



**Project Title**

The development of undergraduates' awareness of, and engagement in, research

**\$ Amount Awarded**

\$29,739.14

**Brief Outline of the Project**

**Aims:** to enhance performance and showcase excellence in curriculum practices specifically in relation to ensuring that the curriculum is informed by current research; further, to exemplify specified student learning outcomes and coordinated assessment practices in research-based learning.

**Outcomes:**

1. Enhanced understanding of current practice in equipping students with research skills and critical thinking through exposure to research problems and realistic environments (Macquarie University Operational Plan Task 2.1.3).
2. Increased opportunities for students to engage in research within and across the undergraduate curriculum (Macquarie University Operational Plan Task 2.3.1).

**Strategies**

1. **Audits** to establish:
  - a. the extent to which research is currently embedded in curricula,
  - b. the visibility of research in departments,
  - c. students' awareness of research,
  - d. the barriers to the development of undergraduate research, and
  - e. the outcomes of undergraduate research experience programs.
2. **Staff development program** comprising:
  - a. university-wide Working Group
  - b. paper-based and online resources and video media
  - c. central workshops, discussions and special events
  - d. faculty and departmental workshops and discussions
  - e. sharing of examples of good practice through website

**Deliverables**

1. Audit reports
2. A video demonstrating and discussing undergraduate research and inquiry
3. An exhibition of visible university research
4. Publication showcasing undergraduate research at Macquarie
5. Journal articles and overall project report

## **Evaluation**

Indicative evaluation mechanisms

1. Audits carried out and made public
2. Working group meetings recorded and reported in other fora e.g. teaching & learning committees
3. Workshops, events and resources evaluated through exit and follow up surveys
4. Critical reflection of project leaders and reporting thorough working group
5. Critical reflection of working group

## **Project Outcomes**

***OUTCOME 1. Enhanced understanding of current practice in equipping students with research skills and critical thinking through exposure to research problems and realistic environments (Macquarie University Operational Plan Task 2.1.3) was achieved through:***

### ***INVESTIGATIONS (AUDITS) OF CURRENT SITUATION:***

1. Students' awareness of research. An undergraduate scholar was appointed to work on this. 200 students spread over different Faculties were surveyed and 6 student interviews were conducted. A report on the quantitative survey data was prepared and reported to the Steering Committee and the Working Group. Interview data has been transcribed and is currently being analysed.
2. The extent to which research is currently embedded in curricula. This investigation has been awaiting the establishment of a suitable university-wide database. The UNITS database now makes it possible to search unit outlines and so the investigation is now underway.
3. A project on the visibility of research across campus was led by Dr Stefan Popenici. The project documented and displayed the visibility of research (research posters, advertisement of scholarship, etc.). Through reporting to the Steering Committee and the working group, missed opportunities to promote and advertise research on campus were realised. Encouragement to promote and encourage more visibility of research taking place on campus resulted in some improvements e.g. corridors showcasing research.
4. Challenges and barriers to the development of undergraduate research. A Research Ethics Application for this investigation was submitted in December 2012 to conduct interviews with HoDs and academics at different levels. The research is deferred until 2013 following ethical approval.
5. The outcomes of undergraduate research experience programs. A survey of program coordinators was conducted by Lilia Mantai, with a 30% response rate. This is a continuation of work done by the former undergraduate scholar (Evan Jewell). The statistical analysis was completed by James Freer, an undergraduate in the Statistics Department, in collaboration with Dr Ayse Bilgin who organised her statistics students to carry out research projects at Macquarie. In addition 10 interviews with students have been conducted by Ademir Hajdarasic and are currently being analysed.

### ***STAFF DEVELOPMENT PROGRAM***

#### **a. Working Group (WG) work:**

A university-wide working group was established via a call for nomination of departmental representatives by the Heads of Department sent out by Barb McLean/Prof Judyth Sachs. The purpose of the Working Group was to promote and

communicate what we do to the Faculties and share ideas.

