OLT Citation for Outstanding Contributions to Student Learning

1. Citation

For sustained excellence in motivating, inspiring and influencing science students’ learning.

2. Summary of a particular contribution and its specific context

I have been an educator for over 20 years and during this time have embraced opportunities such as: completing a Graduate Certificate in Tertiary Teaching (2004); collaborating with and learning from colleagues who share my interest in student-centred learning; carrying out teaching and learning research in my discipline area of chemistry; accessing a range of professional development opportunities; and, most importantly, reflecting on and learning from my own experiences in the classroom. In recognition of the excellent results of my efforts I received an ECU Vice Chancellor’s Citation for Outstanding Contributions to Student Learning (2013).

I have a PhD in chemistry and am an active researcher in analytical chemistry and specifically separation science. I have educated postgraduate and honours students to a high level. One of my PhD graduates received the University Research Medal (2012). At Undergraduate level I have taught chemistry to all year levels. I combine my interest in student-centred learning and analytical chemistry research to lead scholarship (with publications) in effective laboratory learning. As a result, my students experience a high quality laboratory learning environment.

I have been the Course Coordinator for Chemistry for much of the last 15 years. In addition to the normal duties of a course coordinator I was also responsible for organising mandatory work placements for our students. These placements were invaluable in helping our students’ transition to the workplace.

I would really like to thank you for everything that you have done for me throughout the progress of my degree, you have been fantastic in offering me assistance and guidance whenever I sought it. You always gave 110%. I truly appreciate the time and effort.

2013 graduate (email).

In my role as First Year Coordinator in the School of Natural Sciences I provide leadership to ensure achievement of excellence in teaching practice. I lead staff in assessment improvement across first year units in our School. All our students now obtain early feedback on a low stakes assignment and students complete a range of assessment types to cater for different learning styles. The assignments for all four units in a semester are mapped out across the semester to help students manage their workload. I was innovative in my implementation of both the Post English Language Assessment and a Peer Mentoring Program. In recognition of my efforts I received the Faculty Executive Dean’s Award (2012) for improving the first year experience (FYE) of students in my School.

My teaching philosophy centres on students being engaged and active participants in their own learning. I achieve active participation in my analytical chemistry units by designing problem-oriented and industry-relevant activities which I believe motivate and inspire students to learn. I designed and deliver a School-wide skills-based unit that focuses on providing students with the skills to succeed at University. A weekly workshop replaces the traditional lecture and tutorial format to provide an active learning environment which fosters collaborative learning and empowers students to take responsibility for their own learning. In doing so, I am positively influencing and supporting student learning.
3. Statement addressing chosen selection criterion

My success in providing students with an engaged and active learning environment is reflected in the student evaluations of my teaching. I achieve overall satisfaction scores well above the Faculty and University average. The UTEI lecturer data for each semester for the last 8 years (there are no data for Semester 2, 2009 and 2014 as I was on study leave) demonstrate a sustained achievement. The data include units across all three undergraduate years.

![Figure 1 UTEI Overall satisfaction Score for Mary in her role as teacher compared to the Faculty average.](image)

Each year anonymous student feedback includes comments about how the learning environment I create inspires and motivates them to learn.

*Her experience and passion for analytical chemistry was really evident and made this unit a joy to be a part of. Her passion for the field definitely inspired my interest.*

*Mary’s boundless enthusiasm for whatever unit she’s teaching is inspirational and very motivating.*

*Mary is a wonderful lecturer, she's bright and full of energy and enthusiasm for chemistry so is very inspiring.*

*She provided a supportive environment where I felt comfortable to ask questions and confident that she would make her best efforts to help me understand.*

**Industry-relevant curriculum.** I engage with Industry to provide students with a curriculum that is relevant, innovative and current. For example, last year my third year students in SCC3201 *Analytical Chemistry* worked with truffle expert, Dr Malajczuk, to determine if variable carbohydrate content in truffles is a factor in truffle rot - a major issue affecting up to 70% of crop production in WA. In 2012 and 2013, my students worked with Brewer Mr Dunn (Degrees Brewery) to investigate factors influencing off-flavours in beer. Mr Dunn was “very impressed with the quality of the work produced by the students”. One of the students went on to complete his natural sciences research project with Mr Dunn on a related topic. Students respond positively to working with Industry; they invest time in questioning their methodology and interpreting their data as they sense the significance of contributing to a “real problem”. These authentic assignments also provide students with a great opportunity to demonstrate a depth of understanding of relevant issues when being interviewed by potential employers. One graduate, felt it was his ability to discuss in some detail the work he did with the Brewery that got him his current job (personal communication, 2013).

