Graduate Teaching Assistant Program: a pilot study in EAIT Faculty

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Structured abstract

BACKGROUND
In other countries, but not often in Australia, Teaching Assistants (TAs) shadow academics and assist with their teaching responsibilities (Castley, 2005). At The University of Queensland (UQ), postgraduate students were brought in at the project leader level in several first-year engineering courses in 2011. They took full responsibility for up to 100 students, including assessment and a weekly workshop, as well as managing and guiding small groups of less experienced tutors. The success of the venture prompted investigation into formal training of suitable postgraduate students as a way of producing skilled graduate teaching assistants (GTAs). An Engineering, Architecture and Information Technology (EAIT) Faculty-funded, six-month study allowed the development, implementation and evaluation of a pilot GTA Program for professional development of postgraduate students.

AIMS
The GTA Program aimed to provide informative, supportive and contextualised professional development for talented postgraduate students across the Schools of Engineering in order to: make better use of our postgraduates with an interest in T&L; encourage the next generation of excellent teachers; increase student engagement; and provide additional teaching support for academics.

THE PROGRAM
The core components of best-practice GTA programs formed the guiding principles. Potential candidates were nominated by academics and were required to be 'partnered' by a mentor from the same school. GTA Program participants were required to attend four compulsory workshops; complete a set of five online modules; observe and reflect upon three teaching sessions; attend professional development activities delivered to academics in the faculty; and receive mentorship. In order to be eligible, postgraduates must have completed a formal program of tutor training (such as Tutors@UQ), have access to a suitable T&L mentor and be actively tutoring. Of the more than 30 applicants, 17 were deemed eligible and were enrolled in the program which commenced in March, 2013.

EVALUATING THE PROGRAM
Keen interest was shown in the program by both postgraduates and academic mentors. Fifteen GTAs completed the program. Feedback has highlighted participant satisfaction with several program components, including lecture observations, exposure to active learning techniques, and facilitated interaction with colleagues. Access to the online program modules showed regular use (at least once per month) for the majority of participants, and all participants completed their activities. Several GTAs secured employment at higher salary level following completion of the Program. Challenges, including the constraints of time, the need for greater advance notice of workshops and a preference for more face-to-face components, were identified.

CONCLUSION
Results indicate support for a GTA Program in EAIT Faculty and strong participant satisfaction with the program. The program will be sustained into 2014, and postgraduate interest in that offering has already been shown.

KEYWORDS
Graduate Teaching Assistants, professional development, tutor training

Background

Australian universities in general appear to be overlooking an important resource that could be used to support busy academics in their teaching duties. In other countries, Teaching Assistants (TAs), most often postgraduate students, are used to shadow academics and assist with their teaching responsibilities (Castley, 2005). These duties may include tutoring, lecturing, lesson planning, marking, laboratory demonstration and discussion sessions (both face-to-face and online); more senior TAs may even take full responsibility for a course. Training for TAs varies considerably from one international institution to the next. At MIT, for example, the TA Program comprises a semester-long set of seven short workshops accompanied by pre-reading assignments and assessments whereas Purdue University formalises the process by offering a Graduate Teacher Certificate and an Advanced Graduate Teacher Certificate. Completing these certificates requires the TA to participate in workshops as well as undertake guided classroom teaching experiences.

Currently, Australia has not embraced the TA culture and very few universities offer a formal program for TAs. Monash University runs a program called TACT (Teaching Associates Conversational Thinking) to provide teaching preparation for sessional teaching associates; Australian National University runs a ten-module tutor training program for interested research students. The University of Western Australia offers training akin to MIT.

The TA program should not be confused with a tutor program that provides basic training of new tutors and is undertaken at most Australian universities. These training programs provide a very limited suite of topics and are intended only to prepare tutors for a rudimentary set of duties, such as leading demonstration sessions and marking of tutorial exercises. Tutors trained in this manner would not be properly prepared to assist academics with more sophisticated tasks, such as lecturing and online facilitation of discussions.

