

# The place of ethics in ICT courses

Professionalism, as we have noted previously, has strong links with ethics. A professional is someone who, amongst other things, behaves ethically with respect to his or her occupation. Education is also an important aspect of professionalism. A professional is an expert relative to the general population and this expertise is usually partly a result of being educated in a particular body of knowledge. It is not surprising, then, that a component of ethics education is commonly considered to be an important element of a professional's education. This is the case in information and communications technology (ICT) and, for a course (by which we mean a specific set of subjects/units leading to a qualification, typically an undergraduate degree) to be accredited by the Australian Computer Society (ACS), it must contain some study of ethical and social issues. Both of the chapters in this section relate ethics education closely to professionalism, and neither discusses courses that are part of standard university degrees in ICT. Before returning to these two discussions, we will consider some unsettling evidence for anyone who thinks that ethics education is important.

ICT ethics education, in its current forms, does not seem to have as much effect as is desirable. A recent survey indicated this, and this view of the efficacy of ethics education is supported, if somewhat ambiguously, in the literature (Lucas and Weckert, 2008). We found only one paper that looked directly at the ICT situation (Sharma and Burmeister, 2004), and it found no significant indication of efficacy. A number of studies of business ethics courses also suggest that their effect is not strong in the business community (Buchko & Buchko, 2009; Hun-Joon Park, 1998) and the same appears to be true of medical ethics courses in the medical area (Campbell, 2007).

Before this rather bleak assessment of ethics education results in it being removed from ICT-course curricula, three considerations should be kept in mind. First, there is evidence that, at least in the medical field, ethics training is important in making a contribution to policy. There is no obvious reason why this should not also be true for the ICT industry or organisations that employ ICT workers. Second, there is evidence that company ethics training programs are effective in the business field. Again this could hold for ICT companies. Third, there is some evidence that what is taught in typical ICT ethics courses in Australian universities might not be what is most needed.

Further consideration of this third point could suggest ways of making ethics education more effective. The survey mentioned previously indicated a difference in the content of typical university ethics courses and the main ethical concerns of ICT professionals. As could be expected, privacy and intellectual property

issues were prominent in the minds of ICT professionals, but what could generally be described as professional issues, that is, issues where professionals must make work-related decisions, dominated. High on the list were compromising quality to meet deadlines, unprofessional behaviour, making false promises and conflicts of interest. Also significant were compromising functionality and requirements to meet deadlines. Unprofessional behaviour also figured large in the extra comments section of the survey. Typical concerns included blaming others for one's own mistakes, poor team contributions, awarding contracts without due process, overpricing and under quoting of time and overstating of skills. The issue of professionalism was also of major concern in the interviews and most of the same worries surfaced. A number of related, new concerns were also mentioned, of particular significance were responsibility and informed consent.

A survey of the material covered in courses suggested that the common topics covered were the standard ones of privacy, security, cyber crime, intellectual property, regulating commerce and free speech and a few others, with professional ethics being one topic but frequently left unspecified. The most common text mentioned was Michael J Quinn's, *Ethics for the information age* (2005), so a reasonable assumption is that the topics covered in the text also form the basis of the courses in which it is used (and most other texts cover substantially the same material). The one chapter of Quinn's volume that deals with professional ethics covers the issue of whether software engineering is a profession, the software engineering code of ethics and codes of ethics in general, and whistleblowing. Notably, many of the issues raised in the survey and interviews are not explicitly mentioned either in Quinn's text or in the course descriptions. It does not follow from this that these topics are not covered, but at least it raises the question of whether the focus of ethics courses is on the most important issues as seen by the practitioners.

While the ACS does require the ethical component to be covered in order for a course to be accredited, it does not require that there be a discrete subject and it is clear that the most popular option for universities is for ethics to be part of other subjects. This reflects a debate regarding the best way of teaching ethics to ICT students. One school of thought is that there must be a discrete subject with rigorous assessment, otherwise students do not take the issues seriously. The other view is that discussion of ethics should not be conducted separately because then students do not see it as an integral part of the profession. A leading advocate of this view is Don Gotterbarn (1992). He argues that ethics education is much more effective if it is incorporated throughout the curriculum, rather than being taught as a discrete subject or course and, second, that ethics is not necessarily best taught by philosophers or theologians. His concern is not to denigrate a philosophical approach to computer ethics, but it is, rather, to

understand how best to ethically educate computing professionals. The related debate mentioned by Gotterbarn concerns the teaching of ethics; by what sort of person should it be taught? On the one hand it is argued that it should be taught by experts in ethics and, on the other hand, there are arguments for it being taught by ICT professionals because they know what the real issues are and they have more credibility in the eyes of the students. In both of these debates there are good arguments on both sides.

Three issues, then, have emerged from the survey and the literature: there appears to be a mismatch between what is taught and what professionals see as the most important ethical issues; there might be a problem with the placement of ethics in ICT curricula and it may not be taught by the most appropriate people.

The first chapter of this section, by David Lindley et al, all of whom are or have been ICT practitioners, begins with a discussion of what the ACS takes an ICT professional to be and an outline of the knowledge and skills that the ACS requires of such professionals. This provides the context within which ethics education is considered. The ethics courses focused on here are not part of university degrees, but, rather, constitute components of the ACS professional development program. The content of the two courses mentioned is interesting in the light of the previous discussion of what appears to be a mismatch between practitioners' primary concerns and the common content of university ethics courses. Lindley et al describe content that is heavily weighted towards everyday professional concerns. Interestingly, too, student involvement is central and the tutors are all experienced ICT professionals.

