



Project Title

Stimulating strategic teaching and learning initiatives through enhanced familiarity with undergraduate research and inquiry

\$ Amount Awarded

\$9,993

Brief Outline of the Project

The Aim of the project was to add value to the Priority Grant project: *The development of undergraduates' awareness of, and engagement in research* by extending staff and student engagement, disseminating across Macquarie and externally, findings of investigations into and critical reflections on best practices and identified challenges into 2013.

Overview

The project added value to work on undergraduate research and inquiry at Macquarie through:

- a. continued support for the Working Group on undergraduate research and inquiry through 2013
- b. a staff development program including:
 - i. a showcase of best practice one day event
 - ii. A national meeting of supervisors of undergraduate research
 - iii. Three workshops on various aspects of undergraduate research and inquiry
 - iv. An iLearn unit on undergraduate research
2. Support for the organisation of the first Australasian Conference on Undergraduate Research (ACUR) at Macquarie in September 2012.
3. Continued investigation of current perceptions and practice

Project Outcomes

1. Fuller engagement by teaching staff and students with the results of the Priority Grant project: *The development of undergraduates' awareness of, and engagement in research* beyond the period of that project.
2. Enhanced understanding of faculty academics of the ways in which undergraduate research and inquiry can contribute to Macquarie curriculum change initiatives, e.g. PACE, capstone units and graduate capabilities.
3. Research disseminated nationally in newspapers and newsletters and internationally through peer reviewed articles.
4. Initiation - with Macquarie University as coordinating institution – of an annual Australasian Undergraduate Research Conference.

Where will the project outcomes be documented (report to faculty or University Learning and Teaching Committee? journal publication? conference paper? Other?)

Dissemination has been through international journals, newsletters, and online, including

- a. Displays of undergraduate research across campus
- b. A video distributed widely across campus and online
- c. Articles, in international journals and conference presentations
- d. Articles, advertisements and features in newsletters and online
- e. Facebook and Twitter facilities on the Undergraduate Research website

The project has been discussed at various times in Faculty Teaching and Learning Committees, Senate Learning and Teaching Committee and in the Provost's Strategy Group.

What is the next step? Or, how may the outcomes of this project be replicated and good practice spread across the University? Is there an opportunity to apply for an OLT grant?

The Project team is completing its investigations of good practice and is continuing to work on papers for publication.

An OLT grant *Ensuring the sustainability of an annual international conference of Australasian undergraduate research* (SD13-3036) was successfully applied for in 2013. Work on this grant is continuing.

The Working Group has expressed a wish to continue to meet but currently there are no resources to support this.

Project Representatives

Name	Angela Brew
Signature	
Date	29 February 2014

Background

The project was designed to add value to the 2011 Priority Grant project through spreading its results more widely in a variety of formats and into 2013.

Dissemination through paper-based, online and face to face formats were designed to address both academics and students, locally at Macquarie, nationally and internationally.

The previous Priority Grant project:

1. Established a Working Group consisting of representatives of departments and units
2. Established a Steering Group which met monthly to plan priorities and the working group agenda.
3. Appointed an undergraduate scholar (Ademir Hajdarpasic) to undertake investigations.
4. Investigated undergraduates' awareness of research by interviewing 200 students and reported on this in the Steering and Working Groups.
5. Investigated the visibility of research and discussed this in the Steering and Working Groups.
6. Surveyed research experience program coordinators nationally.
7. Carried out interviews with students who have engaged in a research experience program.
8. Established a wiki for the use of the Working Group.
9. Publicized the project in the LTC Newsletter, in *Undergraduate Research News Australia*, and in a US Council on Undergraduate Research *Characteristics of Excellence in undergraduate research* document.
10. Planned a Conference of Undergraduate Research to coincide with Learning and Teaching Week and sent out a call for papers.
11. Arranged for the best papers at the undergraduate research conference to be published in *MQ Matrix*.
12. Obtained a monetary donation for a prize for the top paper at the conference.