An emergent theme from the successful Teaching and Learning Development Program (TLDP) at The University of Queensland (UQ) (Kavanagh, O'Moore, Reidsema, Crosthwaite & Papinczak, 2012) was that of the untapped potential of postgraduates and postdocs with respect to teaching. An informal TA program had been running at UQ since 2011 when postgraduate students were brought in at the project leader level in several compulsory first-year engineering courses. They were employed, at higher salary than tutors, to take full responsibility for up to 100 students, including assessment, pastoral care, and a weekly project-based workshop, as well as managing and guiding small groups of less experienced tutors. These project leaders were found to be motivated to assist students, have the capacity to communicate with them in a highly effective and engaging manner, and were affordable to employ (in comparison to academics). The success of the venture prompted investigation into formal training for these project leaders and other suitable postgraduate students as a way of producing skilled and enthusiastic graduate teaching assistants (GTAs). As Goodlad (1997; p2) highlights, there is a need to provide "opportunities for preparation and professional development" to ensure that these 'advanced' tutors are adequately prepared.

A trial TA program was funded for 2013 to:
- provide teaching relief for academics who are trying to achieve research outputs in a research-intensive university;
- increase the number of teaching staff commensurate with the increasing student cohort size;
- plan for succession (Coates et al., 2009) – an investment in good academic practice is an investment in the "future community of the discipline" (Castley, 2005); and
- increase student engagement and the quality of student learning.

Aims

The GTA Program aimed to provide informative, supportive and contextualised professional development for suitable postgraduate students across the schools of engineering at UQ in order to:

- make better use of our postgraduates with an interest in teaching and learning (T&L);
- encourage the next generation of excellent teachers;
- increase student engagement; and
- support academics with respect to both the incorporation of best practice T&L and management of their time.

The research questions were:

1. Will the GTA Program meet the learning needs of participants?
2. Can the GTA Program be completed in six months?
3. Are GTAs able to secure T&L employment at higher salary and utilise their newly-acquired skills?
4. Can we recruit sufficient eligible PhD students with an interest in T&L to create a sustainable program?

The program

The core components of best-practice GTA programs (Amundsen & Wilson, 2012; Park, 2004; Takayama, 2009) formed the guiding principles. These were as follows:

1. The selection process for the program must be transparent and easily understood.
2. Training must revolve around evidence-based models for effective teaching practice to enable GTAs to understand the depth and breadth of their responsibilities and how to perform them, how to work in collaboration with academics and others, and how to take the initiative with teaching and enhance learning outcomes for the student.
3. Training should extend to managing ethical dilemmas, including a code of conduct, and how and where to seek advice on matters such as plagiarism, cheating, confidentiality, and navigation of the dual roles of peer and teacher.
4. An opportunity for mentoring by an experienced academic should be provided.
5. GTAs should be actively tutoring/ teaching during the professional development phase, and should be allowed to demonstrate what they can achieve.
6. A certificate or some other visible reward for completion of the GTA Program should be provided along with financial benefit in any subsequent teaching appointment.

In keeping with these components, potential candidates were nominated by academics and were required to be 'partnered' by a mentor from the same school of engineering. In addition, applicants were required to be PhD candidates or postdocs who had completed a formal program of tutor training (such as Tutors@UQ) and be actively tutoring or teaching.

Program participants were required to:

- attend three compulsory workshops hosted by the teaching team;
- complete five online modules which included relevant activities;
- observe and reflect on three teaching sessions delivered by academics across UQ;
- attend at least two professional development activities delivered to T&L academics in EAIT Faculty; and
- receive mentorship.