Work progress of the Steering Group was reported and discussed in the Working Group. [numbers in brackets indicate attendance]

**Meeting 1** [28]

- Establishment of the WG, its terms of reference, its purpose and strategy.
- Discussion and analysis of existing practice and future plans for undergraduate research in different departments.
- Introduction of the undergraduate research website including its resources.
- Presentation of the RSDF (Research Skill Development Framework – University of Adelaide) and the Research-based learning decision-making wheel for consideration in planning and implementing undergraduate research.
- The WG developed desired outcomes for their departments as a result of the undergraduate research project.

**Meeting 2** [20]

- Project Wiki established for members to exchange ideas and document ongoing and planned activities in individual faculties.
- The COEUR (Characteristics of Excellence in Undergraduate Research) document published by the Council of Undergraduate Research was discussed in the WG in terms of its practical use in departments.

**Meeting 3** [21]

- Examples of good practice in engaging undergraduates in research in different departments were presented by WG members and précis published on the website WG Wiki.
- Announcement of successful application for the Competitive Grant with the title “Stimulating strategic teaching and learning initiatives through enhanced familiarity with undergraduate research and inquiry” to increase publicity of the undergraduate research project and to continue in 2013.
- Report on Undergraduate Awareness, Experiences and Perceptions of Research at Macquarie University presented and discussed in Working Group and distributed across university.
- Presentation by Dr Lisa Wynn on Ethical issues in undergraduate research within courses.
- Featuring of the Undergraduate Research Project and the Working Group in the LTC Newsletter March 2012.

**Meeting 4** [8]

- The main agenda item at this meeting was the evaluation and feedback of ACUR 2012 which was presented and discussed. Suggestions were made for continuation of the ACUR conference.
- A document on threshold criteria for research-based learning as minimum standards of outcomes in departments and Faculties was presented and discussed. This was based on the COEUR document mentioned in Meeting 2.
- New resources and information on events related to Undergraduate Research added to the Undergraduate Research in Australia website [www.undergraduateresearchaustralia.com](http://www.undergraduateresearchaustralia.com).
- Initiation of discussion about the new Master of Research and its implication for undergraduate research.

**Meeting 5** [13]

- Outlined the ISP project “Creating a community of undergraduate research scholars” held by members of the Working Group and presented the timeline for appointing scholars.
- Reported on the special issue of *MQ Matrix* which contains the best papers from the ACUR conference
- Publicised the Undergraduate Research Newsletter (URNA 5)
- Departmental representatives shared and discussed their initiatives
- Prof Nick Mansfield (Dean, Higher Degree Research) introduced a discussion on the implications for research in the undergraduate curriculum through the introduction of the Master of Research.
- Discussion of plans for 2013: Working Group continuation through the Competitive Grant: “Stimulating strategic teaching and learning initiatives through enhanced familiarity with undergraduate research and inquiry”; Departmental initiatives; and the possibility and usefulness of developing an iLearn Unit on “Implementation of Undergraduate Research” to draw together resources and provide guidance for staff.
- Discussion of responses to the “Defining Standards for Research-based Learning” document.

**b. Showcase of Good Practice in Undergraduate Research and Inquiry was held on 21<sup>st</sup> September 2012** during Learning and Teaching week. The showcase featured a workshop by Professor Mike Neary (The University of Lincoln, UK) and presentations by Macquarie staff from Chiropractic, Education, Statistics and PACE on initiatives to engage students in research and inquiry within the curriculum.

**c. A workshop** on *Learning experiences for transition to work* was presented by A/Prof Leigh Wood and Prof. Angela Brew during Macquarie University Learning and Teaching Week, 19<sup>th</sup> September 2012.

**d. Website.** The Website has been continually updated to provide resources. As well as upcoming events, the website now contains the proceedings of the undergraduate research conference (ACUR) including abstracts, keynote addresses, prize-giving and address by the Vice-Chancellor, and photos. Showcase powerpoint presentations have also been placed on the website.

**e. Faculty and departmental workshops and discussions** have also been held and a number of these are reported in the minutes of working group meetings and the Wiki.