This Competitive Grant project was designed to enable the work of the Working Group to be continued into 2013; to ensure the best possible use and widespread dissemination of information gathered during 2011 and 2012 both within Macquarie and outside it. It was designed to make a greater contribution than had previously been possible to the involvement of undergraduate students in demonstrating their work and capabilities in research thus facilitating the development of a community of undergraduate researchers. The project ran alongside the ISP Project *Creating a community of undergraduate research scholars* which has already been reported. An attempt has been made not to include outcomes of that project here, although some overlap is inevitable.

Strategies

Working Group

The Project provided face to face dissemination of Priority Grant findings through support for the continued meeting of the Working Group on undergraduate research and inquiry throughout 2013 to provide continued opportunities for reflection on practice and exchange of ideas. The Working Group met on four occasions in 2013. A summary of items discussed is given in Figure 1. It can be seen that the meetings provided a forum for sharing ideas, discussing and disseminating new initiatives and publications, meeting staff and students engaged in undergraduate research and providing advice to the project leaders.

<p>6th Working Group Meeting 19.03.13</p> <ol style="list-style-type: none"> 1. Progress Reports <ol style="list-style-type: none"> a. Introduction of Undergraduate Research Ambassadors and their projects b. ACUR 2013: Call for Reviewers c. Announce URNA 6 newsletter d. Call for Participation in Interviews in October (Project 4 and 5) e. LTC Workshops on Undergraduate Research –sign up f. UNITS (Macquarie’s online units depository) review report g. iLearn unit on “Undergraduate Research @ Macquarie” 2. Showcase of Engaging Practice in Undergraduate Research <ol style="list-style-type: none"> a. WG members: Showcase of best practice in UGR b. Ambassadors: Example of engaging research activity in coursework
<p>7th Working Group Meeting on 28.05.2013 - Agenda</p> <ol style="list-style-type: none"> 1. Progress Reports <ol style="list-style-type: none"> a. Introduction of UGR Ambassadors and their projects b. ACUR 2013: Call for Reviewers c. Announcements: URNA 6, Workshops, Interviews d. Introduce iLearn online unit on “Undergraduate Research @ Macquarie” 2. Sharing Practice in Undergraduate Research: <ol style="list-style-type: none"> a. Everyone is asked to share the best example they know of engaging students in research and inquiry in the curriculum. b. UNITS (Macquarie’s online units depository) review report
<p>8th Working Group Meeting on 28.09.13 – Agenda</p> <ol style="list-style-type: none"> 1. Progress Reports <ol style="list-style-type: none"> a. Feedback on ACUR 2013 b. MQ Matrix Special Issue, best paper publications from ACUR 2013 c. OLT Seed Project and ACUR 2014 d. ISP Student Projects e. other UGR programs (other departments) f. iLearn Unit on “Undergraduate Research @ Macquarie” g. Posters in Parliament – in the planning 2. Upcoming workshops <ol style="list-style-type: none"> a. Designing research-based learning units (1st October) b. Strategies for extending undergraduate research-based learning experiences (15th October) c. Supervising undergraduate research (5th November)
<p>9th Working Group Meeting on 28.11.13 – Agenda</p>

<ol style="list-style-type: none"> 1. Progress Reports <ol style="list-style-type: none"> a. MQ Matrix Special Issue b. Library Support on iLearn Unit “Undergraduate Research @ Macquarie” c. Undergraduate Research Newsletter Australia - URNA 7 d. OLT Seed Project, Posters in Parliament and ACUR 2014 e. Current initiatives: Students in ISP programs, Merit Scholarships f. New initiatives: Developing a culture of UG research in Egyptology, Dept of Ancient History (Dr Alexandra Woods) g. Interviews with academics about challenges and barriers
<ol style="list-style-type: none"> 2. Future of the Working Group

Figure 1. Items discussed in the Research-based learning working group.