Materials were delivered in blended learning mode, with online modules accessible on the UQ Blackboard system as shown in Figure 1.
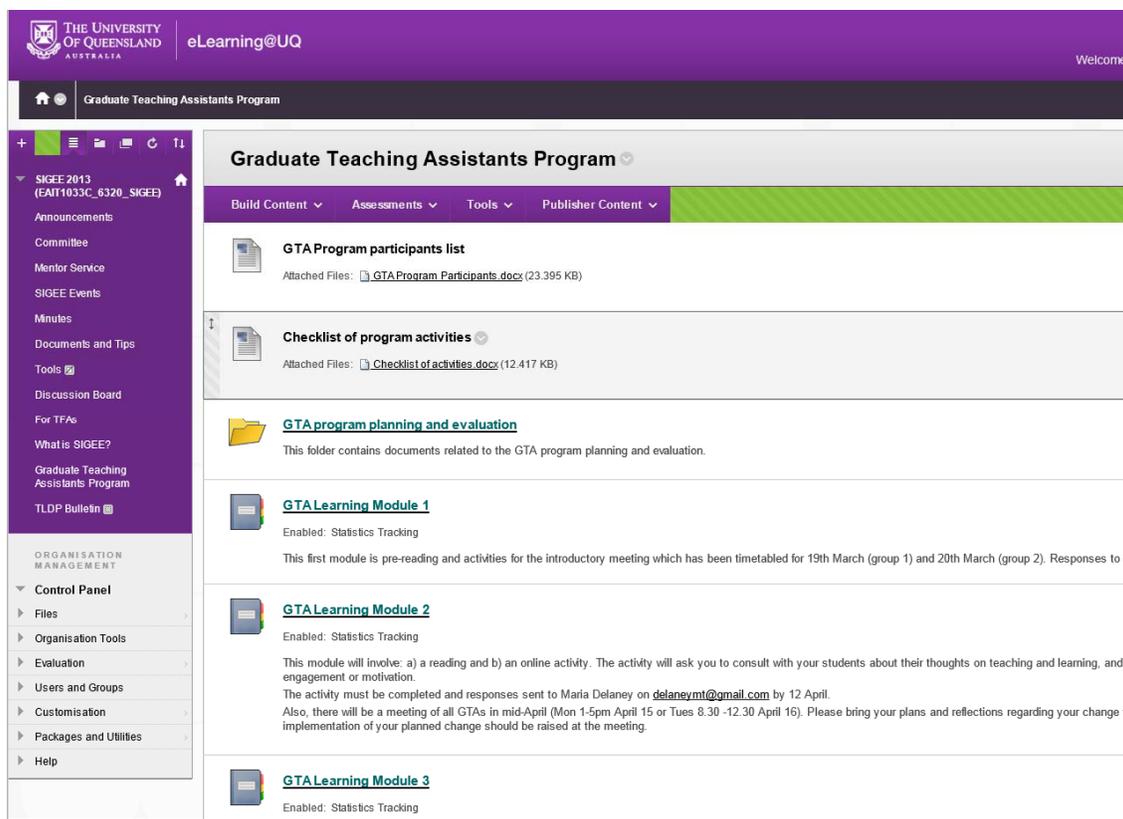
Figure 1: Screenshot of GTA Blackboard main page

Topics within the online modules and workshops aligned to the current research on professional development of early-career teaching staff (Korthagen, Loughran & Russell, 2006; Park, 2004; Takayama, 2009) and focused both on core teaching skills and domains shown to have the most impact on student learning and course satisfaction. Table 1 outlines the major aspects of each of the five GTA modules which were pulled together and adapted from a number of sources. The table gives an example reference for each activity but there are many more resources on the internet. In addition, a GTA Facebook site was also developed.

Upon completion of the GTA Program, participants had their Human Resources profile updated to record completion and their names and contact details were disseminated to all School T&L Chairs and relevant Course Coordinators to support their employment at a higher level.

Continuous evaluation of the GTA Program was undertaken as part of an action-research process. This included written feedback from workshops, email communication and anonymous online surveys.

