

Glasgow University Teaching Excellence Award (2011): Nomination Statement

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Introduction

The theme of my teaching philosophy is *enhancing the potential of the student as a collaborative learner*. Students have much to offer to the learning process, even before we have 'taught' them anything, and I like to acknowledge the contribution that they can make to the learning process, as part of a community of learners. Thus learning becomes a collaborative, interactive and shared process, rather than a one-way transmission of information and tasks. My approach requires respect for students, a teaching style that develops trust between myself and the students and amongst the students themselves, and energy and enthusiasm. I am a reflective learner myself: I make personal notes after each lecture, lab, tutorial or item of assessment so as to ensure that I improve on them the following year.

Teaching Excellence Award criteria

1. Effective ongoing contribution to enhancing the student learning experience on a range of levels, evidenced through student feedback.

- I am an advocate of contributing student pedagogy (CSP), whereby students contribute to the learning of their peers, and, in turn, learn from their peers' contributions. I have been co-author on three publications in this area, and I have been using peer assessment methods in my own classes since 2000. I practise this pedagogy at several levels – from basic database queries, through imaginative interface design, to argumentation and critical skills.
- The contributing student pedagogy is most evident in my lectures, which, although often consisting of over a hundred students, are highly interactive. Every lecture includes an activity which requires students to engage with the material (for example, answer a short quiz or draw a design diagram), and to discuss it with their peers. For example, I give students time to work on a small exercise in the class, and then select three or four students to write their solutions on overhead slides which are then shown to the rest of the class and discussed openly. Such interactivity within large class lectures requires that a high level of trust be built up between me and the students. I enable such trust by respecting the students and publically valuing their contributions to the class discussions, even if these contributions are not 'correct'. Students quickly realise that open discussion of their incorrect solutions is more valuable for learning than review of the correct answers.
- While on sabbatical at the University of Auckland I helped design and run a second-level course that was highly contributory: students created their own online learning materials (including learning activities), effectively writing the textbook for the course for use by the whole class. Unprompted, the students created a mock examination question paper (with answers) to assist them in their revision. While some students were uncomfortable with this approach, many students valued the opportunity for independent research and for taking responsibility for their own learning, and the fact that they were trusted to develop and share learning materials.
- I consistently produce peer-reviewed research publications from supervision of undergraduate student projects. This is not a typical outcome from Computing Science undergraduate projects, but reflects a strong research-led approach to project supervision, and my ability to attract strong students and develop their skills to a research standard.
- In all of the three most recent courses I have taught with sufficient numbers for robust statistical analysis (at level 1, level 2 and MSc), on a scale of 1-5 I achieved both a median and a mode of 4 for both of the following two statements: "*Teaching on this course enhanced my understanding of the subject*" and "*Overall I was satisfied with the course.*" Students like the interactive style of the lectures ("there was a lot of opportunity to become involved", "class exercises keep you thinking", "Interactive style of lectures maintained interest in what may be the least liked element of computing science amongst students"), and the style of lecturing ("Teacher was good, entertaining and professional", "lecturer is enthusiastic, clear and concise", "great lecturer", "brilliant lecturer", "pro lecturer").

2. Innovative practices relating to curriculum or course design, particularly in relation to interdisciplinary working.

- I designed and implemented three new 'Research Readings' courses for our PGT programmes in 2005. These courses require students to read both seminal and state-of-the-art research papers, to summarise them, to perform an in-depth review, and present their review to the rest of the class. This was a new approach to research-led teaching and its success is evidenced by it still being employed today. An external examiner of our PGT programmes from Edinburgh University has since taken this idea and used it there.