Steering Group

Regular meetings of the Steering Group ensured that the project kept to time and task. The group was responsible for the overall project evaluation and for the Working Group agenda at its initial stage. It played an important role in decision making and setting up the First Australasian Conference on Undergraduate Research ACUR 2012. The Steering Group consisted of:

- Trudy Ambler (Faculty of Arts)
- Angela Brew (Project leader)
- Ademir Hajdarpasic (Undergraduate student)
- Lilia Mantai (Research Project Administrator)
- Mitch Parsell (Faculty of Human Sciences)

Staff development program

Showcase

A Showcase of good practice one day event was held on Friday 21st September 2012, 11.30am to 3.15pm. The Showcase aimed to demonstrate examples of good practice in how to actively engage undergraduate students in research. Macquarie academics from different departments were invited to share their experience of engaging students in research. It included the following presentations:

Prof Mike Neary, Teaching and Learning, University of Lincoln, UK:

Student as Producer- Reinventing the Undergraduate Curriculum

Aron Downie, Department of Chiropractics, Macquarie University:

Using social media to stimulate undergraduate interest in research

Dr Matt Bower, Department of Education, Macquarie University:

Using a technology mediated approach to develop Education Students' Research Capabilities

Dr Michaela Baker, Alison Beale, Laura Hammersley, Dr Kate Lloyd, Dr Anne-Louise Semple and Dr Karolyn White, PACE Units, Macquarie University:

The PACE Ethical Practice Module and the PACE Ethics Protocol

Dr Ayse Bilgin, A/Prof Peter Petocz and Students: Alexander Cantori, Daniele Capraro, James Freer, Gayle Frez, Hyun Ha Kim, Sen Lu; Department of Statistics, Macquarie University:

Students' perspective and experience of being a researcher

National Meeting

A national meeting of supervisors and academics supporting their students, was held at the ACUR Undergraduate research conference 2013 on 20th September. See: http://www.mq.edu.au/ltc/altc/ug_research/acur2013/presentations.htm

Workshops

At the request of the Undergraduate Research Working Group the following three workshops were presented and attended by approximately 30 people in total:

Designing research-based undergraduate units

In this workshop, participants had the opportunity to engage in a syndicate exercise designed to deal with the challenges of designing units which engage students in research and inquiry. In the workshop, resources were available to support a guided inquiry. The workshop was based on the framework for decision-making in respect of undergraduate research experiences (Brew, 2013).

Supervising undergraduate research

This workshop focused on the particular challenges of supervising students to ensure timely completion of useful projects. The workshop featured brief talks by Dr Kevin Brooks, (Department of Psychology) and Dr Aysa Bilgin (Department of Statistics) who each had considerable experience in supervising such projects. These were followed by discussion of issues and challenges.

Strategies for extending undergraduate research based learning experiences

In this workshop participants had the opportunity to consider how they can move towards excellence in providing undergraduate research experiences in faculties and departments. This workshop was based on the document *Characteristics of Excellence in Undergraduate Research* published by the US Council on Undergraduate Research.

iLearn Unit

A wiki was established for the Working Group in 2012. However, it was noted that it was not being used by members of the group. Therefore, in 2013, as part of this Competitive Grant project, an iLearn unit entitled: *Undergraduate Research at Macquarie* was created by Lilia Mantai to provide easy access to the undergraduate research resources available on the website. The iLearn Unit includes:
a news forum, a glossary of terms and sections on:

- Defining undergraduate research;
- student engagement;
- setting up an undergraduate research program;
- design of courses and curricula;
- assessing undergraduate research and inquiry;
- outcomes for students;
- ethics and undergraduate research ;
- involving students in research teams;

- disseminating undergraduate research ;
- practical resources for students and academics;
- disseminating undergraduate research;
- Macquarie library support for undergraduate research; and
- useful web links.

Registration details were circulated widely. Responses to the ilearn unit have generally been positive.