Table 1: Overview of GTA modules 2013

Module	Readings	Example reference	Activities
At start	Checklist of program activities Outline of the GTA Program		Workshop: Introduction to the GTA Program
Module 1	1) UQ Code of Conduct	UQ Policies and Procedures	100 word reflection
	2) UQ Tutor Manual	www.tedi.uq.edu.au/docs/tutoring/tutor-training-manual.pdf	
	3) Getting started as a sessional teacher	www.flinders.edu.au/Teaching_and_Learning_Files/Documents/Tutorbooklet20Jan2013.pdf	
Module 2	1) Questioning techniques to improve learning/ engagement	www.pgcps.pg.k12.md.us/~elc/isquestiontopromote.html	Workshop: Engaging with students in the classroom Discussion with student(s) regarding good teaching: 200 word reflection
	2) Concept maps in engineering education	Freeman & Urbaczewski, 2001	
	3) Active learning	Felder, 1991	
	4) ABC of Engineering Education	www4.ncsu.edu/unity/lockers/users/f/felder/public/Papers/ASEE04(ABCs).pdf	
	5) Engage Engineering – lesson plans and tips for engineering educators	http://www.engageengineering.org/?page=40	
Module 3	1) Peer review	Brent & Felder, 2004	Observation/ review: 3 x teaching sessions Online quiz
	2) Student voice	Cook-Sather, 2002; 2013	
Module 4	1) Pedagogy	AISL, 2012	
	2) Teaching: diversity, marking and feedback, in the lab, large classes	FSU, 2004	
	3) Map of Meaning	www.holisticdevelopment.org.nz/	
	4) Mentoring	Henderson, 2010; Sorcinelli, 2007.	
Module 5	1) Motivating students	http://www4.ncsu.edu/unity/lockers/users/f/felder/public/RMF.html	Workshop: Basics of Teaching & Assessment Lesson plan (including presentation)
	2) PBL and CBL	http://www4.ncsu.edu/unity/lockers/users/f/felder/public/Papers/InductiveTeaching.pdf http://www.realworldengineering.org/	
	3) Group dynamics	Roberts & McInnerney, 2007	
	4) Final teaching tips from Richard Felder	Felder, 1992	

Participants were asked to feed-back on events and modules that they had just undertaken, and feed-forward on upcoming events and modules. These data were used to guide planning of upcoming modules and activities and will be used in the next offering of the program to improve learning. The feed-forward advice was particularly helpful in the development of topics (such as problem-based and case-based learning) in Module 5.

Evaluating the program

Participants

Keen interest was shown in the program by both postgraduates and academic mentors. Of the more than 30 applicants, 17 were deemed eligible and were enrolled in the program which commenced in March, 2013. Participants came from all schools of engineering; two participants withdrew from the program before completion as shown in Table 2. No attrition was observed for academic mentors. To date, several enquiries regarding the GTA Program for 2014 have been received.

Table 2: Participants in the GTA Program 2013

Engineering School	Number of participants	Attrition	Reason for attrition
Chemical	3	1	Extended absence overseas
Civil	4		
Electrical	8	1	Issues with PhD study
Mechanical and Mining	2		
Total	17	2	

Participation

All GTAs attended each workshop except for the final one where two were absent. Blackboard 'hits' for the online modules showed the majority of program participants used the site at least once per month (82% in the first three months , 80% for the final three months), with peaks in usage as activity due-dates approached. Activities were also monitored and the majority of GTAs submitted required activities within one week of the due date. Facebook participation was low and mainly consisted of the facilitators posting articles or questions to initiate some sort of discussion.

Outcomes

Of the 15 GTAs completing the program, 13 were available for employment in semester 2. Four were able to secure a salary increase due to their enhanced skills as a GTA.

Feedback

Participant feedback on the program at its mid-point highlighted satisfaction with several program components, including Module 3 Part 1 (lecture observations), Module 2 Part 3 (exposure to active learning techniques), and the mentoring which facilitated interaction with colleagues. Several respondents commented negatively on the time requirement which lead to modifications in the final three months of the program.

