Chapter 7

Academic Dishonesty among Engineering Undergraduates in the United States

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ABSTRACT

Over the past 15-years the authors have undertaken a series of research studies examining the tendency of undergraduate engineering students to participate in unethical behaviors, such as academic dishonesty, and the nature of the decision-making that such students use when faced with an opportunity to behave unethically. The four studies, PACES-1, WES, PACES-2, and SEED, have elucidated the extent of the problem of academic dishonesty among engineering students and demonstrated that cheating in college is associated with unethical workplace behaviors. They have also confirmed that a model of ethical decision-making can successfully predict an individual’s intention to engage in unethical behavior in the future. Finally, the studies have shown that, while engineering students’ ethical reasoning improves throughout college, their tendency to engage in unethical behaviors such as cheating actually increases, suggesting there is a gap between moral judgment capacity and moral behavior.

INTRODUCTION

Engineers hold a privileged role in society. They are the designers and providers of much of the technology modern civilizations enjoy. From civil infrastructure, to modes of transportation, to more recent developments in artificial intelligence, cyber security and nanotechnology, engineers are involved in the development and deployment of this and other technology. Simultaneously, engineers are expected
to ‘hold paramount the safety, health, and welfare of the public’, according to the National Society of Professional Engineers (NSPE) Code of Ethics (National Society of Professional Engineers [NSPE], 2015). This call for a more ethical profession also comes from several other organizations including the American Society of Civil Engineers (ASCE, 2006), the American Society of Mechanical Engineers (ASME, 2012), and the National Academy of Engineering (NAE, 2003; NAE, 2004).

Much has been made of the role of engineering ethics in the professional work and education of engineers. The working assumption in these calls for enhanced ethical decision-making among engineers has been that improvements must be made in the undergraduate education of engineers. For example, Shepperd, Macatangay, Colby and Sullivan (2009) made a strong argument for a national effort to improve ethics education within the discipline at the undergraduate level. What can and should be taught, and by whom has been a subject of much debate among engineering educators (Davis, 2001; Burgess et al., 2013; Li & Fu, 2012).

In this chapter, the authors address the educational preparation of engineers and how they come to make the sorts of ethical decisions which they will invariably face in their professional practice. To address this topic, the authors have conducted 15-years of research on the tendency of engineering undergraduates to engage in anti-social behaviors, specifically academic dishonesty, as a proxy for unethical decision-making. This chapter will review the author’s work over this time, including the results of four key studies.

BACKGROUND

Engineering education has been concerned with teaching professional ethics to future engineers for many decades. This is probably best illustrated by the fact that the Accreditation Board for Engineering and Technology (ABET) requires that all engineering degree programs demonstrate that undergraduate engineering students have an ‘understanding of professional and ethical responsibility’ by the time they graduate from college in order for that degree program to receive accreditation (Accreditation Board for Engineering and Technology [ABET], 2015). While this requirement has spurred the development of myriad ethics education initiatives in engineering and much discussion of the importance of engineering ethics education, there is a paucity of data on the outcomes of these efforts and on the actual ethical decision-making and behavior of engineering students (Herkert, 2000; Herkert, Pritchard, Rabins, James, & Englehardt, 2002; Newberry, 2004). While the need for ethics education in engineering has been strong, there is little data indicating that various attempts to address it have had an impact on student behavior. One such behavior that may be influenced by ethics education is academic dishonesty or cheating.

There is little doubt that cheating is prevalent in colleges and universities with upwards of 80% of undergraduate students reporting they have cheated at least once during their college careers (Bowers, 1964; Spiller & Crown, 1995; Brown, 1996; McCabe & Treviño, 1997; McCabe & Drinan, 1999; Brown & Emmett, 2001). There have also been numerous studies supporting the finding that the extent of cheating varies according to discipline (Bowers, 1964; Harp & Taitetz, 1966; Baird, 1980; Shaughnessy, 1988; Brown, 1996; Newstead, Frankly-Stokes & Armstead, 1996; McCabe, 1997; Roberts, Anderson & Yanish, 1997; Rawwas & Isakson, 2000; Jackson, Levine, Furham & Burr, 2002). It is well documented that the percentage of undergraduates who self-report cheating differs by college major with engineering students reporting some of the highest rates of cheating in college over the past 50-years (Bowers, 1964; Harp & Taitetz, 1966; McCabe, 1997). The findings in this regard are consistent; the percentage
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