**f. Opportunities for informal discussions.** A wiki was provided for Working Group members to discuss issues between meetings. Facebook and Twitter sites were established for delegates and presenters to share ideas prior to and during the ACUR conference.

**OUTCOME 2. Increased opportunities for students to engage in research within and across the undergraduate curriculum (Macquarie University Operational Plan Task 2.3.1) was achieved through:**

1. An undergraduate scholar was appointed to work on investigations, particularly to survey and interview students on their awareness of undergraduate research, and

to serve on the Steering Group.

2. The First Australasian Conference of Undergraduate Research (ACUR) 2012 was held with about 130 presentations by undergraduate students and 220 visitors from Australasia.
3. Profs Mick Healey (University of Gloucestershire, UK) and Mike Neary (leader of the “Student as Producer” program at the University of Lincoln, UK) presented the keynotes at the conference. All other presentations were given by undergraduate students.
4. Attraction of sponsorship for prizes, conference shirts and print media.
5. Establishment of a reviewer panel consisting of 28 Macquarie and external academics including WG members for abstract and paper reviews.
6. Release of a Special Issue of *Macquarie’s Matrix* Undergraduate Research journal publishing the eleven best paper submissions.
7. Building a team of 50 Macquarie students who volunteered at ACUR 2012 and expressed their interest in volunteering at ACUR 2013.
8. Advertisement of ACUR 2012 through Macquarie’s Marketing Department, via email, campus screen display, postcards and poster display.
9. Initiation of an international steering group to secure sustainability of the ACUR conference.
10. Initiation of a community of undergraduate researchers via Facebook group and Twitter.
11. The conference was videoed with a view to completing a video demonstrating and discussing undergraduate research and inquiry. This is still under production.

## **Evaluation**

1. Audits have been carried out and made public as detailed elsewhere in this report.
2. Working group meetings were recorded, minuted and reported in other fora e.g. the Academic Development Group and teaching & learning committees
3. Resources developed can be found on the WG wiki and the URA website <http://www.undergraduateresearchaustralia.com>
4. The Showcase and the ACUR 2012 conference were formally evaluated through exit and follow up surveys. Results of evaluations can be obtained upon request (lilia.mantai@mq.edu.au).
5. Critical reflection of project leaders and reporting took place thorough regular meetings of the Steering Group. This comprised: Trudy Ambler, Angela Brew, Evan Jewell (until July 2012), Ademir Hajdarpasic, Lilia Mantai, Mitch Parsell and Stefan Popenici.

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

*Note: The priority grant project which is the subject of this report is now one of four projects related to undergraduate research (alongside Competitive, ISP and LTC Teaching Index grants). Each of these grants specifies projected publication strategies and in some cases, research carried out in one project becomes a publication outcome in another. To give an overall picture of publications relating to undergraduate research by the project team, a complete list of publications to date is given here. However, to avoid “double-dipping”, those that are specifically defined as outcomes for this Priority Grant project are asterisked.*

1. The outcomes of the project have been documented in reports and discussed in Working Group and Steering Group meetings as well as Learning and Teaching Centre, Academic Development Group meetings.
2. Events and outcomes are also documented on the Undergraduate Research Australia website( [www.undergraduateresearchAustralia.com](http://www.undergraduateresearchAustralia.com)) .
3. Dissemination of information, news and upcoming events in undergraduate research across the university have included items in *Staff News*, *MQ Grapeshot* and LTC newsletters as well as on the Central Video screens on campus. A press release was distributed world-wide after the conference via the WG, the UGR network, the LTC, *Staff News*, *MQ Grapeshot* and the student facebook group.
4. During the period of this project, Issues 3, 4, and 5 of *Undergraduate Research News Australia* (URNA) were released and distributed, to the UR network, to survey participants, LTC and WG members as well as students attending the ACUR conference. ACUR 2012 was advertised in the HERDSA newsletter.