**Industry engagement.** In addition to organising Industry work placements for our students I also look for other industry opportunities for our students. One such opportunity was a WA Government’s Office of Science, Technology and Innovation initiative (2006-2008) which sought to promote partnerships
between Universities, Industry and graduating students. In partnership with The Wine & Truffle Company, an emerging and novel rural industry, I successfully guided third year students through the process of applying for these highly competitive Studentship Awards (SISA). Each year, I had a student work with me in the laboratory over the summer to provide solutions/information to the Wine & Truffle Company that would help them grow their business. One project, focusing on *Optimal Storage Conditions for the Transportation of Truffles to International Markets*, was so successful that the company funded a research project on the same topic, allowing the student to work part-time as a research assistant for six months.

*I feel that the SISA project was most helpful .... It transitioned me very rapidly from being a freshly graduated student into a candidate with experience in an industry based application that answered to a ‘client’ and stakeholders.*

*A reflection by a Studentship Award recipient*

**Problem-oriented approach.** In my second and third year chemistry units, I have developed a number of laboratory experiments that focus specifically on higher order learning skills. In the last 15 years, five have been published in the internationally renowned, peer reviewed *Journal of Chemical Education* published by the American Chemical Society [1-5]. Feedback, from international peers, has been complimentary. One reviewer for one of my early articles wrote “*I look forward to trying this lab with students next spring*” [3]. On publishing the journal article *Student learning and evaluation in analytical chemistry using a problem-oriented approach and portfolio assessment*, Professor Paulson emailed the following message.

*Mary I enjoyed your article on “Student Learning and Evaluation in Analytical Chemistry . . . .” in the December 2008 issue of J. Chem Educ...... I was particularly interested in the techniques you used in the analytical laboratory. I have not had much success in getting my colleagues to go the active learning route in lab classes. I have a question which I know my colleagues will ask when I show them your article. Have you had experience with multiple offerings of this lab class?*

Professor Paulson, California State University, Los Angeles

This same laboratory activity was presented at the *Australian Chemistry Enhanced Laboratory Learning (ACELL)*, a 3 day national conference held in Sydney (2006). Chemistry academics from 27 Australian and New Zealand universities submitted examples of best practice in student laboratory learning. The experiments presented were then evaluated by the delegates (academics and UG students from the participating universities). Over 80% of the delegates who evaluated my contribution *‘strongly agreed’* that it would help students *develop their thinking skills, require them to participate as active learners, and provide students with opportunities to take responsibility for their own learning*. My activity was rated as an *‘outstanding’* learning experience by almost half of those who assessed it. My own students have also responded very positively to this problem-oriented style of learning.

*Mary really shook the unit up and lifted learning a notch by making us responsible for most of our own learning. I really liked this learning approach.*

**Influencing student learning.** I have a well-established and demonstrated track record in teaching and learning research. I was part of a research team that completed the 2007/2008 ALTC (now OLT) funded project *Diversity: A longitudinal study of how student diversity relates to resilience and successful progression in a new generation university*. Our results clearly indicated that strong personal goals, an inclusive learning environment (sense of belonging), support networks and help-seeking skills were important factors for successful students. Our findings were published [6] and presented at international, national and local conferences. We also disseminated our findings at ECU by presenting at a number of Teaching and Learning forums, producing information sheets for staff and participating in relevant working groups.
For 12 years I co-ran a successful skills module for our first year science students. In 2010, I was part of a working group that developed the FYE Implementation Plan. With intimate knowledge of the plan, an understanding of our student cohort (from the ALTC funded project), experience in running a skills module and a practitioner of student-centred activities in my own discipline, I was well placed to design a new skills unit, **SCI1125 Professional Science Essentials**. In preparing this unit I sought to provide a collaborative learning environment and to promote help-seeking skills. I collaborated with library staff and learning advisors in the development, scaffolding and integration of skills across the unit. The learning advisors and library staff continue to make a significant contribution to the delivery of the unit; they co-run workshops and provide assignment drop-in sessions for our students at critical times during the semester. Importantly, these key support staff have built relationships that make it easier for students to seek help. This is evident from the attendance at a drop-in session organised for students during a non-teaching week.

> It went really well! I was astounded to see the room practically full when I walked in and it stayed that way until I left. Most students were working on their posters and some asked for feedback on their summaries, too. I would strongly recommend a repeat next time the unit is run.

*Di Bunney, Learning advisor regarding an assignment drop in session (email)*

Students respond positively to our efforts to provide them with the skills necessary to succeed at university and to the help provided by support staff.

> I really enjoyed the opportunities to work as a team and to be assessed on more engaging tasks.

> The interactive learning, with hands on tasks made the unit more interesting as it involved interaction and collaboration with others. The skills we learned were helpful for my other units.

> Great explanations on how we can improve our writing abilities with lots of staff coming in to help.

### 4. Concluding statement

I believe my application supports my claim of providing students with an engaged learning environment that promotes active participation and responsibility for their learning. My claim is backed up by high student satisfaction rates and positive feedback from students. My teaching approach, curriculum development and resources are recognised by my peers, nationally and internationally. In providing students with a rich learning environment where students are active participants in their own learning, I inspire motivate and influence their learning.

### References:


