

# Enhancing Undergraduate Engagement through research and inquiry

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# Welcome to the Learning Café

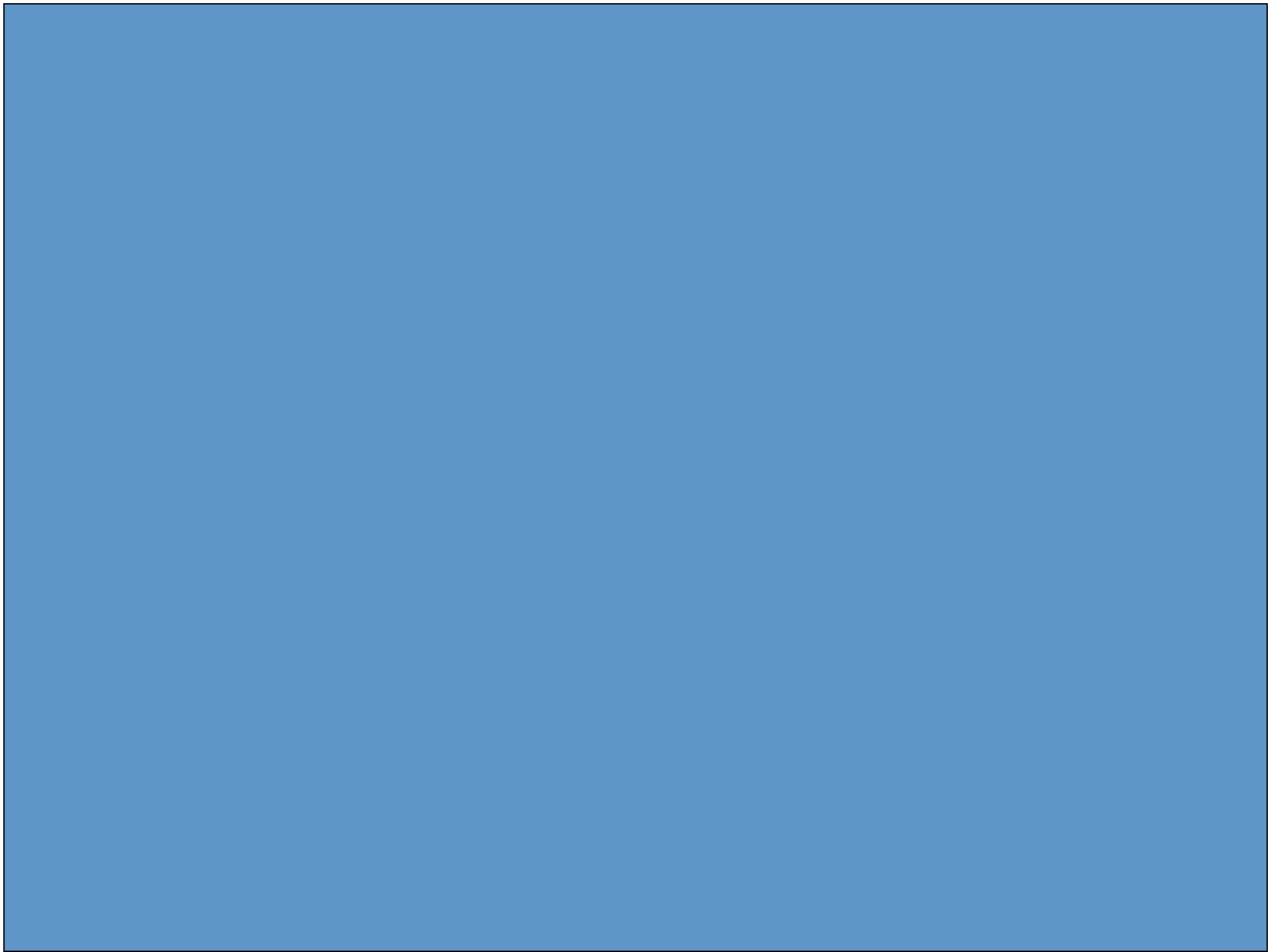
- 🧠 As the name suggests, a learning café is a place where you come to engage in conversation leading to learning
- 🧠 We suggest that you sit with someone you don't know
- 🧠 Start by introducing yourself and talking about where you are from, why you are here and any initiatives in engaging undergraduates in research and inquiry that you are involved in

