

# Chapter XVII

## Ensuring Students Engage with Ethical and Professional Practice Concepts

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### ABSTRACT

*The teaching and learning of aspects related to ethics and professional practice present significant challenges to both staff and students as these topics are much more abstract than say software design and testing. The core of this chapter is an in-depth examination of how ethics and professional practice can be addressed in a very practical manner. To set the scene and provide contextual information the chapter commences with information on an international model of professionalism, a code of ethics for Software Engineers, and different teaching and learning approaches that can be employed when addressing ethical issues. The major part of the chapter is then devoted to detailing a particular teaching and learning approach, which has been developed at the University of Sunderland in the UK. Finally conclusions, views on the present situation and future developments, and details of outstanding challenges are presented.*

### INTRODUCTION

Software Engineers operate within a global market place where, for example, software can be specified in the USA, developed in India, and then used by individuals globally on the Internet. The systems that they produce provide solutions to problems across a wide range of areas from health care, through business, to all forms of transport.

Compared to what could be achieved just a few years ago the technical developments that software underpins can have far reaching implications on everyday life. Also, it must be noted that they support much of the world economy. However, these technical developments can also have a downside, raising significant social and ethical risks for individuals, organisations and society at large (ETHICOMP, 2004).

A major challenge for educators is to ensure that students do not just concentrate on the technical elements of Software Engineering. The students need to be prepared for their place as future professionals who can appreciate the wider issues associated with the systems for which they will have a responsibility. It is thus important that the students understand the need for professional practices and the roles that codes of ethics play in underpinning such practices. However, it is equally important to ensure that these “softer” subjects are treated in an engaging and meaningful manner that involves the students fully and interactively. Simply studying models of professionalism and codes of ethics in isolation can be, to say the least, a boring and unchallenging activity (both for the students and the academic staff).

The objectives of this chapter are firstly to provide some background and contextual information relating to an international model of professionalism relevant to professional practice in information technology and a code of ethics for Software Engineers. Then consideration will be given to different teaching and learning approaches that can be employed when addressing ethical issues. Following this, the major part of the chapter is devoted to presenting details of a particular teaching and learning approach, which has been developed at the University of Sunderland in the UK, and which is believed to:

- Give the students an understanding of the role and importance of codes of ethics and professional practice.
- Encourage students to engage and work together.
- Develop individual and group skills in the areas of analysis, appraisal, discussion, and presenting.
- Provide an environment in which the students can apply a code of ethics and professional practice to a realistic (though fictitious) situation.

- Encourage staff/student communication.
- Provide elements of: “fun” (yes, it does this), of competitiveness, and real engagement.

The following two sections set the scene, by respectively, providing contextual information and examining teaching and learning approaches. The next five sections then address, in detail, the approach adopted at Sunderland. The final section of the chapter is devoted to some conclusions, views on the present situation and future developments, and finally details of outstanding challenges.

## **BACKGROUND AND CONTEXTUAL INFORMATION**

Since the mid 1990s there have been a number of initiatives relevant to professionalism within the wider Information and Communication Technology (ICT) sector. For example, during the 1990s the International Federation for Information Processing (IFIP), following encouragement from the World Trade Organisation, undertook activities related to defining international standards for professionals in the field of Information Technology. Whilst in the USA, during the same time-frame, the ACM and IEEE Computer Society worked together on a number of initiatives which would support the establishment of Software Engineering as a profession. The ACM and IEEE Computer Society initiatives concentrated on areas associated with Ethics and Professional Practices, Body of Knowledge and Recommended Practices, and Education.

A detailed account of the efforts of IFIP and those of the ACM and IEEE Computer Society and what has followed them can be found in a paper presented at the 2007 ETHICOMP conference (Thompson, 2007). Of particular relevance to this chapter are:

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