- In semester 1, 2010, I introduced a new course for students who wish to know something about Computing Science, but who do not wish to continue with the subject. This new course 'Principles and Practise of Computing Science' is, as far as I know, the first of its kind in the UK, although there are a few instances of similar courses in the USA. It covers basic computational principles, their application in practise, how these principles have developed over the centuries, and the key people who influenced the study of computing. This course is particularly useful for students who wish to follow a broad, interdisciplinary curriculum, and our first enrolments included students studying Psychology, Film and TV, Chemistry and Comparative Literature. A paper describing this course has been accepted for presentation at an upcoming Higher Education Academy workshop on first year computing curricula.

3. Impact of learning and teaching practices

- I have championed the use of the Aropa peer-assessment system to fellow academics – in 2009 at the University of Auckland (while I on sabbatical), and here in Glasgow since my return. Aropa enables peer-assessment activities to be conducted easily and routinely, even with large classes. I was instrumental in launching the system at Glasgow and Strathclyde in August 2010: in the past six months it has been used by six academic members of staff at Glasgow University (Computing Science, Veterinary Science, Business and Management, the Teaching and Learning Centre) and by one academic at Strathclyde (at the Centre for Academic Practise). During this time, I have also provided remote advice and support to 12 existing and 8 new Aropa users at the University of Auckland. I have advised several other colleagues in Glasgow on the benefits of peer assessment, and there have been expressions of interest from Law, Classics and Biology.
- Our Computing Science in the Classroom course is an outreach activity that entails final year students taking placements in secondary schools where they prepare and conduct interactive workshops and support school teachers in computing classes. It is highly contributory, and its success relies heavily on mutual respect between students and staff. As one of the leaders of this course in 2010/11, I have improved its processes – in particular in communication with schools and in making the learning outcomes clear to students. I have been instrumental in providing an informal, yet focussed supportive environment where students have felt free to propose and explore their own ideas with their peers. A disparate group of students (many of them nervous and shy) became a high-performing team of engaged and passionate learners and teachers – it was a transforming experience.

4. Involvement in, promotion of, and dissemination of Scholarship of Teaching and Learning

- I have 18 peer-reviewed publications on learning and teaching issues. These papers cover topics on: peer-assessment (3 papers), contributing student pedagogies (3), student-contributed multiple choice questions (PeerWise) (4), teaching ethics and research in computing science (2), pre-university students (3), tutor-training (1), electronic voting systems (1), and student reflection (1).
- I participated in creating an archive of best practice resources in HCI teaching, as part of the Human Computer Interaction Disciplinary Commons held in 2007/8. This HEA-funded project involved 20 selected HCI educators from all over the UK. My own reflective portfolio of practise can be found at: www.cs.kent.ac.uk/people/staff/saf/hcidc/portfolios/hcp-commons/
- I am currently working with Professor David Nicol at the University of Strathclyde (as part of his JISC-funded project) by contributing case studies on peer assessment.
- I have held external examiner appointments previously at the Universities of Stirling, Heriot Watt, Hertfordshire, Oxford, and currently at Lincoln and Kent.

5. Income generation relating to the development of learning and teaching.

- I was awarded a grant (£3500) from the Higher Education Academy to support the launch of Aropa at the University of Glasgow.
- I was awarded a grant (£1000) from the Faculty of Information and Mathematical Sciences Learning and Teaching Fund to support the development of the new 'Principles and Practise in Computing Science' course.

6. Demonstrable impact of exceptional leadership in Learning and Teaching at School and/or College levels

- I joined the University of Glasgow as programme director of the MSc(Information Technology) in 2001 at a time when the enrolment was approximately 180, and the programme was taught over several departments and faculties. As numbers declined, I initiated and led the design and implementation of our new MSc(Advanced Computing Science) in 2004/5 and its sister MSc(Computing Science) in 2006/7. I led the extension of these two programmes to create four additional 'spoke and hub' programmes in 2008/9. In my role as Director of the Computing Science Postgraduate Programmes over the years, I have co-ordinated the efforts of up to 15 teaching staff, introduced an efficient process for dealing with Masters applications, arranged several PGT publicity and recruitment events, and advised the Convenor of Teaching Committee on PGT matters.