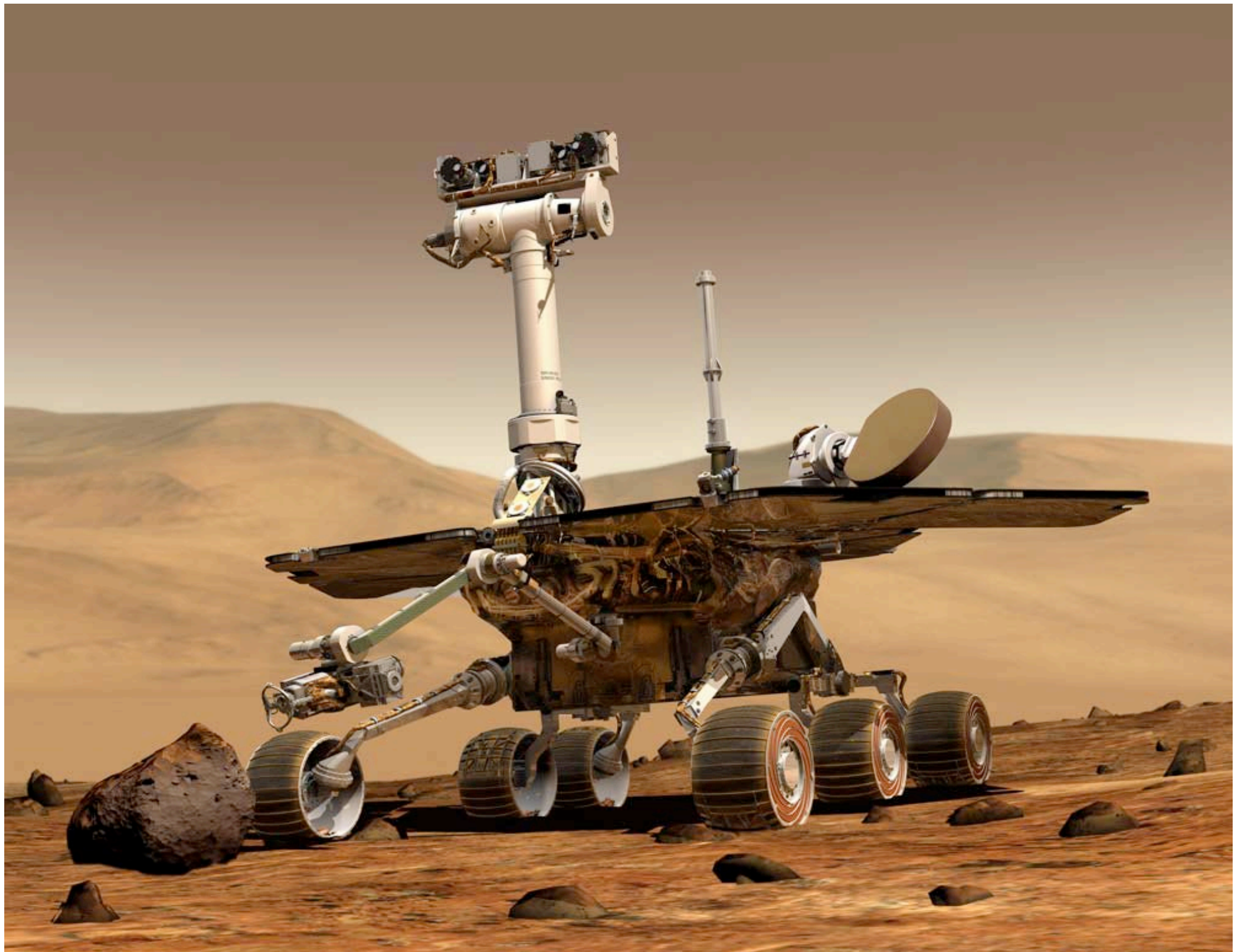
# Welcome to the Learning Café

- 🧠 Examine the themes and issues on the handout
- 🧠 In your group: choose and discuss the issues that most concern the group. If there are issues that are not on the list, please feel free to introduce these into the discussion
- 🧠 On your own: identify two particular challenges you personally face
- 🧠 In your group: share these and agree on the three most common
- 🧠 Put these on a flipchart

# THEMES AND ISSUES

- ✿ How to assess inquiry-based learning
- ✿ How to establish an undergraduate scholars' research program
- ✿ Does the system of modular units help or inhibit the development of inquiry-based approaches to teaching and learning
- ✿ How to deal with issues relating to research ethics
- ✿ How to foster critical enquiry among students
- ✿ How to deal with the myth that students just want lectures
- ✿ How to engage large groups of students in research and inquiry
- ✿ Funding excellence in integrating research and teaching
- ✿ Time and workload issues
- ✿ Ensuring students study the prerequisites
- ✿ Students' motivation and preparedness
- ✿ Can all students participate in research?
- ✿ Is research only for high achieving students?
- ✿ The role of undergraduate research in different kinds of institutions
- ✿ The role of undergraduate research in regional Australia
- ✿ encouraging under-represented groups into graduate study
- ✿ Training the next generation of researchers and academics
- ✿ How to progressively develop research across the whole curriculum
- ✿ How to specify open-ended learning outcomes
- ✿ Who defines the research questions and how?









Ben Gulak: Uno cycle



Rafael Smith: The Uber Shelter

1.  PLACE SHELTER IN DESIRED LOCATION
2.  OPEN FROM ENCLOSED POSITION TO BASIC STRUCTURE
3.  SET FLOOR, ATTACH JACK STANDS AND LEVEL THE STRUCTURE
4.  SECURE I-BEAM AND SHELTER FLOOR INTO LOCKED POSITION
5.  ATTACH FABRIC SUPPORT RODS AND MODULAR REINFORCEMENT
6.  ATTACH INNER FABRIC LINING. THIS INCLUDES AN ALREADY INTERWOVEN MOSQUITO NET
7.  ATTACH OUTER FLY LAYER OF FABRIC. THIS LAYER HELPS SHIELD FROM THE SUN AND PROTECT FROM THE ELEMENTS
8.  SECURE TOP FLOORING TO BOTTOM STRUCTURE AND REPEAT THE PROCESS



# Aim of the Fellowship

To enhance student engagement in learning through supporting the development in Australia of undergraduate research and inquiry

# How to identify national needs

 Study tours

 National documents

 Undergraduate research

 Key personnel

# Intended outcomes

- ✿ Identify national needs
- ✿ Enhance debates concerning engagement of undergraduate students in research and inquiry
- ✿ Establish a set of readily available resources and protocols to bridge gaps between current and future practice
- ✿ Disseminate these through a [website](#) and discussions
- ✿ Provide the foundation for the establishment of a national centre for the integration of research, teaching and learning



LEARNING AND  
TEACHING CENTRE

[Macquarie Home](#) | [Course Handbook](#) | [Library](#) | [Campus Map](#) | [Macquarie Contacts](#)

Google™ Custom Search

SEARCH

[Student Portal](#) | [Staff](#) | [Online Units](#) | [E-Student](#)

## Undergraduate Research in Australia

You are here: [Macquarie Home](#) » [LTC](#) » [ALTC Projects](#) » Undergraduate Research in Australia

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## Undergraduate Research in Australia

### WELCOME!

This website is designed to provide information and resources for people interested in enhancing students' engagement through involving undergraduates in research and inquiry across the curriculum and in scholarship schemes.

It is intended to be used by:

- academics wishing to give students a research experience within their undergraduate degree;
- academic managers, administrators and other university personnel involved in implementing policy and strategy related to undergraduate research; and
- undergraduate and postgraduate students with an interest in being involved in research and inquiry.

The website is hosted by Macquarie University and funded by the Australian Learning and Teaching Council (ALTC). It has been initiated by Angela Brew and designed by Michael Catabay in the Learning and Teaching Centre, Macquarie University.



### UPCOMING EVENTS

- **23rd September NSW & ACT Regional Roundtable**  
[Register for this event](#)
- **15th October - VIC Regional Roundtable**
- **16th October - QLD Regional Roundtable**
- **5th & 6th November - The First Australian Summit on the Integration of Research, Teaching and Learning**  
By invitation only.
- **11th November - SA Regional Roundtable**





## Undergraduate Research in Australia

You are here: [Macquarie Home](#) » [LTC](#) » [ALTC Projects](#) » [Undergraduate Research in Australia](#) » [Resources](#) » Search for Resources

- » Home
- » Ideas and Issues
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  - » [Search for Resources](#)
  - » Bibliographical Information
  - » Useful Websites
  - » Add a Resource or Reference
  - » Feedback and Comments
- » Contact Us

### Search for Resources

The resources available are reviewed to ensure that they are relevant to the website. Innovations in learning and teaching are only included here if they include elements of engaging undergraduates in research and inquiry.

