Fostering 'Technological Citizenship': the redesign of a curriculum unit on computers and ethics

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Introduction: the challenge of 'ubiquitous computing'

This paper explores the redesign of an intermediate-level module on 'Computers and Ethics' (IT225) that has been running for a number of years within the Humanities Information Technology (HIT) degree pathway, in what is now the Department of Humanities, Arts and Languages (HALS). The position of HIT at London Metropolitan University is somewhat unusual since, unlike most similarly named subjects, it does not encompass humanities computing (a technical subject concerned with such matters as database archiving of cultural material). It also exists distinct from social science approaches to information technology, such as those found in Digital Media and Business studies. This leaves HIT operating in the very specific domain of applying humanities-based analyses to the realm of computing. Central among these are philosophical forms of analysis, including those derived from ethical theory. 'Computers and Ethics' thus lies right at the heart of the HIT mission. Although IT225 is not a 'core' module, it is designated for the Ethics as well as HIT degree.

Typically, IT225 attracted around 20 students a year, but in 2002-3 enrolment suffered because IT modules are offered within several departments other than Humanities, such as Applied Social Science, Computing and Business, and many of these claim to cover some of the same ground as IT225. This highlights the general problem HIT as a subject has in defining itself and explaining its unique contribution. For students in Humanities, IT is not usually a natural choice of subject, and for students in Computing or Social Science, Humanities is not usually a natural place to look for an IT course. Nevertheless there is a strong case, on grounds of social, academic and workplace relevance, for a computer ethics module at London Metropolitan University, and IT225 is the only such module.

Moral or ethical development has long been considered one of the key aims of education and is still seen as a core part of the university, both in terms of what it offers to students and as embodied in its institutional activities. Barnett (1990) speaks of 'substantive responsibilities [and] … moral virtues that are an inseparable part of the intellectual life.' IT225, with its basis in ethical theory and its contemporary technological focus, ought to be playing a key role in delivering the cross-curricular goal of developing the ability to make ethical judgements.

A further aspect of the institutional context is the University mission statement's explicit commitment to social justice. The former version of IT225 did not address topics of justice, such as the digital divide 21 nformation poverty', but focused more narrowly on individual moral agents and their actions as users of computers. This was a gap in the curriculum design that prevented it making a full contribution either to

the university's vision or to the actual lives and concerns of students and their future roles as workers and citizens.

In the broader environment of higher education in general, some writers have located concern with the ethics and justice of technology as a fundamental function of the university in a global age. Delanty (2001), for instance, maintains that 'the challenge facing the university today is to link cultural reproduction and technological production'. His view is based on a notion of 'technological citizenship' as a new set of rights (and presumably obligations) that universities must help to forge:

> *'... technology is shaping the world according to the dictates of capitalism and global markets. As a global force it is not linked to citizenship, which has predominantly been confined to national contexts and has been historically linked to the welfare state. Universities have an important role to play in linking technology to citizenship. Technological citizenship concerns a new terrain of rights relating to the forces unleashed by technological rationality in the media, the environment, the internet and information technology ...' (pp156-157)*

Again, it is evident that we have to start thinking more broadly than just the sphere of individual moral choices, the main focus of the old IT225. The point about modern technology is its ability to bring about widespread, systemic, perhaps global, consequences.

Outside the university, the spread of computing into ever more spheres of life – the trend called ubiquitous computing – is raising new ethical issues for both individuals and institutions. As citizens, students need to be able to participate in public debate and to make ethical decisions regarding technology in their own lives. As the future workforce, they need to understand also the institutional and professional issues affecting technology use in organisations, such as intellectual property, database matching, privacy and security. Computers are now used as much if not more for communication as for computation, and humanities students, whether they go on to careers in the media, education, business, civil service, community work or whatever, are likely to work with computers. In this environment, and as more and more jobs become professionalised and acquire codes of conduct and good-practice guidelines, a degree of ethical awareness is increasingly crucial for new graduates embarking on a career. Students who go on to work in software, programming or media industries (increasingly difficult to separate), will find that the specific ethics of design as well as of use will be a daily part of their working life.

Furthermore, all students are likely to use computer networks extensively in their professional and personal lives, and here design and use become inextricably entangled, since networks are defined only trivially by their technical architecture but much more importantly by the patterns of interaction that users implement on that architecture. The global technological context of proliferating computer networks and systems is one which poses some particularly difficult – and interesting – ethical challenges. When systems outstrip the reach of regulating structures alternatives have to be sought to external control, throwing into relief the actions of users and designers and the role of voluntary assoc [22] ns and codes of conduct in establishing internal control mechanisms. Our students will be part of many of these mechanisms, and that is going to demand from them awareness, critical thinking, reasoned judgement and ethical commitment.

