Evaluating undergraduate research experiences in science and health professional courses
Teaching Research: Evaluation and Assessment Strategies for Undergraduate Research Experiences

• OLT-funded project
  (Susan Howitt, Anna Wilson, Denise Higgins, ANU)

• Used reflective practice to examine student learning processes in UREs
  • Help students reflect on the nature and processes of research
  • Help students reflect on their learning during UREs
  • Provide an opportunity for supervisors to better understand what their students are thinking / learning
The Approach

Helping students learn from URES, by:

• Expanding the definition of learning beyond the focus on results
  • Learning about the process of research
  • Developing generic skills

• Making learning visible by asking students to reflect on their research experience
  • Using a bank of questions that prompt students to reflect on their research experience- What are they doing? Why? What would they do differently? what are they learning?
  • Written responses in a ‘learning logbook’ / reflective journal
What did TREASURE tell us?

- Reflective journals show the development of more sophisticated understanding of research
- Demonstrates different levels of student understanding of research process
What about UREs in professional courses?

– Do students in professional courses benefit from UREs?

– Are the expectations / benefits similar to non-professional courses?
Finding TREASURE in professional courses

– Identify student expectations that may act as contextual barriers to benefitting from undergraduate research experiences

– Make learning in undergraduate research experiences visible to students and their supervisors

– Develop whole of curriculum scaffolding to better prepare and support students for undergraduate research experiences
Study cohort – Science students

- Science / Medical Research students (44)
- Final year (3 year course)
- ‘Capstone’ unit: ‘Research Project in Health & Disease’
- Apprenticeship-style research project
- Groups of 1-3 students
Study cohort – paramedic students

- B.Paramedic Practice Students (119)
- Final year (2 year course) / Fast-track
- Final semester / coinciding with professional placements
- The unit: ‘Professional development in paramedic practice’
- Structured systematic review
- Groups of 4-7 students
Most common expectation of the research experience

Medical Research / Science students

• Understanding research*
• Practical application of prior learning / develop skills*
• Flexibility / independence
• Engagement with future research

*linked to unit ILO
Most common expectations of the research experience

Paramedicine students

• Understanding research*
• Evaluating literature / develop research skills*
• Team work and communication*
• Understand how research applies to profession*

*linked to unit ILO
Experience meets expectations?

Science / medical research

YES
Undecided

Paramedicine

YES*
Undecided
NO

*almost all relating to positive expectations
Experience meets expectations?

Science / Medical research

- Understanding research*
- Practical application of prior learning / develop skills*
  - Flexibility / independence
  - Engagement with future research

*linked to unit ILO
Experience meets expectations?

Paramedicine students

- Understanding research*
- Evaluating literature / develop research skills*
- Team work and communication*
- Understand how research applies to profession*
- Challenging

*linked to unit ILO
Experience meets expectations?

Paramedicine students

- Understanding research*
- Evaluating literature / develop research skills*
- (Difficulties of) Team work and communication*
- (Not) Understand how research applies to profession*
- Challenging
- No research findings

*linked to unit ILO
What have you learnt?

Science / Medical research

Understanding research*
- The research process
- Managing a project

Practical application of prior learning / develop skills*
- Topic specific knowledge
- Research techniques

*linked to ILO
What have you learnt?

Paramedicine

Understanding research*

- How to critically evaluate literature
- How to find information
- Writing skills

Team work and communication*

- How to manage group work

Understand how research applies to profession

- Importance of research to profession
- Discipline specific knowledge *linked to ILO
FACULTY OF HEALTH

What skills have you developed?

Science / Medical research

Generic / transferable
- critical thinking
- organisation, time management
- communication, problem solving
- team work

Discipline specific
- Laboratory techniques
- Research techniques
## What skills have you developed?

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*<2% thought skills not valuable for future profession*
What TREASURE did we find?

• reflections of paramedic students pre- and post-URE were largely positive, suggesting a lack of contextual barriers.

• a common expectation of professional and non-professional students is to gain an understanding of the process of research

• Students recognise the development of generic as well as discipline-specific skills

• Expectations of UREs and perceptions of skills gained may be coloured by ILOs and the context of the URE
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