The database is being added to on a regular basis. You can contact those involved by clicking on the email address following your search.

Please feel free to contact us should you have any queries.

### GUIDELINES FOR SEARCHING

You can search the database by either **text** or **keyword**.

A text search allows you to enter your own search term. The database will search for that term and return the number of entries that match it. You can enter individual words (eg, scholarships) or phrases (eg, problem-based learning). If you wish to search for entries from a specific university, just enter the name of the university.

You can choose whether you want to search for the words individually or together.

A keyword search allows you to search using pre-determined terms organized in drop-down menus.

### Text Search

☒ match any words ☐ match all words ☐ match exact phrase

### Keyword Search

categorykeyword

-	-
-	-
-	-



[» Ideas and Issues](#)[» Project Activity](#)[» Resources](#)[» Search for Resources](#)[» Bibliographical  
Information](#)[» Useful Websites](#)[» Add a Resource or  
Reference](#)[» Feedback and  
Comments](#)[» Contact Us](#)

## Add a Resource, Reference or Website for other people to use

Contributions are welcome from academics and students in Australian universities, but excellent examples from overseas are also encouraged.

If you're unsure whether your artifact, protocol or resource will fit and is likely to be useful, you might like to [search the database](#) to see what kind of resources are included.

### Step 1 – Tell us about your submission

What are you submitting? ☒ A resource

☐ A bibliographic reference

☐ A website

### Step 2 – Please tell us about yourself and any collaborators

First Name

Surname

University

Faculty/Centre

School/Department

[add collaborator](#)

Contact name

Contact email

### Step 3 – Submitting a resource/artifact/protocol

Title of resource (artifact or protocol)

Description

Context

Please provide a brief description of the context where you have used this resource, e.g. course, unit, subject or institutional location