First Australasian Conference of Undergraduate Research (ACUR)

This Competitive Grant provided support for the organisation of the first Australasian Conference on Undergraduate Research (ACUR) at Macquarie University which was held on 20th September 2012 as part of Learning and Teaching Week and for the second ACUR conference held on 19th-20th September 2013. In each case the budget was supplemented with funding from Learning and Teaching Week resources. Each of these conferences has been reported separately. The undergraduate research website http://www.mq.edu.au/ltc/altc/ug_research/acur2012/index.htm contains the programs for the conferences and links to pictures, papers and other items of interest. An OLT Seed Grant was obtained to ensure that the conferences continue and a conference to be held at the ANU in September 2014 is already being organized.

Macquarie Matrix

The best papers at the conference in 2012 were edited to form a Special Issue of the undergraduate research journal *Macquarie Matrix* (Volume 2:2). This is available online at: <http://studentjournal.mq.edu.au/issue22.html>. Some of the best papers at the 2013 conference have been edited for another Special Issue which is still in production.

Sponsorship

Both ACUR conferences attracted sponsorship to provide prizes for the best papers and to support volunteers. In 2013, some \$7,000 in sponsorship was received.

Facebook and Twitter

Publicly available Facebook and Twitter accounts were added to the Undergraduate Research website. These provide facilities for widespread discussions and dissemination and have been heavily used during the run up to each conference. Twitter: <https://twitter.com/AacurAur>

Investigations of practice

Inquiry has been central to this Competitive Grant project and also to the Priority Grant project that preceded it. Investigations of perceptions and practice in regard to undergraduate research have continued work started in the Priority Grant. Findings from these investigations have been fed into and discussed at Working Group and Steering Group meetings. Thus this practitioner-led and community-

focused critical reflection on practice has worked at several different levels. This Competitive Grant continued these successive cycles of action and reflection.

Five research projects were carried out:

- a. *the extent to which research is currently embedded in curricula*. This was investigated in this Competitive Grant project through a search of the UNITS database. Lilia Mantai liaised with Lucy Archer and a separate report was prepared and discussed in the Working Group.
- b. *the visibility of research in departments*. Completed in the Priority Grant project and reported to the Working Group. It also was the subject of a conference presentation and a book chapter (see below)
- c. *students' awareness of research*. Completed in the Priority Grant project and reported to the Working Group. A full report was prepared which was also the subject of an article published in *Studies in Higher Education* (see below)
- d. *the barriers to the development of undergraduate research*. Ten interviews with staff have been conducted as part of this Competitive Grant and further interviews are to take place in 2014.
- e. *the outcomes of undergraduate research experience programs*. A survey of program coordinators was conducted in 2013 and 10 students were interviewed. The findings have been reported to the Working Group and are to be the subject of a future paper.

Dissemination

Displays of undergraduate research

The Priority Grant project had investigated how research in general and undergraduate research in particular was displayed across campus. These investigations resulted in obtaining access to the display cabinets in C5C courtyard. On behalf of ACUR we therefore took over responsibility for displays. Information including undergraduate research opportunities, events, and sharing of networks including MUURSS (Macquarie University Undergraduate Research Student Society) posters has regularly been displayed throughout 2013. Working Group members were encouraged to display posters of students work in their departments and a noticeable increase in such displays has occurred.



Figure 2. Display of undergraduate research in C5C courtyard



Figure 3. Corridor displays of undergraduate research posters

Video

A video highlighting the undergraduate research conference was displayed widely on the large screen in the Main Courtyard at regular intervals. It has been retained on the undergraduate research website and can be viewed at:

http://www.mq.edu.au/ltc/altc/ug_research/events.htm

Articles in journals, magazines and online

Three articles for international peer reviewed journals and one book chapter have been published or are in press:

