ethics in engineering was first realized in the 19's by engineering societies (for e.g. The American Institute of Electrical Engineers in 1912 and The American Society of Mechanical Engineers in 1914) from different parts of the world. In this context "ethics" means understanding the distinction between the "rights" and "wrongs" in the engineering profession and the art of absorbing values that are necessary for engineering profession. Though various engineering societies have adopted a formal code of ethics during the 19's, the Institution of Engineers in India only implemented it in 2004 (http://www.ieindia.org/archive.aspx). At that time, these bodies found that there was a lack of ethical sensitivity among engineering professionals, which had been reflected in many disastrous events in the form of bridge collapse, building collapse, etc. Though the situation has been changing overtime, continuing instances of unethical practices in the engineering field shows that the situation has not changed much and so it has to be improved. Still, many instances show that corruption is widespread in the engineering section. Though engineers recognize corrupt situations, they prefer to keep quiet. The construction field is a good example. It has been reported that engineers have been charged with dereliction of duty due to building collapse in Thane (Times of India, 2013). In 2014 also, building collapse has been reported in Bombay (Times of India). In the same year (2014) a building collapsed after catching fire in Chandigarh (India Today). These types of incidents reveal that engineers have received inadequate training or they lack virtues themselves in order to distinguish between "what they ought to do" and "what they ought not to do" in their profession. Consequently, there is an urgent need to understand what is lacking in the graduate engineering program. In addition, inclusion of the Corporate Social Responsibility (CSR) mandate under the new companies Act 2013 has augmented the relevance of pursuing ethics in engineering. It is the ethical responsibility of an individual to take care of his or her society.

To train the students how to distinguish between "what they ought to do" and "what they ought not" in the engineering profession, Ethics has been inculcated into the engineering curriculum. The assumption is that if students are trained for ethical responsibility in their graduate program,

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