Evaluation

Please indicate whether and how you have evaluated this resource

# Program

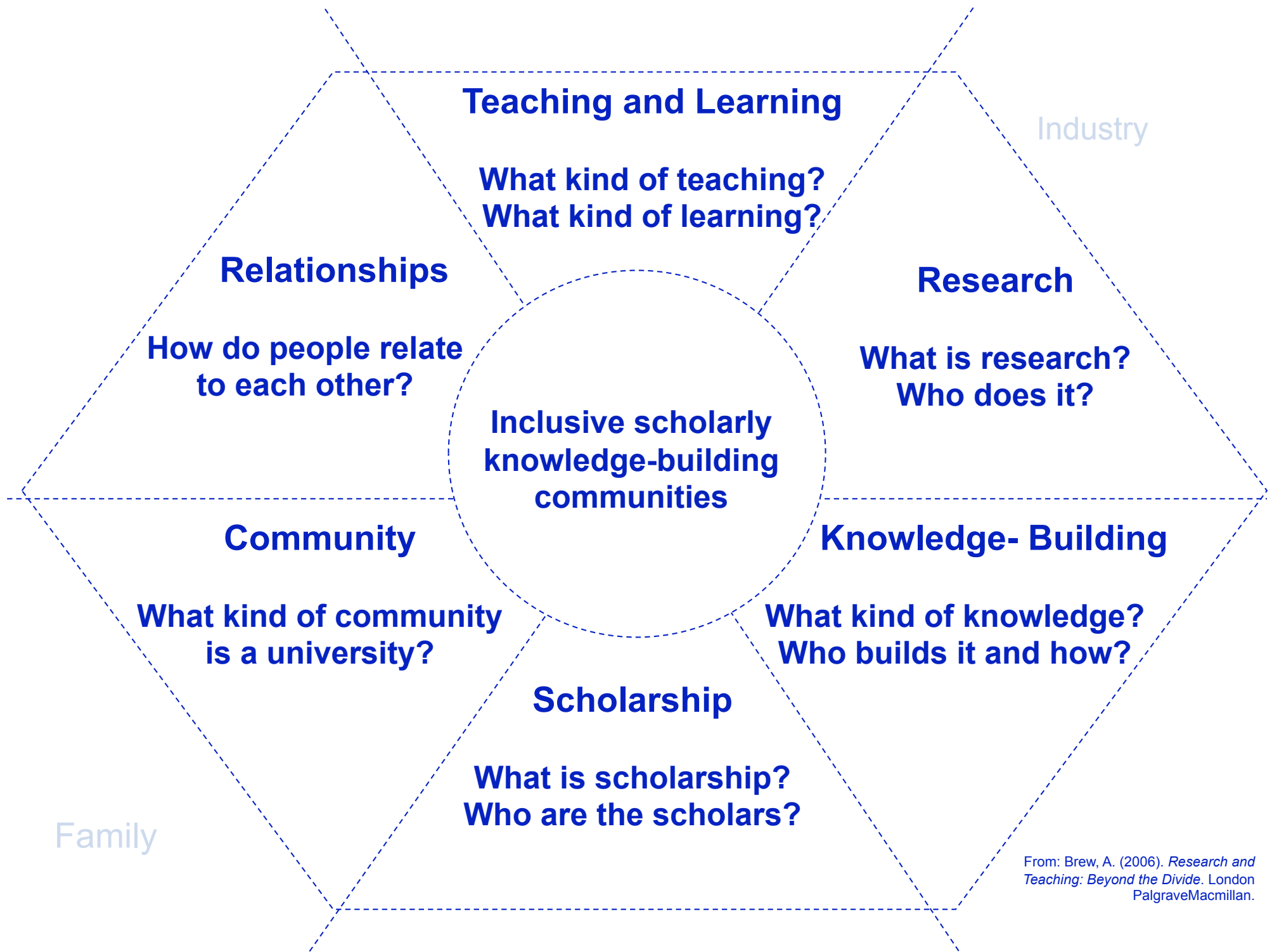
 Conversations

 Showcase examples

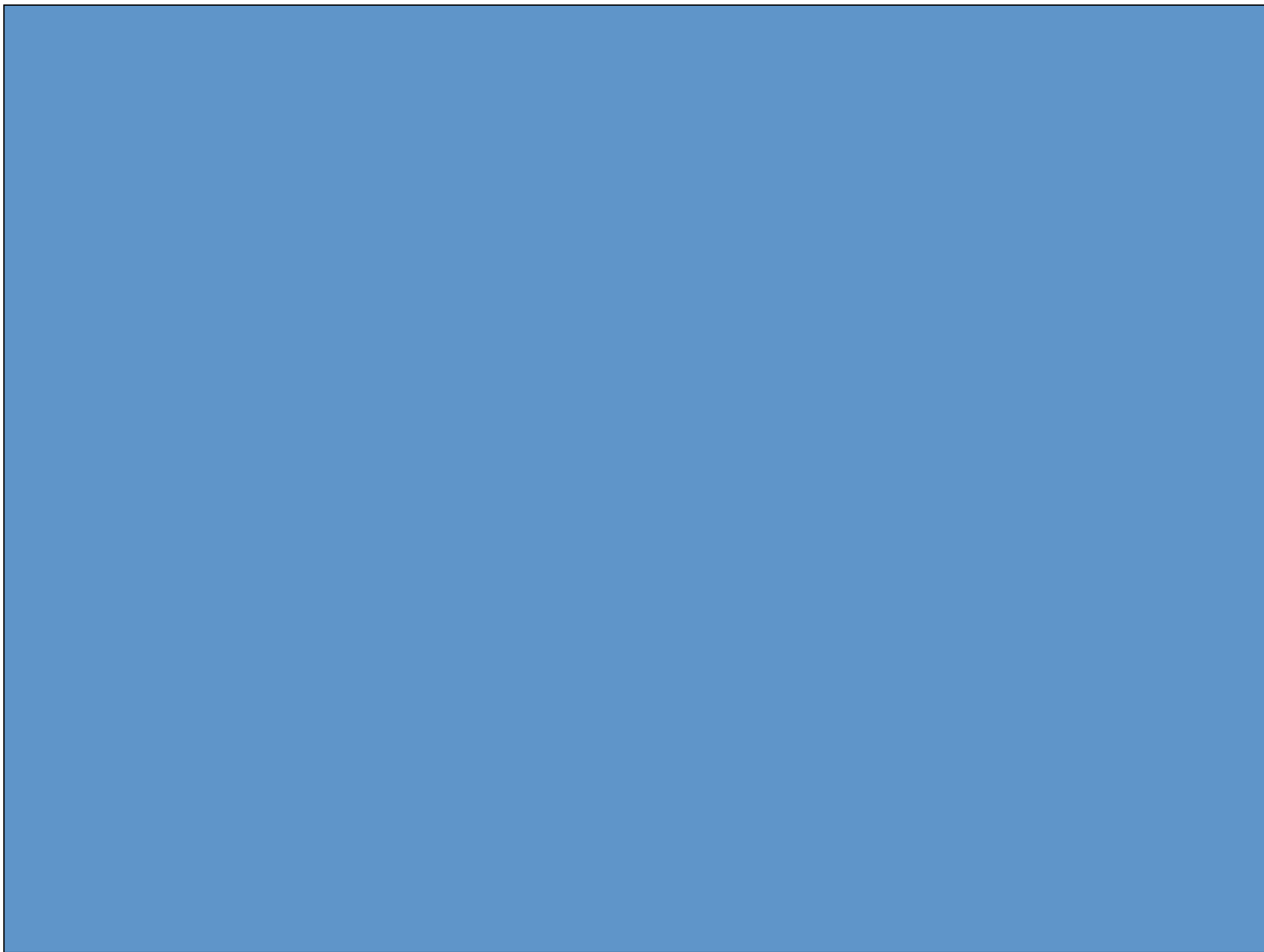
 Artifacts, resources, protocols

# Some issues from regional roundtables

- ✿ Put undergraduate research as a key item on an upcoming faculty retreat (accounting, chemistry)/ heads of school retreat
- ✿ Use the RSD framework to have a conversation with colleagues
- ✿ Write a paper for the university teaching and learning committee
- ✿ Include poster session in a get together at the end of a course and invite outsiders
- ✿ Have a debate in the classroom which students have to research for
- ✿ Library staff to invite undergraduate scholars to present at their retreat
- ✿ Library staff to suggest research to students in drop-in sessions
- ✿ Research students' views



From: Brew, A. (2006). *Research and Teaching: Beyond the Divide*. London PalgraveMacmillan.





# Outline

✿ Why engage undergraduates in research and inquiry?

✿ Practical implications

✿ How to move this undergraduate research agenda forward

# Definition of undergraduate research and inquiry

“An inquiry or investigation  
conducted by an  
undergraduate student that  
makes an original intellectual  
or creative contribution to the  
discipline.”

(Beckman & Hensel, 2007)

# Definition of undergraduate research and inquiry

“[An] inquiry or investigation or a research-based activity conducted by an undergraduate student that makes an original intellectual or creative contribution to the discipline and/or to understanding.”

(following Beckman & Hensel, 2007)

# Integrating research and teaching to enhance student engagement

- ❁ Positive impact on retention and satisfaction
- ❁ Students learn what research is and how to do it
- ❁ They develop a sense of professional identity
- ❁ Increases in self confidence
- ❁ Develops of advanced technical skills, problem solving, creative thinking and communication skills e. g. giving presentations
- ❁ Develops independent work habits
- ❁ Enhances teamwork and collaboration
- ❁ Ability to deal with ambiguity and obstacles
- ❁ Clarifies career goals

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# National documents

- ✿ "Public funding should be directed only to those institutions that: encourage both students and staff to engage in critical enquiry...." (Bradley Review Report page 7)
- ✿ "Self-fulfilment, personal development and the pursuit of knowledge as an end in itself; the provision of skills of critical analysis and independent thought to support full participation in a civil society; the preparation of leaders for diverse, global environments; and support for a highly productive and professional labour force should be key features of Australian higher education." (Transforming Australia's Higher Education System)

# What the AUSSE measures...



## Six engagement-focused scales

- Academic Challenge
- Active Learning
- Student and Staff Interactions
- Enriching Educational Experiences
- Supportive Learning Environment
- Work Integrated Learning



## Six outcomes-focused measures

- Higher-order Thinking
- General Learning Outcomes
- General Development Outcomes
- Average Overall Grade
- Retention Intention
- Overall Satisfaction

# High impact educational practices

(Kuh, 2008)

1. First year seminars and experiences
2. Common intellectual experiences
3. Learning communities
4. Writing-intensive courses
5. Collaborative assignments and projects
6. Undergraduate research
7. Diversity/global learning
8. Service learning, community-based learning
9. Internships
10. Capstone courses and projects

# Outline

✿ Why engage undergraduates in research and inquiry?