Towards a new curriculum framework

In educational theory the notion of 'curriculum' is generally given a very wide interpretation, including everything from teaching methods and resources to

underlying values and commitments. There are a number of models of curriculum design available (see for example Diamond 1989, Moon 2001). This redesign project was based on the model proposed by Toohey (1992), in which curriculum design is seen as a complex process involving a number of interrelated questions that need to be tackled in parallel rather than linear, sequential fashion. Nevertheless, Toohey identifies two main stages:

1. Determining a framework, including
   - What to teach
   - Underlying beliefs, values, goals
   - Structural principles
   - Assessment methods

2. Developing detailed specifications, including
   - Relationship to other courses, level, assumed prior knowledge
   - Aims
   - Outline of content (topics, concepts, methodology)
   - Methods and media to be used
   - Study time
   - Assessments

Toohey's scheme really refers to more large-scale curriculum design than that of just a single module. She also assumes a greater degree of collaboration and departmental, even interdepartmental, involvement than is feasible in the case of this project. For example, she envisages the first stage as a highly contested process in which different interests and political and philosophical positions emerge and come into conflict, demanding significant investment in dialogue, consensus-building and compromise. Even so, the model is a useful broad outline, and the discussion that follows addresses key aspects of it.

What should be taught

As an 'applied ethics' module, IT225 is fundamentally concerned with the interaction between empirical and theoretical knowledge, and with the processes of analysis and critical reflection involved in making connections between the two. At a very general level, the course teaching needs to cover:

- Why computing is an ethical concern
- What ethics is, and its relationship to justice and law
- Major ethical concepts and theories
- Tools and techniques of ethical analysis
- Cases and issues
- Critical reflection on two themes runni 23 iroughout the course)
  a) The relationship between technology and ethics: is it just a matter of 'applied' ethics or does technology put pressure on ethical theory?
  b) Their own ethical development.

Who the course is for

IT225 has traditionally been aimed at humanities students. However, computing and its ethical implications extend far beyond this narrow - and perhaps diminishing - band of students. In addition, informed debate requires good technological understanding, which means the module could only benefit from drawing in programmers, engineers and designers as well as users. Equally, since computers enable and constrain forms of social and political life as well as of personal action,

social science and policy students should be recruited if at all possible, to provide a more macro perspective.

Underlying commitments

The course is built on five fundamental commitments:

- Social justice: the course will attempt to build an awareness of the social implications of technology, and how ethics, as the foundation of justice, may have political implications and lead to a critical perspective on existing social arrangements.

- Methodological focus: students will learn how to use the tools and techniques of ethical analysis in an informed and critical way. They will be required to reflect on the process of application, and to consider the extent to which theory deals adequately with the cases and examples they study, and if not why not. They will also be asked to question the notion of computer ethics as 'applied ethics' and to consider the methodological implications of such assertions as 'rights will increasingly depend on new technologies which will in turn shape the discourse of rights' (Delanty 2001, p157).

- Criticality: throughout the course students will be asked to question underlying assumptions, to explicate the grounds of their judgements, to interrogate individual and social practice, and to question theory in the light of experience and their own moral intuitions.

- Personal development: students will be encouraged to see the course as an opportunity for personal as well as academic development. They will be asked to think about ethical concepts, issues and theories, in relation to their own lives as moral and social agents; and to reflect on their personal ethical development as the course progresses.

- Mutual importance of research and teaching: the way I like to teach is to treat students, even at undergraduate level, as colleagues in a collaborative process of discovery. I would like in the new IT225 to introduce students to ideas and methods of research in applied ethics, and to expose them to original work and recent research papers.

Structural principles

Computer ethics is traditionally taught as an 'applied ethics' course in which a body of ethical theory is imparted and then used as a tool for analysis of real-life cases and issues in the domain of IT. IT225 will to some extent step outside this framework in that students will be required to reflect critically on the adequacy of ethical theories in dealing with computer technology and the socio-technical systems in which it is implicated. The personal development component also goes beyond the traditional applied ethics curriculum – although perhaps less so now that virtue ethics is included in the theoretical teaching.

Applied ethics is a complex field, involving development of cognitive skills of analysis and judgement; the acquisition of new knowledge, concepts and theories; and also the development of personal moral commitments. It is never a matter of passively absorbing ideas and information and 'transmission' models of teaching are wholly inappropriate. A 'deep learning' approach (Ramsden 1992) is required, which encourages students to engage actively with the material. Personal commitments in this field are crucial and teachers cannot pretend to be neutral. Neither can they risk appearing dogmatic, so they must be prepared rationally to defend their commitments

and to help students through a process of moving from intuitive responses, through questioning and criticism, to a more grounded but no less committed position of their own. Constructive alignment as advocated by Biggs (1996) is a useful perspective that stresses integration of design so that all activities and assessments involve students as active participants in realising the aims and outcomes of the course.

The new IT225 has a lot of work to do on several fronts. This raises potential structural problems in deciding how to integrate theory, technological content, case description, analysis, critical reflection and personal development. A number of organising principles have been identified in literature on course design, but applied ethics courses, with their combination of knowledge, action/practice and self-focused goals, are probably best structured in a cyclic way that continually revisits and builds linkages from theory to practice to critical reflection to theory.

