Citation for Outstanding Contribution to Student Learning 2008: Dr D'Arcy Mullamphy (JCU)

For dispelling the fear of mathematics through respect for the learning of individuals

Overview of contribution and relevance

Over the past decade I have taught a preparatory mathematics subject to students who do not have a background in mathematics. These students have a profound fear of mathematics and are required to complete this course as part of their degree. This fear of mathematics gives many students a feeling of inadequacy and severely hinders their ability to learn. The poor self esteem felt by these students not only affects their performance in their mathematics course but has profound effects on their overall university experience. I have developed approaches to teaching which have been extremely well received by my students, my peers and have been recognized as outstanding by the Faculty. As many students enter preparatory mathematics with strong reservations about mathematics, I feel that it is just as important to instil a feeling of confidence and self belief about mathematics as it is to improve basic mathematical abilities.

Regional universities serve the needs of a distinctive student demographic with diverse academic histories and backgrounds (rural, mature age, indigenous backgrounds and first time participants in the tertiary education sector). As universities accept students from such varied backgrounds we must be prepared to adapt our courses and teaching styles to match the constantly changing student intake. This is particularly relevant to preparatory mathematics whose cohort of students come from varied mathematical backgrounds. JCU identifies the importance of increasing tertiary participation rates and preparatory mathematics is important in this, as it is vital in supplying the basic mathematical skills needed for numerous degrees across the university. The problem with providing these basic skills also occurs at a national level, where the ability of students entering first year universities has decreased significantly over the past decade. This problem has generated significant discussion on strategies to handle the increasing "gap"

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It is his enthusiasm for his teaching and a genuine interest in the success of his students that
promotes the required environment and motivation for the students. (Peer review: Dr Ronald White, Senior lecturer, MPlT)

Creating a Safe learning Environment:

Many students entering Preparatory Mathematics have been told all their lives that they are no good at mathematics. They ofien have low self esteem as their problems with mathematics make them feel inadequate. In order to begin to learn, the students must feel that they are in a safe learning environment where they can ask questions without the fear of being ridiculed. This is particularly important in this subject as many students are embarrassed by their maths fears and will hide their work rather than allow the lecturer to see that they have made a mistake. Hence the priority must be to get the students to a point where they feel it is safe to try to attempt their maths, as it is often by making mistakes that they truly learn. I make it clear that almost all people are capable of becoming proficient at mathematics and I continually stress that there is no such thing as a "silly question". It is this building of trnst between the lecturer and the students that is vital in creating a good learning environment. Over all student evaluations conducted, 54 % of the students responded that my "interest in assisting students to learn" was outstanding. Furthermore, 70% of students responded that "the teacher's attitude" was outstandig.

The first step in fostering independence is to give the students confidence, and D 'Arcy 's methods in
giving feedback certainly foster this. (Peer review: Dr Shaun Belward, Senior Lecturer)
Always apleasure to come to class. Always a happy, easy working learning environment. He made itfin to learn and easy to attend maths. (2007)
Excellent delivery of context in a manner that removed much of the anxiety associated with the
study of mathematics. Ifonly more mathematics teachers adopted the same approach. I hope to use many ofD'Arcy 's techniques when I end up teaching. (2006)
I had a terrible fear of mathematics when I enrolled, as an elective. I now do not have that fear any more. My lecturer understood m142 -1.096 Td Tc 11.3q

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There is also further excellent student survey evidence dating back to 1999 which is too large to incorporate in this document. There are an enormous number of very positive student comments over the last decade and of the 80 responses on the most recent student evaluation, over 93% of the comments are favourable. The comments included in this application are typical of the vast majority of student comments I have received.

The lecturer made it a joy to learn, coming from someone who has always hated maths. (2004)
Ijust want to say thanks heaps. I never thought I would look at a math book and understand what
I'm looking at. Math isn't as bad as I thought it was. (2008)

Contribution to student learning (Criterion 4)

I have taught all or part of Preparatory Mathematics over the last decade, and over this period student numbers have risen from 35 students in 1996 to over 300 students in 2004. This statistic is very pleasing as mathematics is now being seen as a viable alternative to students who previously never consider mathematics as part of their degree. Although this rise in numbers cannot be fully attributed to quality teaching I do believe that the quality of my teaching played a significant part in improved student enrolments and retention.

The students who have progressed from preparatory mathematics into first year statistics in the following

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the inclusion of local topics to be very successful in relating to the students. I also find that the inclusion of examples involving finances is well received by the large cohort of mature age students in the class, as they see the direct relevance of mathematics to their own lives.

D'Arcy is an extraordinary lecturer who understands and reads the class capability very well. Exceptional in providing clear and concise material. His ability to simplify even the hardest areas
of the course shows how valuable his contribution to teaching is. (2007)
With his down to earth language he makes maths easy to understand. His explanations during
lectures were clear, concise, as well as entertaining. (2004)

I believe that student engagement is the primary reason for my success in teaching unmotivated students. I feel that the use of "theatre" in my lectures is very helpful in keeping a group of non-maths savvy students engaged and interested. This is very important to catch, and maintain, the attention of the students in order to keep them motivated. I genuinely love teaching mathematics and this is obvious to the students and seems to "rub off "on them. Over all student evaluations, 44% of the students responded that the teacher's ability to generate interest was "outstanding", which is a very good result in a class of students who predominantly hate mathematics.

His enerby motivates the students and his teaching ability keeps students motivated. (2005)
The lecturer's infectious enthusiasm for this subject made for an enjoyable andproductive learning experience. (2007)
Fantastic. The lecturer made a hard and quite boring subject into a challenging and exciting experience. (2001)
He ispatient and able to explain complex issues. I cannotpraise his teaching enough. (2007)
For you are the reason why people become such a success in their future careers. (2000)
The lecturer's enthusiasm and teaching style excited interest in a subject I had no interest in. Ifeel I understand the subject rather than just know it. (2007)

Contribution to student learning (Criterion I)

I have a genuine interest and enthusiasm for teaching and education and I am currently moving my main area of research from atomic physics into the field of mathematics education. I recently published an education paper in the ANZIAM journal discussing the perceived drop in mathematical abilities of first year university students, as well as being part of a small group who received a $30,000 internal grant to incorporate screencasting in their lectures. I have always received very high student evaluations, excellent student comments and have won the school teaching award on one of only three occasions it has been granted, as well as receiving four letters from the PVC of Science and Engineering for outstanding student survey responses. I am very actively involved with local high schools and have spoken at local high school maths conferences as well as organising JCU's contribution to these conferences. I initiated meetings between JCU mathematics, education staff and high school teachers in an effort to bridge the gap between secondary and tertiary mathematics. I am on the Queensland Association of Mathematics Teachers committee, the school teaching committee as well as working on teaching quality for the strategic plan for