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# Tensions in implementing undergraduate research and inquiry

Student, process  
centered



Outcome, product  
centered



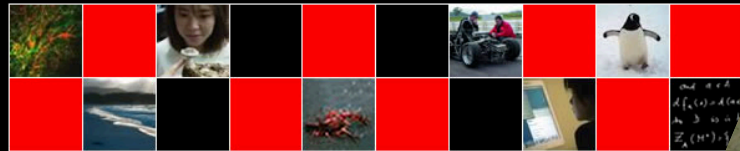
# Reinvention

a Journal of Undergraduate Research

## Reinvention: a Journal of Undergraduate Research

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*Reinvention: a Journal of Undergraduate Research* has now reached its first birthday. In our first year we have published our launch issue and our first volume. We have grown from accepting papers from the Reinvention Centre's two host institutions, to accepting papers from around the world and the response we have had from undergraduate students and academic staff alike has been better than we could have predicted. Our website has received over 40,000 hits in this first year alone with 6,500 individual visitors to the site and we hope to build on this success in our second year.

[Click here for Current Issue](#)[Sign up for](#)

## nexus journal of undergraduate science engineering and technology

[Home](#)[Contact us](#)[Volume 1 2004](#)[Volume 2 2005](#)[Volume 3 2006](#)[Submission details](#)

Nexus: journal of undergraduate science, engineering and technology is a journal of integrating and promoting the teaching/research nexus within the University of Tasmania.

The journal highlights linkages between high-level learning and research publication. It also provides a showcase for the research undertaken by students from the disciplines of science, engineering, and technology.

It is published annually.

Volume 3 is currently being laid out for printing and will be published in the preparation of Volume 4 of Nexus: journal of undergraduate science, engineering and technology.

Currently

We are calling for academic staff, able to nominate and mentor students willing to provide a mentoring role. The work needs to be:

- of a high quality;
- written in semester 2 2006, semester 2 2007 or semester 2 2008;
- able to be **formatted** as either a research paper or a review article.

Mentors are usually Unit Coordinator, but can be any academic staff member willing to provide guidance to the student. It is not envisioned that this will be a large commitment.

Initially, we need Unit Coordinators to simply nominate students.

Timetable

The following dates punctuate the timeline for Volume 4's release:

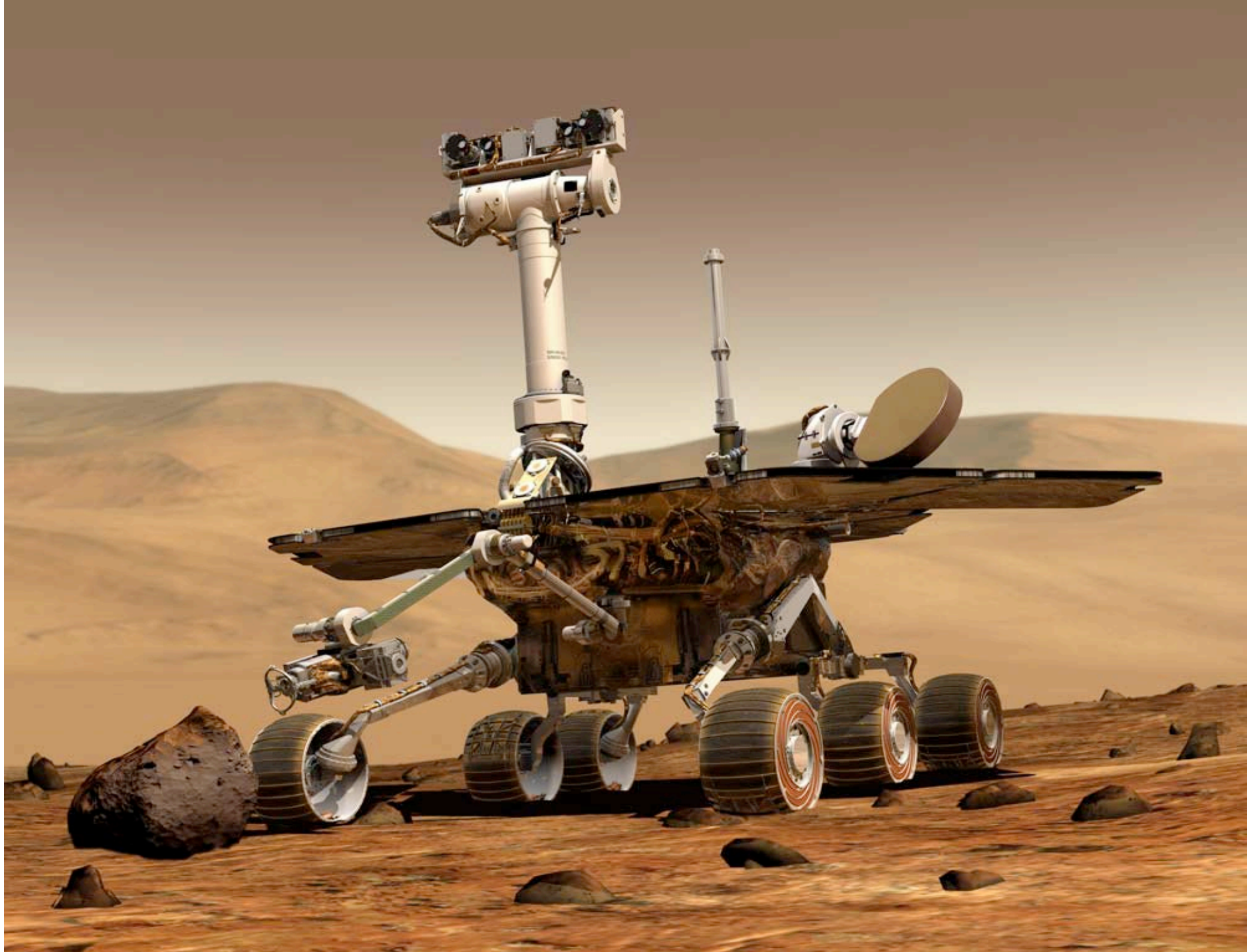
- June 8th (or earlier) — unit coordinators to advise the Editorial Committee