Table 3 presents the results of the online survey that students completed at the end of the program. All items rated above 3.6 out of 5. Two students did not feel that the program had met their expectations, one of whom was already working long hours and had family responsibilities. In a further question, the most useful resources, as rated by GTAs (on a scale of 'not useful at all' to 'key component of program') were information on questioning techniques, problem-based and case-based learning, lecturing and time management.

Table 3: Participant feedback on GTA Program

Survey item	Mean Rating (1 - 5)	Std Dev
The program was very good overall	4.3	0.7
I enjoyed taking part	3.7	1.2
I learnt valuable skills	4.1	0.7
I have gained important knowledge	4.3	0.4
The program met my expectations	3.9	0.5
I would recommend it to others	4.1	0.5

Note: 1= strongly disagree; 5 = strongly agree

Comments from participants

One participant indicated that a program like this would be beneficial for all teaching staff, as the program exposed them to literature and experiences that they otherwise would not have accessed.

Overall I think it is a good idea to train academic staff more … like this. I must say that I would never have looked at the resources given if I didn't attend the GTA program.

In general, GTAs perceived that the program was helpful, especially the lecture observations.

I learned good techniques from the three (peer observation) classes that I attended.

I think the most valuable experience was going in and really trying to identify what the lecturer was doing. You can really tell when the lecturer is trying to teach properly or not.

Support for more practical and face-to-face components was strong, with several comments focused on the need for more workshops to take the emphasis off the online materials.

More practical component in the future will be excellent.

I personally preferred to have more workshops as I believe a face to face communication is more useful than reading reports and articles.

Mixed responses were received for the mentoring component of the program. Some GTAs were very satisfied with their mentoring experience and were intending to model their teaching techniques on their mentor's approach (as below) whilst others found that their mentors demonstrated demands of being an academic by rarely being available.

My mentor has a unique style and I suppose I'm lucky to work with her. She can simply encourage the students to be involved during the session and it is what I would like to do when I become a lecturer.

Other GTAs sought their own mentoring with more senior tutors.

It was very helpful to talk with the senior tutor after each tutorial …(and discuss) what we each found worked in terms of supporting the students through completing their tasks.

Points for consideration

Difficulties were identified through the action-research process, such as time constraints for busy postgraduates, and the need for substantial advance notice of workshops and due dates for activities. Several participants felt that there was too much reading and 'homework' and that face-to-face workshops were more helpful in supporting their T&L development.

Conclusions

The strength of this research lies in its mixed methodology which allows triangulation of findings. Limitations include small sample size and the challenges associated with self-report surveys.

GTA Program participants showed robust overall satisfaction with the program as demonstrated by a rating of 4.3 out of a possible 5. Participant feedback, both in terms of quantitative results and qualitative comments, showed active engagement with program elements as partly evidenced by Blackboard hits, workshop attendance and open comments. This verifies the first research question.

Research Question 2 was supported as findings indicate that the GTA Program was manageable for most of the participants - 15 of 17 participants completed the program within the six-month time frame. Difficulties with time management were occasionally evident, particularly when PhD confirmation deadlines and GTA assessment due dates were in conflict, or when PhD travel commitments took candidates away from campus for extended periods of time. Despite efforts of the GTA Program team to accommodate such short-term commitment clashes, both students who withdrew from the program fell into these categories.

All GTA Program graduates were able to find employment as tutors if they wished, with several employed at higher salary due the skills and knowledge gained through participation in the program. This provides some evidence for research question 3. Support exists from both academics and candidates for an annual GTA Program in EAIT Faculty. With existing modules held in the online platform, ongoing preparatory work will be minimal. Interest from postgraduate students in the 2014 offering of the GTA Program, augurs well for the sustainability of this initiative. The Faculty has indicated that funding will continue at least until December 2016 which, in the current funding climate, is a clear indicator of the success of this T&L initiative.

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