Northumbria Research Link

Becoming a professional: a university perspective

Examples of arguably unprofessional or unethical behaviour related to IT are fairly commonly reported events. For a number of years the BCS has been encouraging coverage of related issues within accredited Higher Education provision. Phil Brooke CEng FBCS CITP CMath MIMA (Green Pike Ltd), Tom Prickett MBCS CITP SFHEA, Shelagh Keogh MBCS (both Northumbria University) and David Bowers CEng FBCS CITP (Open University) reports.

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"The term professional means different things to different people; nevertheless, there are certain general technical and social standards normally associated with a professional. Further, the term is more generally applied to the practitioner rather than to the researcher. But within the rather broad definition specified, the computing practitioner is, as yet, not regarded as a professional." Finerman (1975)

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In our organisations, in our pedagogic practice and as mentors we attempt to instil professionalism in many ways, such as reflecting on completed work, codes of conduct and issues such as ethics and legal requirements. Membership of BCS and other professional societies entails professionalism. Yet none of us are born professionals; for a person to become a professional they need to dedicate time to consider their approach, attitude and decision-making when engaging in practice. It is a challenge in higher education to help our students develop professional attributes such as ethical awareness.

Many readers will have seen examples of IT-related ethical problems in the media in recent years. As we write this you can read allegations around social media and the mining of information. Medical informatics provides many examples such as Google's Deep Mind and the Royal Free Hospital in London, yet the use of pseudonymised NHS data can be hugely valuable for medical researchers. Conversely the sale of data raises concerns and the implementation of GDPR demands consideration of consent and reasonableness.

Many of us grew up enjoying dystopian science fiction visions of the future use of computing. This could vary from *2001 A Space Odyssey*, through to *Terminator* and *The Matrix* as well as a plethora of media from books to computer games. We are moving to a world of pervasive surveillance, autonomous cars (and a report of the first associated death) and military projects like the Fast Lightweight Autonomy programme by DARPA in the USA. Unlike in science fiction these projects (should) operate within well thought-through ethical frameworks with human involvement in critical decisions. Whether that is obvious to the casual observer is less clear.

As educators we have a clear obligation to develop professionalism in our students. Becoming a professional may not always be the easiest pathway for a career-minded technologist who is driven by technological innovations. We aim to capture and nurture the passion and innovations, and still ensure our students have professionalism at the forefront of their minds. Sometimes an ethical issue might not be relevant today but it could be a concern tomorrow. A good example would be current innovations in AI. Stephen Hawking emphasised our ethical duty when he warned China that "we should do all we can to ensure that its future development benefits us and our environment".

In our profession we cannot require our students and graduates to become members of a professional body which would support their professional development. But it is a requirement of BCS-accredited courses to make visible and to assess the teaching and learning of professionalism in the curriculum. Those of you teaching on these courses may know them as "LSEPI": legal, social, ethical and professional issues. A cynical view of LSEPI is that they are a hoop to jump through, a viewpoint we strongly disagree with as they are intrinsic to the education of responsible practitioners.

[[[box out: "LSEPI" -- the BCS guidelines on course accreditation]]]
What does the BCS expect to be covered within degree programmes in relation to Legal, Ethical, Social and Professional Issues (LSEPI)? "Students should not perceive LSEPIs as peripheral to, or less significant than, technical skills detailed in the syllabus. Topics which are not assessed may be seen by students as unnecessary. BCS considers that adequate coverage of LSEPIs is important in the assessment and examination of accredited programmes and accepts that the requirements may be met in many ways". It is not the role of the BCS or any other professional body to stifle innovation nor mandate how these are covered within degree programmes or precisely which issues are explored. What is expected is that issues are taught to students and included in the assessments the students complete. Within reason the intention is not to discourage innovation, development or application of new technology, but to reflect upon the potential consequences.
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There are two distinct ways to incorporate professionalism in the curriculum: one is to include specific topics or modules in a degree course; another is to have professionalism distributed among many subjects or even all subjects. The former can be a challenge for technical students as it often means working with assessments quite different from their other subjects. Having professionalism embedded in many different subjects can mean this aspect is diluted or even missed while students are still able to pass the assessments without achieving a deep understanding of professional issues. Of course some institutions mix both methods and there is no perfect solution. The medical profession has been going a lot longer than computing but still struggles with this social phenomenon.

All of these debates can be a distraction as the main objective here is to focus on students demonstrating that they have committed to be a professional: this can require an attitude shift. We can teach skills and impart knowledge but appropriate attitudes can be developed only through repeated application of professional principles by students in

their studies. Next time a student muses "what needs to be done next to develop this product?", we should respond "what needs to be done and how can we limit or mitigate harm today and tomorrow?"

For a number of years, the BCS has taken these issues seriously in the accreditation of higher education programmes. There is an expectation that as well as LSEPI, information security, commercial and economic issues are covered as core topics in the degree programmes we accredit. This is part of a wider initiative in partnership with our sister professional bodies in the Chartered Engineering (CEng) sector (under the Washington Accord) and for the Chartered Information Technology Professional (CITP) status offered by sister computing and IT bodies (under the Seoul Accord).

How can you help? One of the challenges for computing academics today is that a significant proportion of our students are at least as interested in their studies for the career opportunities they provide rather than for love of the discipline itself. Consequently the weight provided to opinions from the "real world" has a strength that academic discourse does not. It is likely in your career you have faced, analysed, balanced and resolved a range of professional dilemmas. These real world stories could be very supportive in making real the importance of legal, social, ethical, professional, information security, commercial and economic issues to a new generation of students.

So can we finish with a plea? Your local university needs you! Help us educate the next generation of computing professionals and together we can endeavour to make IT good for society. Your real professional dilemmas can help us bring to life this critical area of the computing curricula and help our future professionals to understand the types of challenges they may face in the world of work.

About the authors

Dr Phil Brooke, Dr Tom Prickett, Dr David Bowers and Shelagh Keogh each have over twenty years of experience in computing. Much of this time has been spent in university posts.

Phil, Tom and David have been academic accreditors for the BCS for around a decade. Phil and Tom are members of the BCS Academic Accreditation Committee. David is also a chartered member assessor. Tom is the current chair of the BCS BCS Academic Accreditation Committee.

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