ERGO  
WEBER STATE UNIVERSITY  
UNDERGRADUATE RESEARCH JOURNAL  
VOLUME 3 • SPRING 2009

WEBER  
STATE  
UNIVERSITY  
ERGO  
UNDERGRADUATE  
RESEARCH  
JOURNAL

VOLUME 2 • SPRING 2008





# Tensions in implementing undergraduate research and inquiry

Student, process  
centered

Student initiated

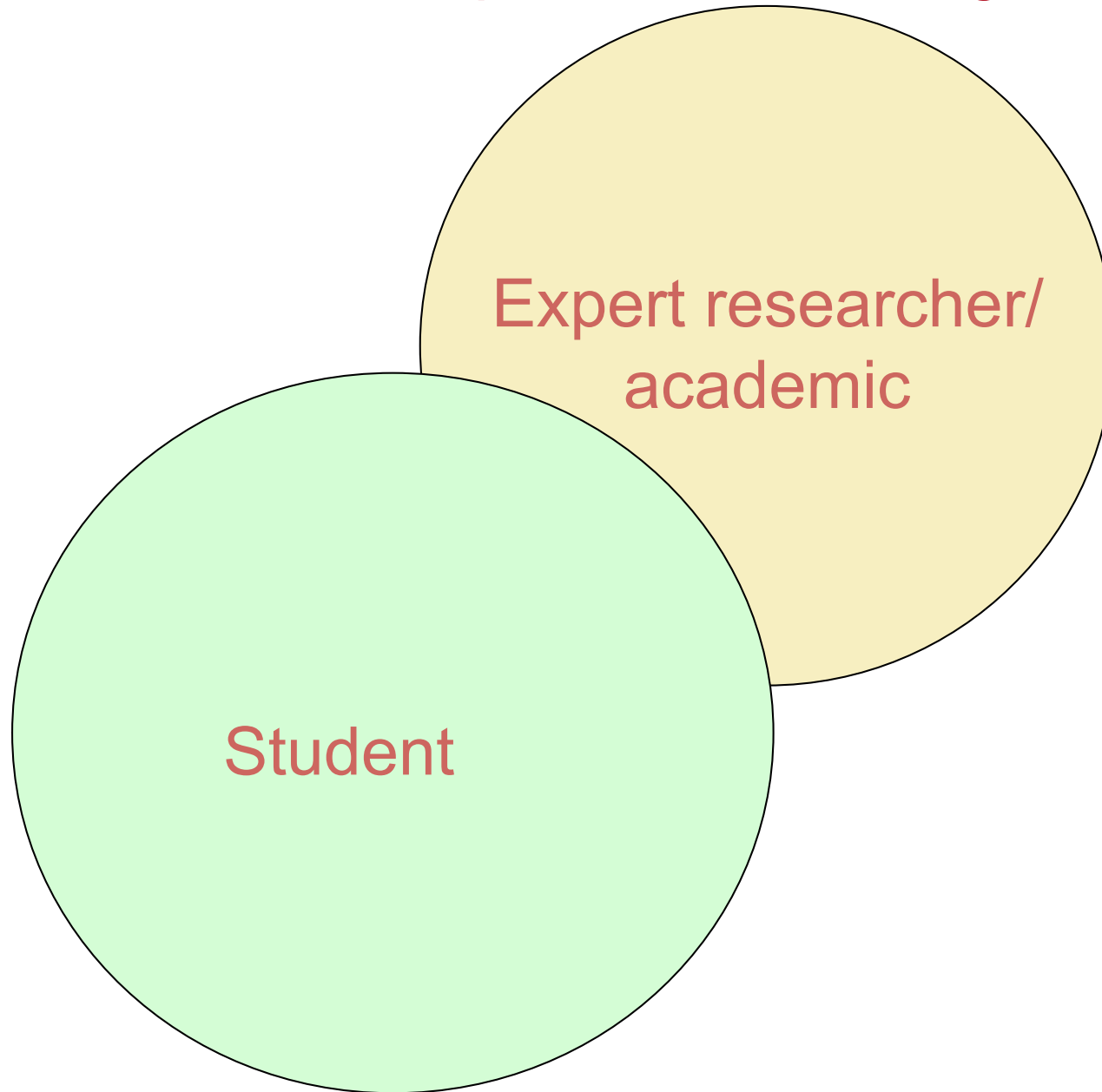


Outcome, product  
centered

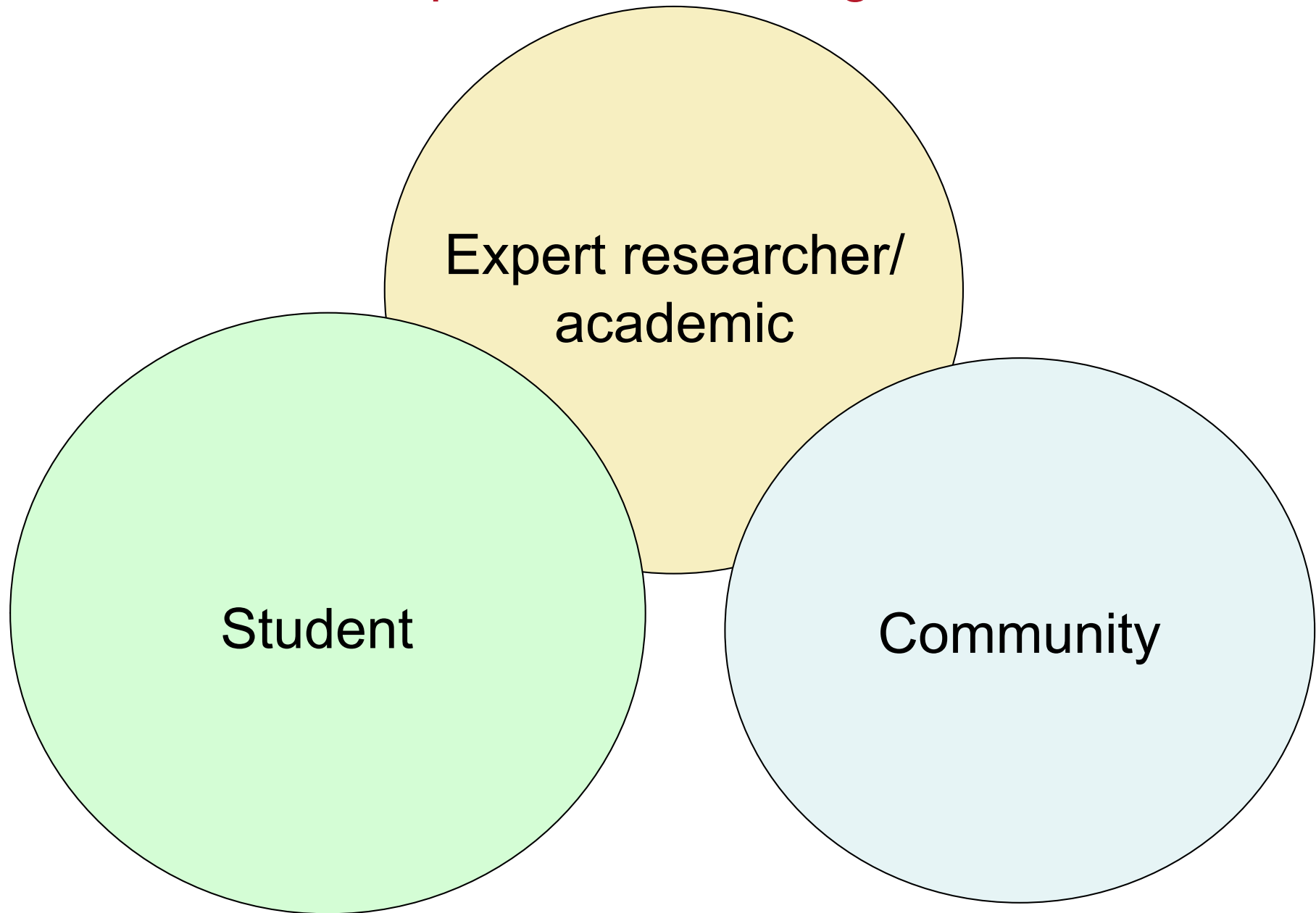
Faculty initiated



Who defines the question in undergraduate research?



# Who defines the question in undergraduate research?



# Tensions in implementing undergraduate research and inquiry

Student, process  
