Teaching Ethics in Software Engineering Design Education

J. H. Weber-Jahnke <jens@uvic.ca>, University of Victoria

Software Engineering matured into an Engineering discipline on its own right, with an internationally accepted core body of knowledge, curricula standards and a code of ethics. Today, several Software Engineering programs have been developed and accredited throughout Canada and Professional Engineers are being licensed in this area. Modern societies have become increasingly dependent on the design of software-intensive systems and hence on the ethical conduct of the Engineers designing them. A common way of educating students about ethics and professional conduct is to discuss and reflect on case studies, which are meant to highlight the particular issues involved. These discussions are often "taken care of" within a dedicated course, while ethical considerations often do not permeate to the rest of the curriculum. This approach has been criticized as being unrealistic because students rarely integrate ethical considerations while actually *practising* design activities. Design is usually characterized as a problem-solving activity in an illstructured domain without well-defined goals and unclear alternatives. Moreover, design typically happens in context of complex social interactions and organizational factors. Failure to integrate ethical considerations into the design education of engineers results in a dangerous oversimplification. Another common problem is that courses on ethics and professional conduct for engineers tend to be shared by students of different engineering disciplines. As a result, case studies are often in domains different from the student's own discipline, making their lessons even harder to import into their daily engineering practice. We argue that, rather than confining the education about ethics to a specific course and pre-fabricated case studies only, ethical considerations must become an integral part of the student's design education, in order to truly reflect the open-ended, multi-faceted and ambiguous character of practical problem situations. This paper specifically focuses on the Software Engineering discipline. We review the state of design and ethics education in current software engineering curricula and make recommendations for a more effective integration of the two subjects.