**Submission for The University of Queensland 1999 Teaching Excellence Award:**

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<u>**Reflective essay**</u>  (*Teaching with real integrity [96/2])*


I value the role that reflection plays in my development as a teacher. I have always reflected on my teaching, maintaining a log book of teaching activities and experiences, and taking student feedback seriously. In reflecting on my teaching practice since taking on the role of  university lecturer, I can identify three phases of my teaching performance:

- **Phase 1**.  As a new lecturer fresh from my PhD, I was inexperienced and defensive, hiding my insecurity behind an authoritarian attitude and the delivery of lots of content. While I still got many positive student comments about my enthusiasm, knowledge of the subject matter and teaching ability, students complained that I was too strict, that I rushed through too much material, and that assessment criteria were not explicit enough. I was relying on the security that a traditional model of education-as-transmission gives, in order to cope with the demands and unfamiliarity of my new responsibilities. During this phase, in line with the departmental focus at the time, I focussed on implementing an appropriate tutorial structure and the provision of suitable tutorial questions.

- **Phase 2**. Recognising the benefits of releasing some of the formal control of the class in favour of a more relaxed relationship with the students, I became more approachable. Students responded well to my efforts to get know them individually, and to my obvious willingness to help. The consequence of my efforts was a much better classroom climate, and consequently a more enjoyable learning experience for both the students and myself. The carefully designed tutorial method and tutorial questions were well received as worthwhile learning experiences. This phase was, however, still characterised by the delivery of excessive content in lectures: I was not yet confident to relinquish the security that a large set of overhead slides gives to a lecturer.

- **Phase 3**. As a result of completing the Graduate Certificate in Education, and in moving towards a more flexible strategy, the phase I am currently in is characterised by a relinquishing of the practice of delivering formal, declarative content; lecture sessions now focus on communal problem solving. I have removed some theoretical content from my subjects, and concentrate rather on application of concepts, encouraging students to contribute their own views and knowledge. I have been following this student-centered education-as-action practice since the beginning of 1999. Students have responded positively, and value the opportunity to contribute to the classroom sessions. Current student comments tend to focus on the tutorials and tutorial questions, features that were considered as highlights in the past.  The change in student attitude toward my tutorial strategy demonstrates the importance of continually responding to the changing nature of the student body.

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[1] Throughout this document, italicised comments in parentheses are student comments (dated by year and semester), all of which were collected by written surveys.

I was interested to learn, *after* writing the above paragraphs, of a paper by Kugel[2] describing five stages of development of university teachers. The phases of development that I outlined above closely mirror those he describes, putting my current phase at the start of his stage four. While it is gratifying to know that my development has not been unusual, it is also exciting to see what lies ahead in terms of moving through his fourth stage (student as active) towards achievement of stage five (student as independent).

Given that I and many students, considered that I was a good teacher at the start of the first phase of my development, *(high standard of teaching [93/2]; wants to, and does teach well [93/2], extremely willing to offer individual help [93/2])* and that I can now see the extent of my improvement since then, it is exciting to anticipate the potential for my teaching development in the future. I welcome the challenge of continually improving in response to changing requirements from students, the university and industry, and in line with developments in both information technology and educational research.

For students to be interested or enthused by a subject, I need to demonstrate a passion for it. I aim to provide a rewarding and enjoyable educational experience for my students, so they develop knowledge of the domain, skills to work within the domain, insight into the breadth and limitations of the domain, and general skills of discussion, analysis, and creative thought. These beliefs affect my teaching practices in the following ways:

- Lecture sessions are not merely used for the delivery of content, but are fora for communal problem solving and discussion. I encourage class interaction and general discussion of broader issues, enhancing the lecture sessions by including topics raised by the students themselves. I acknowledge that students may know more about a topic than me, and encourage them to contribute their knowledge.
- I foster a climate of honesty, openness and informality in lecturer-student and student-student communication: this includes openly admitting to my mistakes, discussing them with the class, and correcting them. I also attempt to know all students by name, and encourage informal interaction with them outside of the formality of lectures, tutorials or consultations: this encourages them to contribute to class discussions and to approach me with any problems that they may have.
- My enthusiasm for the subject, for teaching, and for open communication with students, is evident.

My strengths as a university teacher are that I am sincerely committed to student learning *(wants the students to learn [98/2])*, and am enthusiastic about the subject matter *(your enthusiasm for the subject rubbed off on me and I'm sure on others too [98/1])*. I am organised, and provide well-structured and lively lectures, tutorials and class activities. I value the reflective process, the practical application of educational theory, feedback from students and my peers, and the support of my colleagues, tutors and students in maintaining an effective learning environment. *(Thank you, Helen, for being one of the few lecturers I have come across who know how to teach, and you do it so well! [99/1])*

**<u>Current teaching activities</u>** *(If only all lecturers took the time to make their subjects so interesting! [99/1]; A pleasure to be taught by [98/2]).*

I believe that computer science students can benefit from exposure to non-computational topics, thus fostering an interdisciplinary perspective and critical thinking skills. In taking an interdisciplinary approach, students' prior knowledge should be valued: they should be encouraged to contribute this knowledge to the learning activities and to realise the benefits of peer learning. For students to feel comfortable in revealing their knowledge and uncertainties, they should feel free to do so without fear of embarrassment, in a non-threatening environment. This willingness to participate relies on mutual respect between me and my students, and student understanding of my educational philosophy.

On arrival at the University of Queensland, I designed two new third year elective subjects (Human-Computer Interaction and Artificial Intelligence), and have had full responsibility for them for six years. Current enrolments are between 100 and 150 students.

**Full class participation lecture sessions**.

1.  Holding lectures that involve the whole class in learning activities. Even with class enrolments of over 100, my practice is to use the lecture time to engage students in active learning experiences, rather than for the delivery of content. The lectures are characterised by an informal, yet disciplined, atmosphere of communal problem-solving, discussion, and exploration, where I encourage students to raise questions and contribute their own perspectives and knowledge to the learning of the whole class. *(Good ability to listen to the class, paraphrase the response, then continue lecturing including the points that are relevant to the discussion [96/1], Pushes us to think beyond out own narrow scope in class discussions [97/1]).*

2.  Basing my educational strategy on a model of flexible learning, with an emphasis on self-directed study. The students are directed to read sections of the textbook and other readings that are relevant to each lecture in advance. The lectures therefore do not need to re-state this material (in an inappropriate transmission model of education), but can be used for more active learning. This practice is in keeping with the flexible learning model that I will want to follow when my Human Computer Interaction subject is offered in Ipswich from first semester 2000. *(This subject has forced me to think probably more than I ever have for a subject [1999/1]).*

3.  Preparing the materials for each lecture anew. To be able to respond to student needs, I do not merely repeat lectures given in prior years, but prepare anew before each lecture session, taking into account the events of the previous lecture. This practice allows me to cater for unexpected events or student misunderstandings that occur during the semester. This does not detract from the subject goals as given to the students at the start of semester, which include ample allowance for extra class activities and explanation.

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[2] Kugel, P., How Professors Develop as Teachers, *Studies in Higher Education*, vol. 18, no. 3, pp 315-328, 1993

4.  Using a variety of teaching methods within the lecture sessions. I have used practical lab-based exercises as an alternative to presenting programming language material in a traditional lecture format, videos on general topics to stimulate class discussion, and large class discussions on recent newspaper articles. I frequently give the students time to work on a problem during the lecture, and then ask them to volunteer their answers for general class discussion. My success in fostering a non-threatening learning environment is evidenced by the fact that there will always be at least one student willing to propose his or her solution. Holding lectures that include significant input from students is unusual, at least within in our faculty. (*Helen's methods of lecturing using computer, OHP, handouts are all well structured and quite painlessly get the message across [99/1]*).

5.  Using "question sheets" in lectures. I frequently hand out brief questions during the lecture sessions, and give the students time to discuss it and to provide a written response. These responses form the basis for subsequent class discussion, and sometimes the students exchange them with their neighbours for comment. In addition, I collect the written responses, summarise them, and post the summary to the web page and online newsgroup, concluding with a comment on the validity of the responses. Students benefit from finding out the views of their peers, and in getting formative feedback on their answers, a practice that is seldom followed in other subjects. *(Class discussion ...gave an idea of what my peers were thinking about a particular topic [99/1]).*

**Support of student learning**.

6.  Defining subject material by expected student outcomes, rather than by the common practice of stating of content. I provide a fortnightly list of "expected outcomes" briefly summarising the topics covered so far, and describing what students ought to be able to do at that point in the semester. This enables students to monitor their own learning, and have a clear idea as to what level of understanding is required for assessment. This practice requires students to interact with, and therefore think about the material, fostering deep rather than surface learning. Students are encouraged to work through these outcomes during the semester, and to discuss their efforts with me or the tutors. *(Good use of expected outcomes to ensure students are on track [99/1])*

7.  Including essays as part of the assessment. Even though essays in computer science subjects are rare, students produce essays on practical experimentation, theoretical discussion and research investigation, fostering critical analysis, communication, and information organisation skills.

8.  Using peer assessment. In Human-Computer Interaction, I introduced the practice of students assessing each others' interface implementations, and marking according to specified criteria. The students see a wide range of designs for the same problem, and can assess their relative merits. They recognise that there is no single correct solution to a design problem, and are forced to make judgements and justify them. They learn from the efforts of their peers. *(Although I was sceptical at first, peer assessment proved to be a very useful/educational experience [99/1]).*

9.  Basing tutorials on group-work. Students work in groups of three or four in their tutorials, reaching joint solutions to problems given in advance. This model fosters peer-tutoring, and enhances students' communication and teamwork skills. While some of my departmental colleagues use a similar method, it is not common practice.

10. Valuing multiple workable solutions. I admit that my solutions to class problems or tutorial questions are not the only or best ones, and that the solutions produced by students in the class all have value. This practice formed the basis of my research for my Graduate Certificate in Education, when I investigated activities that I could feasibly include in my classes to foster this view (that there are multiple workable solutions to a problem, and that all solutions need to be assessed according to their relative worth). Computer science students typically come from a culture where only one solution is considered correct: my educational practice encourages critical analysis and judgement.

**Lecturer-student relations**

11. Knowing the students personally. Although my classes consist of more than 100 students, I undertake to know them all by name, in the firm belief that this makes me more approachable, and that they will be more willing to contribute to class discussions or raise questions, thus enhancing their learning. I attend all the tutorials for the subject in the first three weeks of each semester, and talk to each student individually. *(Learning the students' names makes the lecture more personal and made me more willing to learn and approach you [98/1], Good idea to memorise every student's name. Creates a friendlier relationship and makes it far easier to talk to the lecturer if lecture materials are misunderstood [96/1]).*

12. A clear educational philosophy. I tell the students my overall educational philosophy at the start of semester. If the need arises, I will also discuss specific educational decisions I have made with individuals or the whole class. I seek feedback on my educational strategy from my students, and frequently discuss contentious issues with TEDI consultants and respected colleagues within my department. In the subject profile, I include the list of graduate attributes to be fostered in all undergraduate courses at The University of Queensland (as defined by the Academic Board, October 1996), so that I can refer to it when discussing my educational practices with the students. Students welcome this uncommon practice, as it demonstrates my respect for them as participants in an active learning process.

13. Disciplined lecture sessions. I make clear my expectations of student behaviour during lecture sessions at the start of semester: chatting is not tolerated, and punctuality is valued. Students are given a one minute chat break half-way through each fifty-minute lecture, and are encouraged to interrupt the session with questions or comments at any time. Maintaining this control is appreciated by most students, and ensures that the discussion and problem solving is focussed. *(Good to see a lecturer who insists on quiet lectures [98/1]).*

The success of my endeavours is evidenced by the willingness of students to approach me outside of formal contact, their enthusiastic and active participation in (and their enjoyment of) the lecture sessions, their appreciation of the learning benefits of my methods. *(Students feel involved in the lectures because they are encouraged to participate in a non-threatening environment [99/1]; friendly atmosphere, good discussion and humour in the class [98/1]).*

**Course materials**  *(Reading materials, lecture summaries and expected outcomes were all produced in a timely manner [99/1]).*

My responsibility is to provide students with materials to assist their own learning, and the achievement of the subject's expected outcomes. I believe that the timely provision of materials (when they are most relevant to the topic currently being discussed), assists in the assimilation of the subject matter. The typical  practice in computer science is to provide a set of  formal "lecture notes" at the start of semester. These notes define the subject content, are typically copies of the overhead slides to be used in the lectures, and are followed closely in each lecture session. I believe that this practice re-inforces an inappropriate transmission model of education, and fails to recognise or value the prior knowledge that students bring to the subject. Within this culture, my challenge is to provide sufficient materials throughout the semester to satisfy the students that, despite not following the common practice, the subject content is still well-defined, while employing a more flexible and student-centred model of education.

First and second year computer science subjects typically have a strong science and computational basis. In the context of teaching third year elective subjects, I believe it is important to foster critical thinking skills and a broader appreciation of the cultural and historical context of the subject matter, as well as understanding of the current status of relevant research.

I provide some materials at the start of semester so that the students have a framework for the subject. Other materials are handed out in the lecture sessions, when they are relevant to the topic under discussion.

**Overall organisation of subject materials**
1.  Providing a detailed subject profile, given to the students in the first week of semester. This document outlines the syllabus, the available resources, the required readings for each week, the overall expected student outcomes and the criteria for assessing them, assessment methods, assignments and deadlines, administrative and contact information, and a statement on my personal educational philosophy.
2.  Making subject materials readily available. Students can access copies of any PowerPoint slides that may have been used in the lecture from the webpage, and hard copies of other lecture handouts are always available for collection in a filing cabinet outside my office. The webpage also contains copies of tutorial question sheets, assignments, annotated tutorial solutions, administrative announcements that have been posted to the subject online newsgroup, summaries of class discussions, the subject profile, and the subject expected outcomes. Such provision enables them to access the materials at any time of day. *(Good to have all the information on the webpage – thanks for that! [99/1]).*
3.  Providing lists of expected outcomes. (See pg 4, no 6)

**Lecture handouts**

4.  Providing lecture handouts only when necessary. Handouts relevant to the current topic of discussion in the lectures are given when required. In some cases, an element of surprise is useful for discussion: for example, it is better to ask a member of the class to provide a definition that can then be discussed than to provide the commonly accepted definition to all students in advance.

5.  Providing a variety of lecture handouts. The handouts include examples, diagrams, recent media articles, definitions or explanations that are not covered adequately in the textbook, as well as "question sheets." (See pg 4, no 5) The practice of providing a wide variety of information sources fosters students' information management skills. *(I feel that I have learnt to deal with vast amounts of information better, by critically evaluating it and therefore being more able to distinguish relevant concepts. I intend to apply what I have learned in this subject to others [99/1]).*

**Tutorial questions and feedback**

6.  Providing extensive tutorial questions. The questions are closely related to the topics covered in lectures, and demonstrating the use of the theory discussed in lectures. The tutorial question sheets are given a week in advance. *(Tutorials and lectures tie in well [98/1]).*

7.  Providing detailed, timely, and individual feedback on tutorial submissions. I have introduced an innovative electronic tutorial submission and feedback strategy. Students submit their weekly group tutorial solutions by e-mail. Each solution is annotated by me or a tutor, and returned to the students by e-mail. The annotations highlight both strong and weak points of the submission, and propose further issues and questions that the student should think about. The students' learning benefits from this timely formative feedback. *(Useful tutorials, good feedback [98/1])*

8.  Providing more than one tutorial solution. A selection of the annotated student tutorial submissions are posted on the subject webpage. The students are required to actively investigate the different solutions, and make judgements on them, rather than passively accepting one solution as the only possible solution to a problem. This practice is in keeping with my "multiple solutions" philosophy (see pg 5, no 10), and develops students' critical thinking and information management skills. *(Good to have the tutorial solutions posted on e-mail, help us to see others' mistakes, so we don't make the same [96/1]; The idea of putting tutorial solutions in web pages … is brilliant [97/1]).*

**Subject content**

9.  Using a good textbook. The topics covered in lectures follow the recommended text book, and augment it with additional examples, problems and diagrams. The students are expected to read the required sections in advance.

10. Providing a booklet of required readings. This collection comprises copies of  interesting and relevant articles or newspaper cuttings. Unlike the "lecture notes" provided in other computer science subjects, many of these readings are peripheral to the content of the subject (as defined by the expected outcomes) and are included for the interest of students. This practice fosters an interdisciplinary perspective and a broader view of computer science within a cultural and historical context. *(Good notes: interesting articles are good [96/1]).*

*11.* Presenting my current research. I include discussion of my current research projects in the lectures, encouraging students to comment and criticise my research efforts. Students appreciate having their opinion valued. *(Using examples throughout the semester was great and also talking about your personal projects and honours students' projects [97/1]).*

Students typically comment on the usefulness of the tutorial feedback and the webpage, on how interesting the subject is, and on the good materials. In using a sound educational strategy that does not involve preparing all the lecture slides in advance and handing them out at the beginning of semester, I am maintaining a more flexible approach to learning and student participation. *(The way the lecturer did not just produce some notes beforehand and read word for word was good because it made things more interesting [99/1]).* This method comes at a cost: materials need to be produced during the semester in response to student progress, and the extent and variety of the materials I provide make my management of the information a more complex task.

**<u>Supervision of theses and projects</u>** *(Takes a personal interest in all her students [96/2]).*

Research projects should not be so firmly defined at the start that there is no room for exploration of the topic. On the other hand, if the project is too loosely defined, the student may be uncertain as to what is required for success. It is therefore important that a careful balance is maintained between flexibility and focus, and that students receive continual feedback on their efforts. I believe that success is less likely if the student is not interested in, or does not feel ownership of, their project. I also believe that I have a responsibility to foster students' research management skills, and to encourage them to take responsibility for the progress of their project.

I have supervised year-long honours and coursework masters projects for seven years: typically two or three in a year, although I have had as many as five on occasions. I have two PhD students, both nearing completion. I supervised year-long third year industry projects for four years (typically two in a year), and currently hold full responsibility for the semester-long third year Information Management project, now in its second year, with an enrolment of 10. This latter responsibility includes liaising with industries to define and arrange appropriate projects for pairs of students. As a project-based subject, it does not have any formal contact class time, but requires that I meet with each project group regularly.

**Definition of the topic and scope of the project**
1. Defining the project proposal (honours). Computer Science honours students typically choose their project based on a short proposal written by the lecturer. Once students have chosen one of my projects I require them to write their own, more extensive, proposal within six weeks of starting the project, after discussions with me, and after undertaking a literature investigation. This practice ensures that the students feel ownership of the project, and that any ambiguities between my expectations and theirs are resolved. It also gives the student the opportunity to give the project their own perspective, which may be different from my original intentions.

2. Balancing freedom and focus (PhD). I encourage freedom for exploration within an area, while ensuring that at all times a clear focus is maintained. Students are frequently required to state their research goals in a single succinct statement.

3. Encouraging exploration (honours and undergraduate). For year project, it is important that students have a clear idea of the scope and expected outcome of the project from the start, and that any deviation from the project focus does not waste valuable time. They are therefore free to explore the topic, but remain within a scope that ensures that they satisfy academic requirements.

4. Providing of a variety of topics. I do not insist that research projects that I supervise necessarily contribute to my own research agenda: it is more important that the student is interested in, and feels ownership of the project. To this end, I am willing to supervise projects within my broad area of expertise that are suggested by the students themselves: both my current PhD students are undertaking research projects unrelated to my current research.

**Supervision of the research process**

5. Encouraging continual writing. All students are encouraged to write draft chapters of their thesis, technical reports and research papers from the start of the project, and to direct their writing and research with reference to a proposed table of contents, while acknowledging that their direction, ideas and goals may change over time. This practice fosters the development of written communication skills, and ensures that work performed early in the project is adequately recorded.

6. Holding regular meetings. I meet with all students weekly where possible, although this frequency may change depending on the current status of the project, and the nature of the student. The discussion in meetings includes the current activities, as well as the wider context of the project.

7. Providing timely feedback. I give frequent and detailed feedback on all written work, with a maximum turnaround time of two weeks. As well as making syntactic, formatting and structural suggestions, I also comment extensively on the content of the document, writing a summary of my overall impressions and suggestions at the end.

**Research management skills**

8. Encouraging the use of research logbooks. In keeping with my own research practice, students are required to maintain research logbooks containing all the notes, sketches, ideas, references, and decisions relating to the projects. While this practice is often met with some scepticism and resistance, students acknowledge its benefit at the end of the project, especially for the record of reasons behind decisions. Students benefit from the reflection that logbooks inspire, and develop appropriate information management skills.

9. Requiring meeting agendas (PhD, masters, and some honours). Once the project is underway, students are required to provide their own agenda for our weekly meetings in advance, thus fostering student reflection and project management. I add to that agenda as I see fit.

10. Maintaining focus. All students are required to prepare an anticipated table of contents for their final report early on in the project: this table of contents and an associated timeline are continually referred to and updated during the course of the project.

11. Mentoring. We often discuss external factors affecting the student's performance, advice on research management skills, interesting peripheral issues, or the student's future plans.

I have a departmental reputation as a good supervisor. I am frequently approached by prospective honours students many months before honours project proposals are officially made available. It is not unusual for students to say that they don't mind what project they do, provided I supervise them. The procedures I insist on ensure project success, and I ensure that students perform to the best of their ability. I find the supervisory process very satisfying, in terms of both the research outcomes and the mutual research relationship that develops between me and the student. (*Helen [was] my first choice for my honours supervisor. I have gained a greater knowledge of the field and have no regrets [98/1]*).

**Student evaluation of teaching** *(A well-organised, articulate person who obviously enjoys teaching [95/2], Everything is just FAB!!! [99/1])*.

My development as a teacher is primarily driven by student feedback, which I value highly. I have always used TEDI instruments to collect end-of-semester evaluations from the students. I particularly value the free-form comments provided on the reverse of the form. In giving the opportunity for students to comment on the method used for their education, I believe that maintaining a transparent educational strategy reduces student concerns about teaching quality, and shows respect for the students. However, I also believe that while all student feedback should be taken seriously, the educational value of student recommendations for improvement should be considered before they are implemented: changing an educational method merely because lots of students want it, rather than because there is a sound education reason for doing so, may not benefit student learning. *(The lecturer is interested in improving the subject at all times [98/1])*.

**Discussion of educational strategy**
1. Performing mid-semester evaluations. End-of-semester teaching evaluations, while having the advantage of maintaining anonymity until after assessment is complete, are too late for students to benefit from them. I request mid-semester feedback, so that I can act on it immediately. I discuss the responses with the class, if necessary explaining the reasoning behind my educational strategy. This discussion has the added advantage of students finding out what their peers think: many students are surprised that other students hold an opinion that is opposed to their own. This practice therefore has the additional benefit of fostering critical and reflective skills.
2. Maintaining a transparent educational strategy. My experience is that if students know that an educational strategy decision has been carefully thought out in advance, they are more willing to accept it. By making my strategy transparent, students know why I make educational decisions, and feel free to discuss such decisions with me.

**Use of student feedback**

3. Summarising and reflecting on student comments. I summarise the comments from each mid- and end-of-semester evaluation, and consider how I can improve my practice for the following semester. In some cases, I need to change my teaching practice; in other cases, what is required is a more careful explanation to the students at the start of the semester as to the educational basis of my method.

4. Carefully considering student recommendations. When there is significant opposition to one of my practices that I believe to be educationally sound, I will seek advice from colleagues respected for their teaching, and from TEDI consultants, before discussing the issue openly with the whole class.

**A summary of evaluation of teaching** *(Innovative teaching materials; innovative assessment [99/1])*

I interpret student opinions of my teaching in the light of the fact that innovative teaching practices are not always valued by students, who may feel disoriented by an unfamiliar structure and approach. This is particularly the case if the teaching practices are contrary to the typical departmental practice (*A marked difference from other lecturers – her teaching style takes some time to adjust to (somewhere till mid semester)[99/1]).* I also consider the fact that my students are in their third year, so have had exposure to many other lecturers with whom they can make comparisons.

Students typically comment positively on my enthusiasm, friendliness, approachability, knowledge of content, concern for student learning in general, and responsiveness to individual students' learning needs. They appreciate the fact that I am organised, well-prepared, honest and punctual, and like the efforts I make to involve all students in class discussions. In the TEVAL responses, I am frequently described as the best teacher that the students have had: this view has also been often expressed to me in unsolicited verbal or written feedback *(You're the best lecturer I have ever had! Well done! Keep it up! [97/1]; This is one of the best lecturers I have come across while studying here [99/1]).* I believe that students respond positively to me teaching efforts because, in contrast to the typical teaching culture of the department, I value interactive learning and the individuality of the student, rather than content transmission. *(Helen willingly sets aside time to help students who require it and guides them to the solution using knowledge they already have [97/1]).*

My overall effectiveness as a university teacher has been rated by students as follows (on a scale of 1 to 7, where 7 is "outstanding") in TEVAL surveys:

| year/semester | 93/2 | 93/2 | 94/1 | 94/2 | 95/1 | 95/2 | 96/1 | 96/2 | 97/1 | 97/2 | 98/1 | 98/2 | 99/1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CS subject | 340 | 345 | 342 | 345 | 342 | 345 | 342 | 345 | 342 | | 342 | 346 | 342 |
| average rating | 4.8 | 5.3 | 4.4 | 5.4 | 5.4 | 5.7 | 5.9 | 5.9 | 5.7 | SSP | 5.6 | 6.1 | 6.3 |
| class size | 71 | 71 | 83 | 94 | 102 | 102 | 105 | 115 | 120 | | 120 | 80 | 150 |

In the first semester of 1999, 91% of students rated my effectiveness as a university teacher as 6 or 7.

This table shows the marked improvement from my first teaching endeavours, and sustained achievement in recent years. In addition, the increase in class size for both subjects (which are both electives), indicate an improvement in the general reputation of the subject amongst the students.

An improvement in, and sustained performance is also reflected in the average ratings for other attributes (on a scale of 1 to 5, where 5 represents "strongly agree") in TEVAL surveys.

| The lecturer ... | 95/1 | 95/2 | 96/1 | 96/2 | 97/1 | 98/1 | 98/2 | 99/1 |
|---|---|---|---|---|---|---|---|---|
| produced classes that were well organised | 4.3 | 4.5 | 4.4 | 4.5 | 4.5 | 4.3 | 4.6 | 4.5 |
| presented material in an interesting way | 3.8 | 4.2 | 4.0 | 4.2 | 4.0 | 3.9 | 4.4 | 4.4 |
| gave adequate feedback on my work | 3.8 | 3.9 | 4.0 | 4.1 | 4.0 | 3.9 | 4.3 | 4.3 |
| treated students with respect | 3.7 | 4.2 | 4.2 | 4.4 | 4.0 | 4.3 | 4.6 | 4.6 |
| seemed to know the subject well | 4.3 | 4.4 | 4.5 | 4.4 | 4.5 | 4.5 | 4.5 | 4.7 |
| communicated her enthusiasm for the subject | 4.3 | 4.3 | 4.3 | 4.5 | 4.4 | 4.5 | 4.6 | 4.8 |
| emphasised thinking rather than just memorising | 3.8 | 4.0 | 4.0 | 4.2 | 3.8 | 4.0 | 4.0 | 4.3 |
| gave explanations that were clear | 3.9 | 4.0 | 4.0 | 4.1 | 4.2 | 4.0 | 4.0 | 4.3 |
| was available for consultation | 3.8 | 4.0 | 4.0 | 4.1 | 4.2 | 4.1 | 4.5 | 4.4 |
| helped me improve my learning skills | 3.3 | 3.6 | 3.4 | 3.8 | 3.4 | 3.5 | 3.8 | 4.0 |

I am continually addressing student criticisms, in the belief that my development as a teacher is best driven by student feedback, tempered by my own and others' educational research, while maintaining a focus on student learning. Initial complaints of delivering too much material too fast, being unapproachable, and not making assessment criteria explicit have all been addressed to the extent that these are now areas that the students deem to be my strengths. Current student comments about tutorials determines the next area that I will focus on for improvement. I have no doubt that students will always suggest valid recommendations for improvement: dealing with this semester's problem appropriately does not mean that I will be a perfect teacher next semester! I value the opportunity for, and challenge of, continually improving my educational practice to take into account the changing student body, the changing requirements of the university, and results of current educational research.

**Changes made in response to previous student evaluations** *(Open to suggestions [99/1])*

The specific changes I have made to my teaching practice have been initiated by student feedback, and date from when I first started as a lecturer. They include:
- becoming more approachable, polite and friendly
- placing more value on student opinion
- being ready to admit my mistakes, and discuss them with the class
- changing the tutorial assessment method
- reducing the complexity of some of the tutorial questions
- not restricting my out-of-class contact time to fixed consultation times

- slowing down my pace of spoken delivery

- being more explicit about assignment objectives and assessment

- reducing the amount of material in the subject

- introducing active learning class activities and discussions, and inviting class participation

- providing a greater variety of classroom activities

- creating a webpage of subject resources

- changing the implementation language in cs343 after consultation with the whole class

- including more practical assignment work in cs343

- removing the programming component of cs345

**Current subject assessment and examination materials** *(Good, useful, interesting, fun assignments [96/1])*

Students have a right to be assessed fairly, should be assessed according to their own performance, and not against the performance of their peers. While assessment is a necessary requirement of higher education, in order to ensure that my subjects are driven by a concern for student learning, rather than being assessment-driven, I believe any assessment activity should contribute to students' learning. This belief means that providing feedback on student assessment items is essential.

**Assessment of students' performance**

1. Providing clear assignment criteria. The assessment criteria for assignments are given in advance, so students know what is expected of them. Assignments are marked according to a fixed marking scheme. *(Setting out criteria before assignments were due was helpful and professional [98/2]).*

2. Using criteria based assessment. Grades are allocated according to fixed grade boundaries (made known to students in advance), rather than according to a normal distribution. The subject profile details the expected student outcomes, and criteria for assessing them. *(Fair in marking [95/2]).*

3. Anonymous submission of assessment items. Students have the option of submitting their assignments with only their student number as identification, and all examination scripts are marked without knowledge of their author. This is an uncommon practice in our department.

**The balance of the assessment methods**

4. Using continuous assessment. Up to 40% of the final percentage mark may be achieved during the semester though assignment and essay submission, and tutorial participation.

5. Project work. The Information Management subject is performed through a semester-long project, usually undertaken by pairs of students. I make contact with clients (both on and off campus) who have a significant information management problems, and support the students through the process of making recommendations to the information management practice of the organisation.

6. Carefully considering appropriate examinations. While it may be possible to assess both the Human-computer Interaction and Artificial Intelligence subjects by continuous project work, this is not feasible with large classes and may result in plagiarism that is difficult to detect. The

examinations are carefully designed to include a balance between demonstrating understanding of the theory, and practical application of concepts to a given problem.

7. Appropriate examination format. Until 1998, the Human-Computer Interaction subject was a closed book exam. The consequence of this was that students were spending time rote-learning the details of concepts for which practical application is more important. This examination is now open-book, and assesses the students' understanding of the theoretical concepts in relation to practical application and discussion.

8. *Variety of assignments.* The range of assignments given is broad, including discursive and research essays, programming, experimental design and implementation, and theoretical discussion. *(This is the first class I have done an assignment that produced something that might potentially have a use outside the class [96/1]).*

**Feedback**

9. Providing  formative feedback. Students are given formative feedback on essay outlines in advance of the submission of the complete essay, and are given continual formative feedback on their tutorial submissions throughout the semester. This unusual practice is essential for student learning, and is valued by the students.

10. *Providing assignment feedback.* I give extensive written feedback on the coursework assignments, clearly indicating to the students the extent to which they have satisfied each criterion. *(Quick and concise feedback on tutorials and assignments [98/1]).*

11. Discussing examination performance. Unlike the departmental practice, which is to merely show the students their examination script,  I provide extensive feedback to students on their examination performance, in the form of a personal discussion for all students who request it. I explain where the students have fallen down in their examination performance, and provide general advice on study and examination skills where appropriate.

**Support of  assessment**

12. Providing assistance for assessment.. Students are encouraged to seek assistance with assignments through e-mail and/or visiting me in my office. I also often visit the laboratories in the weeks leading up to an assignment due date to assist any students who may be there working on the assignment. Consultation hours are held daily during the revision and examination periods.

13. Providing support during examinations. I attend all examinations, and remain in the examination room for the duration of the entire examination, ensuring that no students are unsure as to what is required of them, explaining any ambiguities that they may perceive in the questions, and reassuring them where necessary (without compromising the integrity of the examination).

My priority is that students learn;  in many cases, their priority is that they get a good assessment mark. It is important that the assessment items do not take over the subjects to the detriment of student learning. This is a difficult balance to maintain. Making the assignments relevant, and providing extensive feedback ensures that they can still be used to enhance student learning.

**Availability to students** *(Really approachable and enthusiastic and encouraging [98/2]; Friendly, honest [96/1], Happy[98/1], A lively attitude [99/1],).*

In encouraging student learning and development, I believe that it is important to foster a relationship with my students that makes them view me as approachable, so that they will feel comfortable in asking questions, thus enhancing their learning and fostering an independent learning approach. It is important to show students that I am concerned about their personal academic performance, and that I am willing to support them in the wider context of the university.

**Personal communication**

1. Fostering a friendly relationship with individual students. I attempt to know all the students by name (by the middle of semester, I am confident with at least 80% of the student names*). (Relates well to students, treats us as individuals [98/2]).*

2. Maintaining an open-door policy. I keep Thursday as my research day, and make this fact generally known. I encourage students to call in at any other time, make subsequent appointments with any student who may arrive to see me on a Thursday, when I am busy or when I cannot see them immediately. *(Willing to help students despite her busy schedule [99/1]).*

3. Contacting students personally. I follow up, by e-mail, any student queries arising from lectures or tutorials; if I think that a particular student may have a misunderstanding about the material, I will e-mail that student individually, explaining any potential confusion, and inviting the student to call in to see me to discuss the issue. *(Making the students feel important [99/1]).*

4. Providing written responses to queries. I answer student queries by e-mail where appropriate; if I think that the matter would be best discussed, I invite the student to call in to see me in my office.

5. Communicating informally. I greet students personally when I pass them outside of formal contact time; if it is appropriate, I will engage in informal conversation, asking them if they have any problems with any assignments I may have set them, or discussing other issues that I know are relevant to them  (other subjects, job interviews etc.). *(Great personality [99/1]).*

6. Wider support. I encourage students to approach me to discuss any university or employment-related issue. Many students request my support in providing employment references, and often contact me after they have left the university

**The formal and academic context**

7. Establishing a behaviour framework. By ensuring that behaviour boundaries are well articulated at the beginning of semester, students know the framework within which they can communicate with me, and the extent of allowable behaviour. This releases them from concern at doing things they might otherwise feel uncomfortable with. These boundaries include simple lecture session behaviour rules, the extent of my availability to students, and assignment deadlines and penalties. While some students may see this uncommon practice as authoritarian, most appreciate the freedom that it provides. *(I appreciate the quiet orderly class [96/1]).*

8. Providing personal academic support. For individual students who are struggling or are behind in the material for some reason, I provide individual support. For any student who has made an effort to understand the material, I will spend as long as they need to ensure their full understanding.

9. Record of student agreements. I maintain a student logbook, detailing unusual circumstances that may affect an individual student's performance, and any agreement that the student and I make with regard to extensions or medical considerations. This record ensures that a clear and unambiguous practice of special considerations is followed.

This scale of availability is very unusual. It is made possible by the mutual agreement and respect between me and my students: this rests on my setting up strict protocols and standing by them. Within the boundaries of the protocols, both I and my students are free to act comfortably, making the educational experience enriching and enjoyable for us all.

**Scholarship in teaching**  *(Willing to insist on educational protocols [991/])*

I am convinced that the positive development of my teaching depends on self-reflection and personal educational research. I am continually reflecting on my educational practices, my overall philosophies, as well as my day-to-day performance in running my subjects. I value this reflective process, and, in noting the positive effect it has had on my teaching practices, believe that I have a responsibility to share my experiences and expertise with my colleagues.

**Voluntary professional development activities**.
1. Completing a Graduate Certificate in Education (Higher Education) in 1998. My teaching practices have changed radically since completion of this certificate, most importantly in a move to flexible learning based on self-directed study whereby lectures no longer merely deliver content.
2. Attending TEDI workshops. This include sessions on postgraduate supervision, evaluation and assessment, discovery learning, and criterion-based assessment.

**Reflection on, and change in teaching strategies**
3. Maintaining a strict reflective routine. I keep a teaching logbook in which I make personal notes after every lecture, tutorial, assignment and other class activity, noting those aspects that were successful, and those that were not. This routine has proved invaluable for improving my teaching methods and materials from year to year.
4. Collecting feedback continually. To ensure that my performance is continually improving, I request mid-semester feedback from students, discussing this feedback with the students, and acting on it. I ask students, former students and tutors informally for feedback on particular class activities that have concerned me. I ask tutors for their knowledge of student opinion.
5. Summarising each set of TEVAL and mid-semester comments into positive and negative points.
6. Changing teaching strategies on the basis of my own research. I have collected data on many of my innovative teaching practices (peer assessment, concept maps, resource availability, tutorials),

and as a result of the analysis of the data, have changed my practices accordingly. In addition, as a result of research performed as part of a departmental action learning project investigating tutorials in computer science, I changed the style of tutorials in my subjects.

7. Changing teaching strategies on the basis of other educational research. Through my participation in the Graduate Certificate in Education, I was exposed to many research papers detailing the results and consequences of educational practices. On the basis of this,

   - I have changed my main teaching strategy from content-focussed to outcome-oriented,
   - I provide opportunities for students' existing knowledge to be incorporated into the communal class problem-solving environment,
   - I introduce and use concept maps in tutorials, and
   - I encourage a self-directed study model.

8. Carefully consideration the introduction of innovative teaching methods. Before introducing a new educational method, I discuss it with colleagues respected for their teaching and/or with TEDI consultants, to get input on its educational validity and advice on methods of implementation. I strongly value the expertise and experience of my peers and educational consultants.

**Contributions to the teaching culture of the CSEE department.**

9. Serving on the Departmental Teaching and Learning committee since taking up my position at the University of Queensland.

10. Advising colleagues in the department on implementing peer assessment in their own subjects.

11. Advising on criterion-based assessment. As the first person in our department to introduce criterion-based assessment, I have advised other staff members. My presentation of expected outcomes, and the criteria for assessing them (given in the subject profile) is used by the co-ordinator of Departmental Teaching and Learning committee as a model for other staff members.

12. Participating in a voluntary "Action Learning" Project. The aim of the project was to investigate ways in which tutorial methods used in the Department of Computer Science could be improved to foster students' communication, group working, and technical skills. I designed, implemented and assessed various tutorial styles as part of this project, and assisted in the production of a final report, a university seminar, final recommendations to the department, and two publications.

13. Contributing to tutor training workshops. As a member of the Departmental Tutor Training committee, I assisted in the design and implementation of the annual tutor training workshop. I present the opening discussion and ice-breaker session at this workshop every year.

14. Advising colleagues. I am often approached by members of staff in the department wanting advice on teaching issues: experienced teachers and as well as new teachers seeking mentors.

**Invitations to share teaching expertise**.

15. Responding to the keynote address at The University of Queensland's '98 conference on Tutoring.

16. Contributing to the development of TEDI materials containing examples of successful use of flexible delivery strategies.

17. Contributing to the development of the TEDI self-study modules on Criterion-based Assessment.

18. Presenting seminars at TEDI workshops on "Peer assessment," "Teaching small classes," and "Using Bulletin Boards, e-mail and discussion groups in teaching."

19. Sitting on a panel to discuss "Flexible Delivery" at the Third Australasian Computer Science Education Conference.

**Educational publications**

20. On tutorials in Computer Science. Bakker P., Carrington D., Goodchild A., Hayes I., Purchase H., and Strooper P. The communicating technologist: An educational challenge. *Proceedings of Frontiers in Education 25th Annual Conference*, pp4a4.1-4a4.4, (ed: Budny D. and Herrick B.) IEEE Press, 1995.

21. On tutor training for Computer Science. Strooper P., Bakker P., Carrington D., Creasy P., Goodchild A., MacColl I., and Purchase H.C. Setting Up a Tutor Training Programme in Computer Science. *Proceedings of the First Australian Conference on Computer Science Education.* pp254-259, ACM Press, 1996.

22. On teaching object-oriented programming to high school students. Hussey A, Leadbetter D, and Purchase H. Learning Object-Oriented Programming in Six hours: an experience with school students. *Proceedings of the Second Australasian Conference on Computer Science Education*, Pp117-125, (ed: Hurst J.). ACM Press, July 1997.

23. On fostering interest in information technology for pre-university students. Purchase H.C., Hussey A., Brookes W, and Leadbetter D. Fostering interest in Information Technology: running a vacation school for pre-university students. *Proceedings of the Second Australasian Conference on Computer Science Education*, Pp126-134, (ed: Hurst J.). ACM Press, July 1997.

I have recently submitted a paper to the Journal of Assessment and Evaluation in Higher Education on peer assessment, entitled "Learning about Interface Design through Peer Assessment." I intend to publish results of my research in the Graduate Certificate of Education. In that project, I investigated methods of fostering a comparative view of solutions to problems in computer science and discovered that most students were willing to consider the possibility of multiple solutions, although their concern for assessment made many of them uncomfortable about the idea. I concluded that if I wished to foster a multiple solutions perspective, then my assessment practices needed to reflect this emphasis.

One of the most exciting aspects of my role as university lecturer is the challenge to improve. I welcome opportunities to take on board and to contribute to, current educational research. Providing a quality learning experience for my students is a high priority, and I am looking forward to furthering my educational knowledge to ensure that I do my best to achieve this goal.

**Curriculum Vitae**

**Employment Details**

    Lecturer level C, initial appointment: 31.08.92, promotion to current level: 01.01.99

**Qualifications**

| | | |
|---|---|---|
| 1998 | Graduate Certificate in Education (Higher Education) | University of Queensland |
| 1992 | PhD | Cambridge University |
| 1997 | BSc(Hons) | Rhodes University |

**Teaching responsibilities at The University of Queensland**

    1993-9 CS343 Human-Computer Interaction (full responsibility). Typical class: 120.

    1993-9 CS346 Principles of Artificial Intelligence (full responsibility). Typical class: 110.

    1996-9 CS493 Advanced Human Computer Interaction (part responsibility). Typical class: 15.

    1993-6 CS395 Supervision of undergraduate industry projects, typically 2 or 3 in a year.

    1998-9 CS387 Information Management projects (full responsibility). Typical class size: 10.

    1994-9 Supervision of honours and masters coursework projects, typically 2 or 3 in a year.

    1995-9 Supervision of two PhD students.

**Other responsibilities and activities at The University of Queensland**

**Research:** My two main research themes are within the area of Human-Computer Interaction. Firstly, I consider whether making the structure of information explicit in a graphical manner assists with comprehension and use of the subject matter. This is important for effective user interface design for manipulating large or complex bodies of information. My empirical work on the effectiveness of graph structure presentation is the first of its kind, and provides an important human perspective in a field that typically takes a computational approach. I am extending this work to consider application areas such as software engineering and social networks. I have been awarded research grant funding, and have had refereed papers accepted for publication in international conferences and journals. Secondly, I investigate the variety of media available for presenting and structuring information, taking a theoretical approach to defining representational systems, and drawing on work done in semiotics. This has resulted in a comprehensive model of media types, each defined on the dimensions of sign, syntax and modality. I am currently complementing the theoretical research with experimental studies. Refereed papers arising from this work have been published in international conferences and journals

**Service**: My primary service activity is in the area of school liaison.

- I chair the committee which initiated and organises a three-day annual information technology vacation school for 60 school students (now in its sixth year). I am very committed to this school, and to its continued success. I believe that it plays an important role in exposing students to a range of information technology activities, and that it effects on students' tertiary education decisions.

- I arrange school visits, and co-ordinate seminars designed to encourage more female students to consider information technology as a career choice. I was departmental co-ordinator for 1999 UQ-Expo, and often serve as an adviser to potential students at university publicity events.

**A selection of significant publications of the past five years**

- Purchase H.C. Performance of Layout Algorithms: Comprehension, not Computation. *Journal of Visual Languages and Computing,* 9, pp647-657, 1998.

- Purchase H.C. Defining Multimedia. *IEEE Multimedia*, pp8-15, Spring 1998.

- Purchase H.C. The Effects of Graph Layout. *Proceedings of the OzCHI Conference* 1998, pp80-86, IEEE Computer Society, 1998.

- Purchase H.C., Cohen R.F., and James M. An Experimental Study of the Basis for Graph Drawing Algorithms. *ACM Journal of Experimental Algorithmics*, 2(4), 1997.

- Purchase H.C. Which aesthetic has the greatest effect on human understanding? *Proceedings of Graph Drawing Symposium* 1997, pp248-261, (ed: DiBattista G). Springer-Verlag, 1997.

- Purchase H.C. Multimedia Communication and Technology: a Semiotic Perspective. *Design of Computing Systems, vol. 2,* pp687-690, (ed: Smith M, Salvendy G, Koubek R.) Elsevier, 1997.

- Purchase H.C. and Kennish J.M. Gloss: interactive navigation of lexical space. *Proceedings of the Asia-Pacific conference on Human Computer Interaction,* pp445-454, (ed: Yong L.K., Herman L., Leung Y.K., and Moyes J.). National Computer Board of Singapore, June 1996.

- Purchase H.C., Cohen R.F., and James M. Validating Graph Drawing Aesthetics. *Proceedings of Graph Drawing Symposium 1995*, pp435-446, (ed: Brandenburg F.) Springer-Verlag, 1996.

- Purchase H.C. Interactive schematic representation systems and related research issues. *Proceedings of the International Conference on Computers in Education*, pp416-423, (ed: Jonassen D. and McCalla G.) Association for the Advancement of Computers in Education, 1995.

- Purchase H.C. Computers as interactive representational devices for declarative domains. *Proceedings of the World conference on Educational Multimedia and Hypermedia*, pp462-467, (ed: Ottman T. and Tomek I.). Association for the Advancement of Computers in Education,1994.

**List of supporting documentation**

- Subject profiles, assignments, tutorials, lists of expected outcomes. annotated tutorial solutions.
- CS343 webpage: http: //www.csee.uq.edu.au/~cs343/home.html
- CS346 webpage: http: //www.csee.uq.edu.au/~cs346/home.html
- CS387 webpage: http: //www.csee.uq.edu.au/~cs387/home.html
- TEVAL student evaluation forms from 1993/2 to 1999/1
- Unsolicited letters from individual students expressing appreciation of my educational practices.
- Honours and undergraduate project reports.
- Four educational research papers.
- Research project report for the Graduate Certificate in Education, entitled "Fostering a 'multiple solutions' view of problem solving in Computer Science."

**Nominated referees**

Dr. David Carrington, Department of Computer Science and Electrical Engineering

Mr. Jay Burmeister, Department of Computer Science and Electrical Engineering