centered

Student initiated

Honors students



Outcome, product  
centered

Faculty initiated

All students



[Link](#)

# Tensions in implementing undergraduate research and inquiry

Student, process  
centered



Outcome, product  
centered

Student initiated



Faculty initiated

Honors students



All students

Curriculum based



Co-curricular

# Research in the curriculum can be carried out







1. Assignments and tutorials within specific subjects
2. Whole courses or programs, for example across year levels
3. At whole of degree level e.g. PBL, IBL



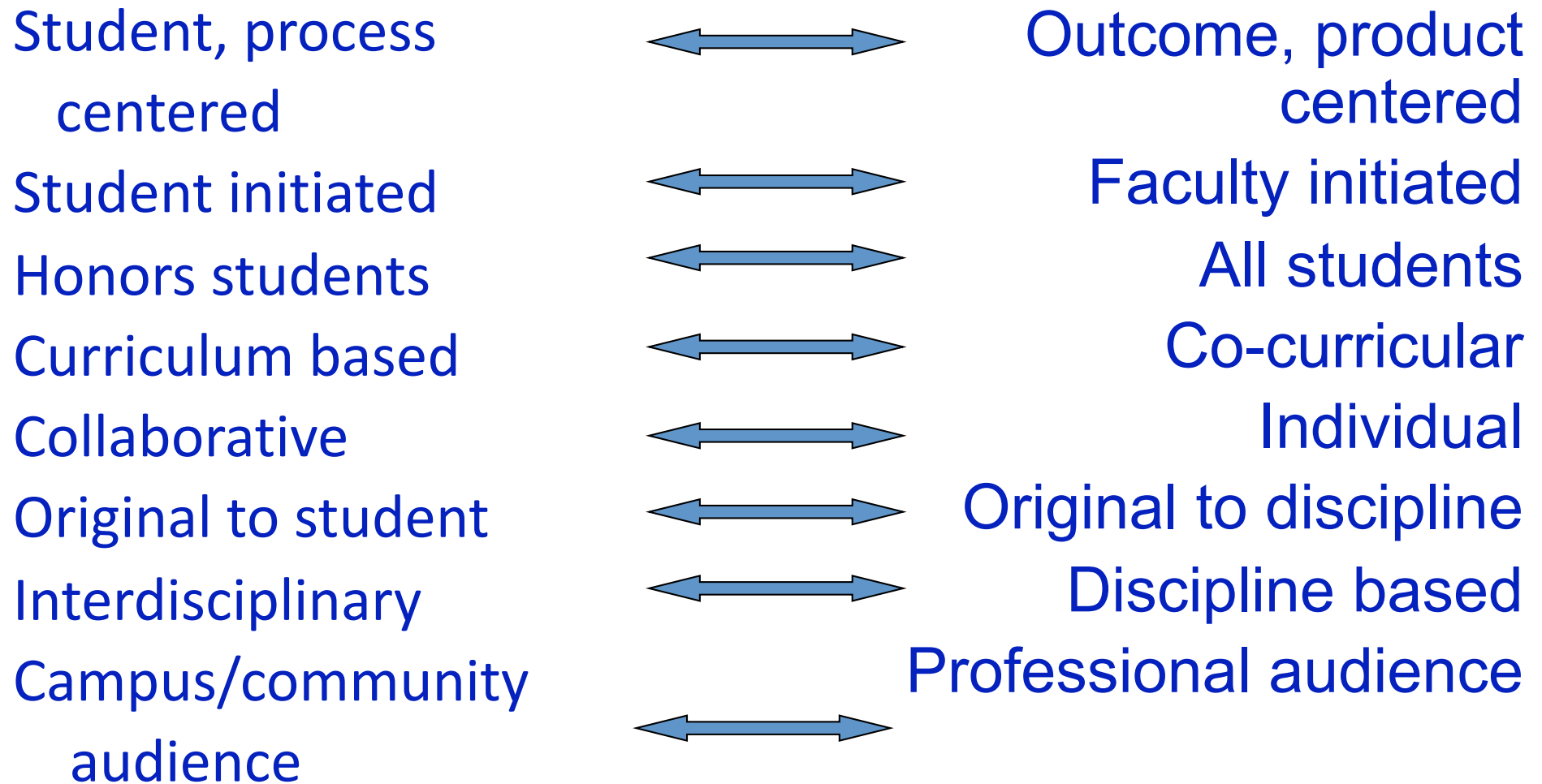
# What needs to change?