1. Hajdarpasic, A., Brew, A., & Popenici, S. (2013). The contribution of academics' engagement in research to undergraduate education. *Studies in Higher Education*. Submitted 28th July 2012. Revisions submitted 6 June 2013 Accepted 17 August 2013.
2. Brew, A. & Cahir, J. (2013). 'Strategic Solidity' in learning and teaching agendas: shifting government policies and institutional initiatives. *International Journal for Academic Development*. Revisions Submitted 18th July 2012. Accepted 5th April 2013. Online first
DOI:10.1080/1360144X.2013.848360
3. Brew, A. (2013). Understanding the scope of undergraduate research: A framework for curricular and pedagogical decision-making. *Higher Education*. 66 (5) 603–618.
4. Popenici, S. & Brew, A. (2013). Reading Walls on University Corridors: Transitional Learning Spaces in Campus. In Vicars, M. and McKenna, T. (Eds.) *Discourse, power, and resistance Down Under: Volume 2* (pp. 145-156). Rotterdam: Sense Publishers.

Conference presentations

1. Brew, A. (2013). *Creative curriculum change through research. Keynote address* at the Sharing Practice: annual conference organised by the University of Central Lancashire, UK in collaboration with the PRF/CAER, 2nd July.
2. Popenici, S. & Brew, A. (2012). Reading walls on university corridors: a hermeneutic journey through transitional learning spaces in campus. Paper presented at the Association for Qualitative Research: Discourse, Power, Resistance Conference, Darwin, NT, August.
3. Brew, A., Hajdarpasic, A., Jewell, E., & Popenici, S. (2012). Working in Partnership with students; undergraduate research and the scholarship of academic practice. Paper presented at the Conference of the International Society for the Scholarship of Teaching and Learning: Research on Teaching and Learning: Integrating Practices. Hamilton, Ontario, 22-27 October.

4. Brew, A. & Mantai, L. (2012). Defining standards for research-based learning. Paper presented at the ACSME: Australian Conference on Science and Mathematics Education Conference, The University of Sydney, 27th-28th September.

Articles were published in *Undergraduate Research News Australasia* (URNA), Issue 4 September 2012; Issue 5 December 2012; Issue 6, May 2013 and Issue 7, December 2013. Nine Macquarie staff and students were authors of these articles. URNA is distributed to approximately 350 people worldwide including over 50 staff at Macquarie.

The project was highlighted in *Macquarie Staff News* on 27th September 2012 (in report on learning and teaching week); 11th September 2013 (advertisement for conference) and 9th October 2013 (report on 2013 conference).

The ACUR conference was featured in the *Macquarie University Events Booklet: July to September 2012* (p.24); and July to September 2013 (p.16).

The project was also featured in the *LTC Newsletter* on: November 2012 (report on first ACUR conference); May 2013 (call for papers for the 2nd conference); July 2013 (report on progress); and September 2013 (advertisements for the conference and for the workshops).

An article by Liam McCann on the 2012 conference was published in *MQ Grapeshot*, Issue 8 2012.

A report *Undergraduate awareness, experiences and perceptions of research* prepared by Ademir Hajdarpasic, Angela Brew and Stephen Popenici: was disseminated widely and is available online at:

http://www.mq.edu.au/ltc/altc/ug_research/

Undergraduate research initiatives have also featured on Macquarie University's webpage at: <http://mq.edu.au/newsroom/2012/09/11/expanding-horizons-macquaries-learning-and-teaching-week-2012/> and <http://mq.edu.au/newsroom/2013/09/17/the-next-generation-of-scholars-step-up-for-australasian-conference-of-undergraduate-research/>

Project Management and Budget

The project was managed in the LTC under the collaborative direction of Professor Angela Brew and, in 2012, Dr Stefan Popenici. As in the Priority Grant project, the Steering Group included the project leaders together with Drs Trudy Ambler and Mitch Parsell, Lilia Mantai and Ademir Hajdarpasic (undergraduate student). The resources for this project were used to fund a research assistant (Lilia Mantai) who worked closely with Angela Brew.

Report prepared by
Angela Brew and
Lilia Mantai
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