**Reports**

1. \*\*Hajdarasic, A., Brew, A. & Popenici, S. (2012). Report on Undergraduate Awareness, Experiences and Perceptions of Research at Macquarie University. Accessed [date] at: [http://www.mq.edu.au/ltc/altc/ug\\_research/index.htm](http://www.mq.edu.au/ltc/altc/ug_research/index.htm)
2. \*\*Freer, J. (2012). A comprehensive study of special research programs and schemes for undergraduate students. Accessed [date] at [http://www.mq.edu.au/ltc/altc/ug\\_research/index.htm](http://www.mq.edu.au/ltc/altc/ug_research/index.htm)

**Conference presentations**

1. \*\*Brew, A. (2012). Undergraduate research and change in higher education. Keynote address at the Council on Undergraduate Research (CUR) Symposium. Hamilton, Ontario, Canada, 24th October.
2. Brew, A., Hajdarasic, 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.
3. 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, 27-28 September.

4. Popenici, S. (2012) "Reading walls on university corridors: a hermeneutic journey through transitional learning spaces in campus". Paper Presented at the Association for Qualitative Research International Conference Discourse, Power and Resistance "Down Under", Charles Darwin University, Darwin NT, August 2012.

#### **Other presentations**

5. Creating a Community of Undergraduate Research Scholars. Presentation by Aron Downie, for workshop for Innovation and Scholarship program participants, Macquarie University, 26 November 2012.
6. \*\*Undergraduates' awareness, experiences and perceptions of research. Presentation by Angela Brew, Ademir Hajdarpasic and Stefan Popenici at the Research on Teaching and Learning Seminar Series, Learning and Teaching Centre, Macquarie University. 12 November 2012.
7. \*\*Learning experiences for transition to work. Workshop presented by A/Prof Leigh Wood and Angela Brew, Macquarie University Learning and Teaching Week, 19 September 2012.
8. \*\*Teaching enhanced Research. Workshop presented by Angela Brew at University of Ulster, Belfast, Northern Ireland, January 2012

#### **Publications**

1. \*\*Brew, A. & Jewell, E. (2012). Enhancing quality learning through experiences of research-based learning: Implications for academic development. *International Journal for Academic Development*. 17 (1), 47-58.
2. \*\*Brew, A. (2012). Using COEUR at an Australian University (pp.55-57). In Council on Undergraduate research. (2012). *Characteristics of Excellence in Undergraduate Research (COEUR)*. Washington, DC: Council on Undergraduate Research
3. Popenici, S. & Brew, A. (submitted for publication). Reading walls on university corridors: transitional learning spaces in campus. Association for Qualitative Research. Submitted 24 September 2012.
4. Hajdarpasic, A., Brew, A., & Popenici, S. (submitted for publication). The contribution of academics' engagement in research to undergraduate education. *Studies in Higher Education*. Submitted 28<sup>th</sup> July 2012.
5. Cahir, J. & Brew, A. (submitted for publication). 'Strategic Solidity' in learning and teaching agendas: shifting government policies and institutional initiatives. *International Journal for Academic Development*. Revisions Submitted 18<sup>th</sup> July 2012

***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 ALTC grant?***

Further funding which enables the project to be extended into 2013 has been received through:

- a. Successful application for a 2012 Macquarie Learning and Teaching Competitive Grant as continuation of the undergraduate research project through 2013. Project entitled: *“Stimulating strategic teaching and learning initiatives through enhanced familiarity with undergraduate research and inquiry”*
- b. Successful application for 2012 allocation of Teaching Index funds from LTC competitive distribution. Project entitled: *“The role of research in enhancing learning in undergraduate education”*
- c. Successful application for Macquarie 2012 Innovation and Scholarship Program (IPS) in collaboration with WG members Aron Downie and Penny Van Bergen. Project entitled: *Creating a community of undergraduate research scholars*

It is planned to apply for an OLT grant early in 2013 to continue this work and possibly to apply for a further Macquarie L&T grant in 2013.

***Project Representatives***

|                              |                           |
|------------------------------|---------------------------|
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