- ✿ Course organisation structures: from individuals to course teams
- ✿ Module flexibility
- ✿ Vertical integration
- ✿ Ideas about research and who is capable of doing it
- ✿ Teaching spaces

# Tensions in implementing undergraduate research and inquiry

Student, process centered		Outcome, product centered
Student initiated		Faculty initiated
Honors students		All students
Curriculum based		Co-curricular
Collaborative		Individual
Original to student		Original to discipline

# Tensions in implementing undergraduate research and inquiry





**SOUR08**  
SOUTHERN CALIFORNIA CONFERENCE ON UNDERGRADUATE RESEARCH  
November 22, 2008  
California State Polytechnic University  
Pomona

22ND ANNUAL  
CALIFORNIA STATE UNIVERSITY  
STUDENT RESEARCH COMPETITION  
CALIFORNIA STATE UNIVERSITY, EAST BAY  
MAY 2 - 3, 2008  
**SRS**  
STUDENT RESEARCH SYMPOSIUM  
2009 STUDENT  
RESEARCH  
SYMPOSIUM  
Celebrating the achievements  
of SDSU student research,  
scholarship, and creative activity

Weber State University  
Sixth Annual Undergraduate Research  
Symposium & Celebration

California State University  
Student Research Competition  
UNIVERSITY OF CALIFORNIA, SANTA BARBARA  
23rd ANNUAL  
**UCSB 2009 Undergraduate Research Colloquium**  
fifth annual undergraduate research  
symposium & celebration  
abstracts  
THE FIRST ANNUAL  
**STUDENT RESEARCH SYMPOSIUM**  
Celebrating the achievements of  
San Diego State University students  
in research, scholarship & creative activity  
February 29 & March 1, 2008

University students  
scholarship & creative activity  
February 29 & March 1, 2008  
Weber State University  
Annual Undergraduate Research  
Symposium & Celebration



# Outline

✿ Why engage undergraduates in research and inquiry?

✿ Practical implications

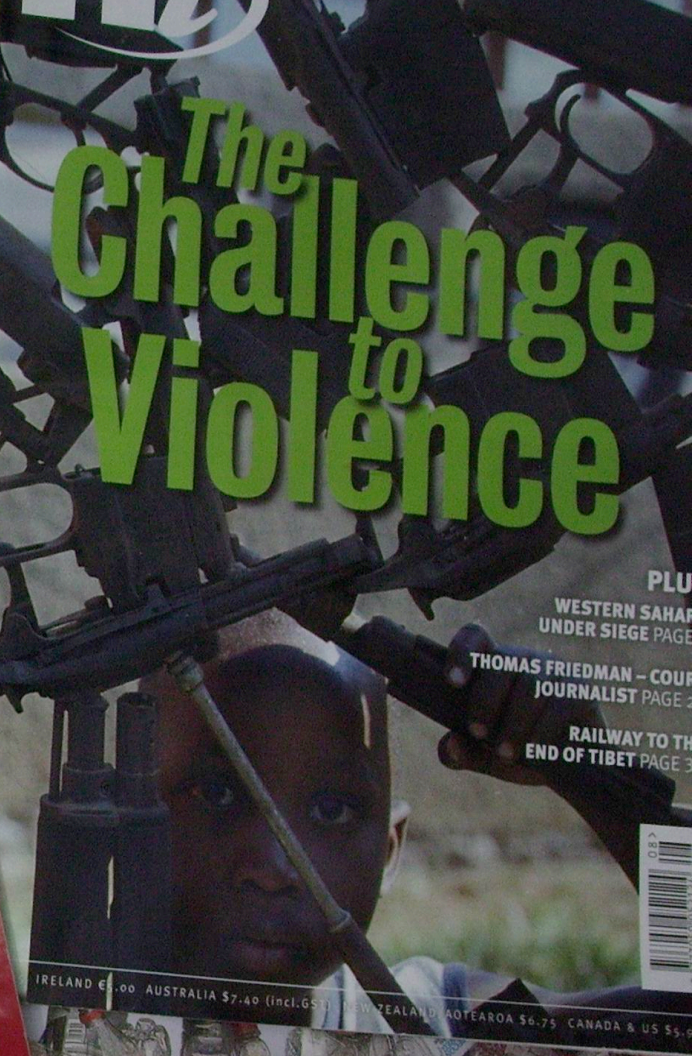
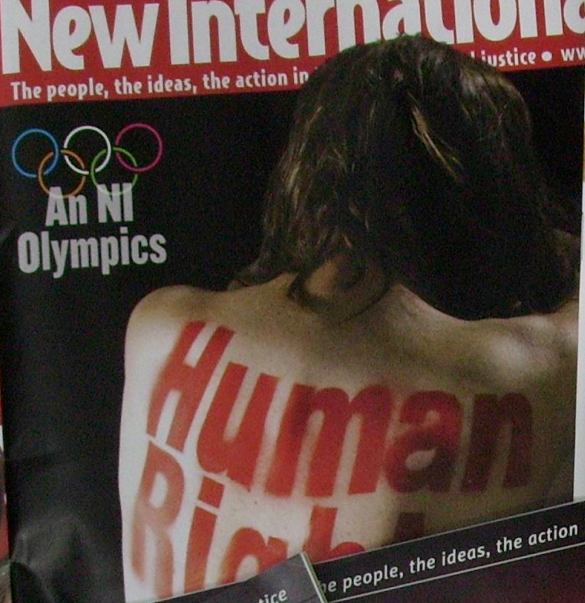
✿ How to move this undergraduate research agenda forward

# Concluding key issues

❁ Importance of undergraduate research as a beginning preparation for research careers

❁ “The path I am setting out...raises the expectations we have of our young people and their parents and of our great institutions. It asks them to be bolder and more ambitious in what can and should be achieved” (Hon Julia Gillard MP 4th March 2009)











# References used in this presentation

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- ✿ Picture of Uno cycle by Ben Gulak <http://www.nytimes.com/2009/01/04/education/edlife/ideas-Uno-t.html?ref=edlife>  
New York Times article: An Easy Ride Around the Crowd of Old Polluters
- ✿ Uber shelter by Raphael Smith: <http://www.nytimes.com/2009/01/04/education/edlife/ideas-ubershelter-t.html?ref=edlife>
- ✿ Macquarie University Undergraduate Research Australia website at: <http://www.undergraduateresearchAustralia.com>
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- ✿ Picture of booklets from various undergraduate conferences and colloquia taken by Angela Brew
- ✿ Picture taken by Angela Brew of various covers of the magazine "New internationalist". <http://www.newint.org/>
- ✿ Question mark picture: unknown internet source