The chapter by Stoodley et al builds on the notion of student involvement in ethics education and develops it in detail and methodologically. It first contrasts the approach being presented, called *prompting new experiences*, with three prevailing approaches to ICT ethics education: exercising behavioural control, developing decision-making skills, and developing moral sensitivity. The aim of prompting new experiences is to change the student's experiences of ethics. Four teaching methods are suggested: moral argumentation and dilemma discussion; role models and heroes; values clarification; and, logic, role taking and concept construction. A 'model of ethical IT' is proposed which illustrates ethics awareness expansion from 'my world' through a number of stages to 'the wider world'. The chapter concludes with an explanation of how the model can be used as a conceptual tool and as a learning tool.

## References

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## Biographies

**Brenda Aynsley** has over 30 years experience as an ICT practitioner, including 11 years as an active member of state and national bodies of the ACS. She was most recently the vice president membership boards (2010–11) and is currently the chair of the International Federation for Information Processing (IFIP)'s international professional practice partnership (IP3) whose mission it is to be a global partnership that will define international standards of professionalism in ICT; create an infrastructure that will encourage and support the development of both ICT practitioners and employer organisations; and, give recognition to those who meet and maintain the required standards for knowledge, experience, competence and integrity. Brenda is a fellow of the ACS and an honorary life member.

**Prof Christine Bruce** is professor in the Science and Engineering Faculty, Queensland University of Technology (QUT). She researches peoples' experiences of information and learning in academic, workplace and community contexts. Over the years she has had particular focus on information literacy, information technology learning, graduate capabilities, and research study and supervision.

Christine is presently director, Higher Degrees Research in the QUT Information Systems School, and convener of the QUT Higher Education Research Network. In 2008 Christine was appointed a fellow of the Australian Learning and Teaching Council. In 2010 she received a State Library Board of Queensland Award for contribution to information literacy, information literacy education and research.

**Michael Driver** has over 40 years experience in technology with the last 25 in senior ICT management. He has worked throughout Australia with top-tier law firms and government entities and also spent 12 years in Papua New Guinea in the early 1980s, introducing the PC into that country and mentoring local users. Mike has been a tutor and mentor for the ACS Computer Professional Education (CPe) Program since 2007 specialising in enterprise architecture. Mike is a senior member of the ACS (Certified Professional).

**Prof Sylvia Edwards** is an adjunct professor with the Faculty of Science & Engineering at (QUT). She was the recipient of the prestigious Australian Award for University Teaching, 2006. Sylvia researches higher education leadership, information searching behaviour and information literacy. She specialises in applying her research findings to practical situations, and her work has significantly contributed to curriculum renewal at QUT

**Robert Godfrey** has had well over 50 years experience in the IT industry, starting in the United Kingdom as a software developer, then as a business systems analyst, and for the last 40 years as an academic. He has recently retired from the School of Computing and Information Systems at the University of Tasmania where he has worked since 1988. Since 2005 he has made several visits to China each year teaching in a number of Chinese universities. His early specialisation was in database design and development, which then broadened into human-computer interaction, in particular user interface design, and the ethics and practices of user/analyst interaction. Bob is a long-time member of the ACS and has been actively involved in their professional education programme for the last 25 years.

**Bob Hart** has over 45 years of experience in IT as a practitioner, user and academic. He was, until recently, responsible for standards and development at ACS and is now a principle advisor to ACS on standards. He was a founding director of the IFIP IP3 and was involved in the formation of the Seoul Accord. He currently provides advisory services to educational institutions, other IT professional associations and governments on professional standards.

**Glen Heinrich** worked for over 40 years as an IT practitioner, primarily in health but also in education and software development. Following his retirement he was involved in tutoring online courses in IT. Glen is a fellow and honorary life member of the ACS.

**David Lindley** has over 10 years experience as an IT practitioner and a further 17 as an IT educator and academic. He has worked in Australia, United Kingdom and Malaysia and, as a visiting lecturer, in Sri Lanka, India, Pakistan, Bangladesh and China. As an educator, his specialisation is learning by working adults using collaborative online teaching methods. David is a fellow of the ACS and an honorary fellow of the Australian Catholic University.

**Ian Stoodley** holds a research position at QUT. He has conducted qualitative research into undergraduates, postgraduates, academics and industry practitioners in the areas of public health, higher education teaching and learning, meta-research, and professional ethics. He is joint editor and author of the book *Transforming IT education* (2006). His principal academic interest is in the ethical formation and support of technology professionals and he was awarded a QUT Faculty of Science and Technology Deans Award for Academic Excellence for his doctoral work on IT professionals' experience of ethics and its implications for IT education.

**Bhuvan Unhelkar** has more than two decades of strategic as well as hands-on professional experience in the ICT industry. As a founder and consultant at MethodScience he has developed mastery in business analysis and requirements modelling, software engineering, agile processes, mobile business and Green IT. He has authored 16 books and numerous papers and executive reports (mostly for Cutter, Boston, United States). He is winner of the Computerworld Object Developer Award (1995), Consensus IT professional award (2006) and IT writer award (2010). His doctorate is in the area of 'object orientation' from the University of Technology, Sydney, in 1997. He is an adjunct academic at the University of Western Sydney and a tutor at the ACS CPe Program. Bhuvan is an engaging and sought-after speaker, a fellow of the ACS, life member of the Computer Society of India.

**Kim Wilkinson** has worked in the IT industry for over 40 years, almost entirely in commercial application development and support for large companies and government agencies. During this time he has worked as a programmer, analyst, project manager and data administrator. He holds two postgraduate qualifications. Kim is a member of the ACS and has been a mentor in its CPe Program course for the last four years.