Within that broad structure, a number of topics or themes can be treated, starting with simpler less theoretically demanding ones and building up to those with more potential for challenging the theoretical frameworks on offer. This enables the course to maintain a strong technological focus ensuring a good grounding in real-life activities and contexts but at the same time developing overarching themes and allowing ongoing mutual engagement between theory and practice. The following structure is therefore proposed:

Theoretical foundations	Topic 1: Design	Topic 2: Use	Topic 3: Systems	Topic 4: Research
Concepts Theories Principles Codes	Cases Analysis	Cases Analysis	Cases Analysis	Cases Analysis
Reflection on theory ⟶				
Personal development ⟶				

Fig. 1: Structure of redesigned IT225

Learning outcomes

The long-term goals of the module translate into four specific learning outcomes:

LO1   Demonstrate good understanding of ethical issues relating to design, use, systemic and research aspects of computing.

LO2   Apply ethical theory and principles to produce balanced and well reasoned analysis of empirical cases.

LO3   Demonstrate critical insights into the relationship between technology and ethics.

LO4   Show development of personal ethical awareness.

Methods

A variety of teaching methods and media will be used, to cater to the learning styles of different students. These will include:

- Use of WebCT
- Seminars and interactive lectures
- Preparatory readings

- Group and individual activities to support assessments
- Ongoing monitoring and feedback tools
- Possibly an element of original but collaborative research

Assessment

Basic principles to be applied in designing assessments include:
- Incorporation of a collaborative component, recognising the essentially social and discursive foundations of ethical analysis and judgement.
- A sustained piece of work allowing students to develop their analytical skills over time, incorporate their learning from formative feedback and also to participate in the selection of work for assessment through the construction of a portfolio as advocated by Biggs's constructive alignment approach (1996). An element of methodological and/or critical reflection.
- A component of reflection on personal ethical development and the grounding of personal commitments.
- Linkages between the academic content and real-world issues including systemic and structural features in society.

There will be two assessment instruments, designed jointly to test all four learning outcomes (LOs):

AI1 Contribution of theoretical, empirical and analytical material to a class website (2000 words, 50% of final mark). [LO1, LO2]
AI2 Portfolio of seminar tasks built up through the course, with covering statement reflecting on development of personal understanding of technology and ethics (1000-word statement plus seminar tasks, 50% of final mark). [LO3, LO4]

The assessments have been designed to expose students to a range of activities and experiences in ethical and academic work. AI1 highlights the social and communicative aspects of ethical life. AI2 requires students to attend seminars and participate in collaborative academic work. Both require individual thought and critical reflection. An effort has also been made to design assessments to be appropriate for students from scientific and technical backgrounds as well as the humanities and social sciences where discursive writing is common. Essays have been avoided for this reason.

Evaluation

There will be two formal evaluation mechanisms. Firstly, a bulletin board will be set up on WebCT for students to post comments and discuss the course as it is running. Since there are a number of rather experimental features in the redesign, I feel this is essential. In line with the commitment to collaborative research, students will be encouraged to see the bulletin board as a space for multiway dialogue rather than them feeding back to me. The idea is to create a forum where we jointly reflect on what we are doing as we go along. Secondly, students will be asked to complete an anonymous written feedback form at the end of the module, so that I also receive comments that students are perhaps reluctant to air in a public place.

Conclusion: an integrated curriculum

My vision for a redesigned 'Computers and Ethics' module is one aimed at exciting and attracting students from several different disciplines, bringing a range of knowledge and skills to bear on some of the pressing issues of the technological age. More specifically, I have elucidated a set of ideas that - I hope - will 'constructively align' to

produce a module that is consistent and well integrated, but that also has scope for change, surprise, experimentation and new developments. Its chief features are:

- An explicit focus on justice: this updates the course in that it is essential if we are to deal adequately with systems issues.
- Inclusion of ethics of design: this is a growing area of interest in all branches of engineering ethics, and is a field in which lay people are increasingly becoming involved.
- Attention to research: students will pay much greater attention to methodological issues in their own work, and to ethical issues surrounding use of computers in research. This should help to prepare them for future academic study, whatever their field.
- Personal ethical development and critical self-reflection: building these in as a learning objective will emphasise to students a dimension of academic life that is sometimes eclipsed by goals such as employability and technological competence. It will also reinforce one of the specific educational contributions of the humanities.
- Broader theoretical base: the module will aim at least to introduce students to virtue ethics, non-Western ethics and non-standard ethics as potential sources of new and interesting approaches. This may be extremely constrained by time, but at least students will gain a greater sense of the varieties of ethical thinking available. Those with a special interest could be encouraged to pursue these topics in more detail in assignment one, contributing valuable teaching and learning resources for future years.
- Broader range of potential students: including technical and social sciences students as well as humanities students will greatly benefit the course (by making a wider range of knowledge and perspectives available in class) and the university (by supporting the often expressed commitment to interdisciplinarity). It will also benefit the students themselves, by making for more interesting classes, greater exposure to new ideas, and more opportunity to participate in forums similar to a real-life ethics committee.

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Biographical note

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