



# **NRM using a consultancy approach to undergraduate education: linking student learning and stakeholder needs**



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- Conferences – sharing of current research
- Broader dissemination limited
- Most valuable resource?
- Translating knowledge & expertise here at STAR across to tertiary teaching
- Building networks between Government agencies, universities, NGOs
  - