



UNIVERSITY  
OF WOLLONGONG  
AUSTRALIA

University of Wollongong  
Research Online

---

Deputy Vice-Chancellor (Academic) - Papers

Deputy Vice-Chancellor (Academic)

---

2001

# Use of Quality Teaching and Learning Circles in Engineering

Alisa Percy

*University of Wollongong, [alisa@uow.edu.au](mailto:alisa@uow.edu.au)*

Wilma Vialle

*University of Wollongong, [wvialle@uow.edu.au](mailto:wvialle@uow.edu.au)*

Fazel Naghdy

*University of Wollongong, [fazel@uow.edu.au](mailto:fazel@uow.edu.au)*

Denis Montgomery

*University of Wollongong, [denis@uow.edu.au](mailto:denis@uow.edu.au)*

Gerry Turcotte

*University of Wollongong, [Gerry.Turcotte@stmu.ca](mailto:Gerry.Turcotte@stmu.ca)*

---

## Publication Details

Percy, A., Vialle, W., Naghdy, F., Montgomery, D. & Turcotte, G. (2001). Enhancing Engineering courses through Quality Teaching and Learning Circles. In Proceedings of the Australian Association for Engineering Education 12th Annual Conference. (pp391-396). Brisbane, QLD: QUT.

Research Online is the open access institutional repository for the University of Wollongong. For further information contact the UOW Library:  
[research-pubs@uow.edu.au](mailto:research-pubs@uow.edu.au)

---

# Use of Quality Teaching and Learning Circles in Engineering

## **Abstract**

The commercialisation of higher education, an increasingly diverse student population, the emphasis on educational technology and flexible delivery, the need to be internationally competitive and the increased regulation on quality standards, just to name a few factors, has seen a rapid transformation of the university system and the demands placed on the staff therein. Assisting staff to cope with such changes and providing them with the necessary skills to effectively contribute to the needs or goals of the institution requires sophisticated methods of professional development. This paper introduces one such method that is being implemented at the University of Wollongong. This method involves the creation of Quality Teaching and Learning Circles (QTLCs) to develop solutions for various teaching and learning issues. The QTLC extends beyond the normal 'teaching program team' to include an educational development and learning development lecturer, among others, to provide contextualised support and to link faculty initiatives to the policy and goals of the university. This method promotes reflective practice, cooperative learning and the ability to contribute to organisational learning, in effect establishing the conditions necessary for a leading learning organisation. The paper provides a rationale for the project, a description of a pilot QTLC in the Faculty of Engineering and a discussion on the issues and expected outcomes.

## **Disciplines**

Arts and Humanities | Social and Behavioral Sciences

## **Publication Details**

Percy, A., Vialle, W., Naghdy, F., Montgomery, D. & Turcotte, G. (2001). Enhancing Engineering courses through Quality Teaching and Learning Circles. In Proceedings of the Australian Association for Engineering Education 12th Annual Conference. (pp391-396). Brisbane, QLD: QUT.

## Use of Quality Teaching and Learning Circles in Engineering

**Alisa Percy**

*Learning Development, University of Wollongong*

**Wilma Vialle**

*Faculty of Education, University of Wollongong*

**Fazel Naghdy**

*School of Electrical, Computer and Telecommunications Engineering, University of Wollongong*

**Denis Montgomery**

*Faculty of Engineering, University of Wollongong*

**Gerry Turcotte**

*English Studies Program, University of Wollongong*

**ABSTRACT:** The commercialisation of higher education, an increasingly diverse student population, the emphasis on educational technology and flexible delivery, the need to be internationally competitive and the increased regulation on quality standards, just to name a few factors, has seen a rapid transformation of the university system and the demands placed on the staff therein. Assisting staff to cope with such changes and providing them with the necessary skills to effectively contribute to the needs or goals of the institution requires sophisticated methods of professional development. This paper introduces one such method that is being implemented at the University of Wollongong. This method involves the creation of Quality Teaching and Learning Circles (QTLCs) to develop solutions for various teaching and learning issues. The QTLC extends beyond the normal 'teaching program team' to include an educational development and learning development lecturer, among others, to provide contextualised support and to link faculty initiatives to the policy and goals of the university. This method promotes reflective practice, cooperative learning and the ability to contribute to organisational learning, in effect establishing the conditions necessary for a leading learning organisation. The paper provides a rationale for the project, a description of a pilot QTLC in the Faculty of Engineering and a discussion on the issues and expected outcomes.

### INTRODUCTION

In the current economic and educational climate, universities are undergoing a major transformation driven by the commercialisation of higher education. Diminishing government funding, increased regulations on quality, an emphasis on educational teaching technology and increasing student diversity are having profound effects on all areas of university education, none more concerning than the pressure being placed

on human resources, particularly the academic staff. As universities become increasingly corporatised, and their programs viewed as marketable commodities, academic staff are required to make unprecedented shifts in the way they conceptualise their roles and accordingly, their practice as educators. Coping with, and surviving this transformation, means rethinking and reskilling on an ongoing basis: those who cling to tradition may find their own viability threatened.

Percy, A., Vialle, W., Naghdy, F., Montgomery, D. & Turcotte, G. (2001). Enhancing Engineering courses through Quality Teaching and Learning Circles. In *Proceedings of the Australian Association for Engineering Education 12th Annual Conference*. (pp.391-396). Brisbane, QLD: QUT.

Part of the transformation for many universities has been the development of extensive Strategic Plans and policy statements that claim, or at least aspire to, excellence in all areas of academic work. While such aspirations are admirable, the effective translation of such policies into practice has been less so. Universities claiming to show leadership in teaching and research should also show leadership in their approach to supporting their staff in achieving such aspirations. This paper argues that what is required is a systemic approach to professional development that provides contextualised, integrated and individualised support; further, it should be an approach that rewards staff for such reskilling and provides the means for continuous and organisational learning. These latter features are crucial for the university to become a 'learning organisation'.

This paper outlines an attempt to implement such a method of professional development at the University of Wollongong in the form of a pilot Quality Teaching and Learning Circle in the Faculty of Engineering. The paper begins with the rationale for implementing such a project, it describes the method and aims of the initiative, outlines the pilot study, and discusses the issues in relation to the implementation phase.

## **RATIONALE**

The commercialisation of higher education and the need for universities to exhibit leadership in all areas of academic work means that increasingly staff are called upon to contribute to the organisation's goals. This is in contrast to traditional academia where academics had greater autonomy and the right to independence from the organisation's corporate goals.

One aspect of academic work that has been under increasing scrutiny and regulation is the area of teaching and learning. Universities face a major challenge in shifting the culture from a teacher-centred, content-focused paradigm using traditional modes of delivery to one which is student-centred, provides students with life-long learning skills and is delivered flexibly [1,2]. This is no easy task in centres for higher education

where research has traditionally been valued and rewarded over teaching, and where, in the current economic climate, funding generally is at a minimum. It is no surprise, then, that leading universities are exploring innovative and efficient approaches to professional development that will have profound effects on the culture of the institution and result in deep qualitative change not only in teaching practice, but also in the culture of departments and faculties.

Current literature dealing with professional development in higher education acknowledges the complexity of facilitating such change in the present context where extensive and conflicting pressures to perform on all levels as an academic are taking their toll on motivation and morale. The major concepts that underpin what are regarded as effective approaches to professional development, however, are identified as thus: they need to be holistic [2,3]; they need to be contextualised, faculty-integrated [2,3,4]; they need to have full support, encouragement and participation from the top down [2,3,5,6]; they need to be proactive as well as reactive, and strategic in the name of efficiency [3,5,7,8,9,10]; they must provide an environment that is supportive, motivating and empowering to the academic staff members [4,7,11]; they should provide the opportunity for self-reflection and collective review [9,10,12,13,14]; and, they should provide the opportunity for staff to share knowledge and experience, to learn from each other and contribute to organisational learning [5,7,9,10,12,13].

It has been argued that professional development is near impossible to achieve only as a 'top down' policy directive; it is important that academics feel ownership over the process [9]. This is essential for real and lasting change to occur. It is also important for them to make a concerted commitment to the goals of the organisation.

Additionally, there have been continued calls for universities to establish themselves as effective 'learning organisations' [3,15]. Candy [3] argued for educational and learning developers to jointly propose professional development practices that promoted the university as a learning community or learning organisation. His concern was the

Percy, A., Vialle, W., Naghdy, F., Montgomery, D. & Turcotte, G. (2001). Enhancing Engineering courses through Quality Teaching and Learning Circles. In *Proceedings of the Australian Association for Engineering Education 12th Annual Conference*. (pp.391-396). Brisbane, QLD: QUT.

“knowledge obsolescence of 5 years” (p.20), and the need for both staff and students to develop lifelong learning practices in order to keep abreast of continual changes in knowledge and practice.

According to Pennington [cited in 12] a learning organisation “improves its performance through education and training, creates opportunities and encourages all its people to fulfil their human potential and shares its visions with its members, encourages them to challenge it, to change it and to contribute to it”. While this vision in itself would require a culture shift in the thinking and practice of many academic staff—for example, with cooperative learning as opposed to complete autonomy and isolation—it is becoming increasingly appropriate in order to meet both the needs of staff who are faced with constant change and demands for self-renewal [12,14].

It is also crucial for the organisation to achieve its goals. The university has little chance of effectively implementing policy at the grassroots level if it does not foster learning communities that contribute to organisational learning. "Organisational learning requires a community that enhances research, capacity-building and practice", one which "integrates knowledge rather than fragments it" [16, p.5].

The Quality Teaching and Learning Circle (QTLC), as proposed in this project aims to provide a method for achieving cooperative learning, and establishing the means for the university to become a ‘learning organisation’. The QTLC is a proactive, responsive, collaborative, supportive and empowering method that has the potential to result in substantive shifts in the practice and culture of departments and the morale and ongoing achievements of participants.

## **THE PROJECT**

The project to establish Quality Teaching and Learning Circles was initiated by the authors, a cross-disciplinary team of five academics, while undergoing a Leadership Development Program; this program is an example of the use of cooperative learning already being used as a method of staff development at the University of

Wollongong. Our task was to consider the issue of “Leading for quality teaching and learning”. The problem statement we were asked to investigate was that despite excellent policies, many subjects still had a poor reputation for the quality of teaching therein. We were given three days to discuss the issues and come up with various recommendations for the university executive. The following section provides our analysis of the problem and our recommendation.

## **THE ANALYSIS**

At most universities, including our own, despite the existence of excellent policies, strategies and committees intended to encourage quality teaching and learning, some subjects still have a very poor reputation for the quality of teaching they contain. Many staff, often with extensive experience in teaching, shift the blame for poor teaching and learning outcomes onto their students. They maintain that students are frequently ill-prepared for university education and/or lack motivation. Whilst students bear some responsibility for the quality of the educational experience, it is also important to acknowledge that there is often a reluctance, by many staff, to look to their own teaching methodologies, or to (re)visit the extensive teaching guidelines and policies that the university has developed, and to use these to improve their teaching practice.

It is possible, by working through the University of Wollongong Learning and Teaching Strategic Plan, 1997 – 2005, to identify a number of reasons for this possible breakdown between guidelines and implementation. First, while there are many excellent models of teaching across campus, the majority of academics, departments and faculties are working in isolation and do not reap the benefit of learning from each other.

It is also possible to identify the following shortcomings:

1. There is limited knowledge and understanding of existing policies on quality teaching and learning by the wider academic community;
2. There is no consistent, systematic, and obvious method for translating the

Percy, A., Vialle, W., Naghdy, F., Montgomery, D. & Turcotte, G. (2001). Enhancing Engineering courses through Quality Teaching and Learning Circles. In *Proceedings of the Australian Association for Engineering Education 12th Annual Conference*. (pp.391-396). Brisbane, QLD: QUT.

existing guidelines into quality teaching at the grassroots level;

3. The lack of awareness in some faculties of the range of services provided by Academic Services Division (Educational and Learning Developers) has been a barrier to the effective use of those services for achieving quality teaching;
4. There are still lingering doubts for many academics about whether or not teaching is valued by the University and a suspicion (which is not supported by the data) that Promotions committees do not value teaching excellence as highly as research excellence;
5. Despite extensive policies on teaching, there are still uncertainties on how subject outlines and other quality measures are actually implemented in the classroom.

A review of the current situation reveals that:

- a. A cooperative, supportive and motivating environment is needed to heighten the awareness of staff of quality teaching and associated guidelines;
- b. An environment in which staff will appreciate the meaning and implications of quality teaching should be fostered;
- c. It should be ensured that staff have a sense of ownership of the quality teaching process;
- d. A framework that provides a systematic and non-threatening approach for peer-review is needed.

## **QUALITY TEACHING AND LEARNING CIRCLES (QTLCs)**

In response to the above analysis, and as part of a Leadership Program within which our team was posed this problem, our recommendation was to establish Quality Teaching and Learning Circles (QTLCs). The QTLC is a group of academic staff (5–10 people) supported by their Faculty Education Committee (FEC) and by Academic Services Division (ASD).

The number of QTLCs in a faculty would vary according to the size of the faculty, the number of degrees offered, the number of different programs

and disciplines and other factors. A QTLC could come into existence dynamically in response to a particular need and dissolve when that need was met. On the other hand, a QTLC might last for a longer period and systematically follow a strategic plan of development and implementation.

The composition of a QTLC may include:

- Subject coordinators and lecturers in a particular discipline, program, or interest group;
- Program/discipline coordinator;
- Learning Development lecturer; and,
- Educational Development lecturer

### **The Aim**

The primary aim of the project is to develop and implement a systemic professional development framework that involves the active participation of academic staff in translating procedures and guidelines on quality teaching and learning into action.

### **Issues and concerns**

Considering the nature and complexity of academic work in the current climate, and the demands placed on staff with regard to workload, the greatest challenge will be maintaining the interest and commitment of both the LDP group and QTLC members throughout the year. When the pressure is on and workloads are on the rise, the first thing that is sacrificed is reflection on practice [17].

### **Expected outcomes**

The outcomes of the project will include

- (a) A better understanding and appreciation of policies and guidelines on quality teaching by the academic staff;
- (b) Creation of a more supportive and encouraging environment for innovation in teaching;
- (c) Implementation of mentoring and peer review schemes in a non-competitive and supportive environment;

Percy, A., Vialle, W., Naghdy, F., Montgomery, D. & Turcotte, G. (2001). Enhancing Engineering courses through Quality Teaching and Learning Circles. In *Proceedings of the Australian Association for Engineering Education 12th Annual Conference*. (pp.391-396). Brisbane, QLD: QUT.

- (d) Translation of policies on quality teaching into action;
- (e) Promotion of ongoing, systematic professional development initiated at the grassroots level; and,
- (f) Promotion of scholarship in teaching.

## **PILOT QTLC IN ENGINEERING**

The outcomes of the project are being achieved through the establishment of Quality Teaching and Learning Circles (QTLC). This provides a process whereby individuals interested in teaching improvements can work together to address quality teaching and learning issues within their faculty.

As part of this project, a pilot QTLC has been initiated in the Faculty of Engineering. The implementation of these QTLCs is being overseen by the authors, the QTLC Project Reference Group, who will closely work with the QTLC to develop a plan of action, both to achieve the project outcomes and to ensure that the developments are linked to, and help improve, the specific needs of the relevant stakeholders.

The participants in the engineering QTLC include lecturers and coordinators of mechanics, structures and associated design subjects. In total, some fifteen subjects across the undergraduate and postgraduate (coursework) mechanics, structures and design strand are encompassed within the QTLC.

The aim is to streamline the subjects and make the strand more efficient with improved teaching and learning outcomes by reviewing the content, sequencing and presentation of subjects to ensure adequate and appropriate articulation of skills, knowledge and methodology applied.

It is anticipated that the QTLC will review the content and sequencing of each subject in the strand, along with the skills, knowledge and methodology taught. More broadly, the group

members will discuss teaching and learning issues and share their collective knowledge and expertise. Finally, they are expected to review teaching methods and student learning processes in the teaching of engineering at undergraduate level.

Normally the lecturers and coordinators will meet as a group monthly to develop a map of the strand, the skills, knowledge and applications taught in each subject, and the students' pathways through the strand. The participants will review the content and sequencing of the subjects as well as discuss teaching and learning issues that arise. As a group, they will then develop strategic solutions to the teaching, learning and related issues that are shared with the entire group. Finally, the QTLC will need to make visible the achievements of the group to the faculty and to the wider spectrum of Engineering educators.

Anticipated outcomes include improved communication and interaction between staff members teaching within the same strand as well as improved content and sequencing of those subjects in the strand. Ultimately, this should lead to improved teaching and learning outcomes.

## **CONCLUSIONS**

The QTLC is one model to promote quality teaching and learning in the tertiary sector that has reportedly attained success at other institutions. While the pilot described above has a specific purpose for its formation, it depends on the development of collegial relationships among academic staff to attain those outcomes.

It is anticipated that as the QTLC Project Reference Group monitors, evaluates and disseminates the findings arising from the pilot study, the QTLC model may become an important means by which the academic staff at the University of Wollongong can attain the quality of teaching that is central to its mission.

## **REFERENCES**

1. Barr, R.B. and Tagg, J., "From Teaching to Learning – A New Paradigm for

Percy, A., Vialle, W., Naghdy, F., Montgomery, D. & Turcotte, G. (2001). Enhancing Engineering courses through Quality Teaching and Learning Circles. In *Proceedings of the Australian Association for Engineering Education 12th Annual Conference*. (pp.391-396). Brisbane, QLD: QUT.

- Undergraduate Education" *Change* 27, 6, 13-24 (1995).
2. Boud, D., "Situating academic development in professional work: Using peer learning", *International Journal for Academic Development*, 4 (1), 3-10 (2000).
  3. Candy, P.C., "Priorities for academic staff development in the nineties: A personal view", *The Australian Universities Review*, 38 (1), 16-20 (1995).
  4. Osborn, M. and Johnson, N., "Helping academics to help themselves: a work embedded approach to professional development", *Proc 1999 HERDSA Annual International Conference*, Melbourne, (1999). <http://www.herdsa.org.au/vic/cornerstones/pdf/Osborn.PDF>
  5. Bryant, M., Scoufis, M. and Cheers, M., "The transformation of higher education in Australia: university teaching is at a crossroads", *Proc 1999 HERDSA Annual International Conference*, Melbourne, (1999). <http://www.herdsa.org.au/vic/cornerstones/pdf/Bryant.PDF>
  6. Richardson, K. and Sylvester, G., "An integrated model for staff development", *Proc 1998 HERDSA Annual International Conference*, Auckland, (1998). <http://www.auckland.ac.nz/cpd/HERDSA/HTML/StaffDev/Sylvester.HTM>
  7. Adams, M., Marshall, S. and Cameron, A., "Strategic academic program development: Heads of Schools' perceptions of the role of professional development", *Proc 1999 HERDSA Annual International Conference*, Melbourne, (1999). <http://www.herdsa.org.au/vic/cornerstones/pdf/Adams.PDF>
  8. Leask, B., Medlin, J. and Feast, V., "Improving outcomes for graduates through multi-faceted reflective practice in staff development", *Proc 1999 HERDSA Annual International Conference*, Melbourne, (1999). <http://www.herdsa.org.au/vic/cornerstones/pdf/Leask.PDF>
  9. Macdonald, I., "The teaching community: recreating university teaching", *Proc 1999 HERDSA Annual International Conference*, Melbourne, (1999). <http://www.herdsa.org.au/vic/cornerstones/pdf/MacDonald.PDF>
  10. Schratz, M., "Crossing the Disciplinary Boundaries: professional development through action research in higher education", *Higher Education Research and Development*. 12 (2), 131-142 (1993).
  11. Ramsden, J., Margeto, D., Martin, E. and Clarke, S., *Recognising and Rewarding Good Teaching in Australian Higher Education*. Project commissioned by the Committee for the Advancement of University Teaching (CAUT), (1995).
  12. Candy, P.C., "Promoting lifelong learning: Academic developers and the university as a learning organisation", *International Journal for Academic Development*, 1 (1), 7-18 (1996).
  13. Smith, B., Scholten, I., Russell, A. and McCormack, P., "Integrating student assessment practices: the significance of collaborative partnerships for curriculum and professional development in a university department", *Higher Education Research and Development*, 16 (1), 69-85 (1997).
  14. Zuber-Skerritt, O., "Improving learning and teaching through action learning and action research", *Higher Education Research and Development*, 12 (1), 45-58 (1993).
  15. Senge, P.M., *The Fifth Discipline: The Art and Practice of the Learning Organisation*. USA, Doubleday, (1990).
  16. Senge, P. and Kim, D., "From fragmentation to integration: Building learning communities" *The Systems Thinker*, 8 (4), 1-6 (1997).
  17. Johnston, S., "Academics as Learning Professionals", *Proc 1998 HERDSA Annual International Conference*, Auckland, (1998). <http://www.auckland.ac.nz/cpd/HERDSA/HTML/StaffDev/Johnston.HTM>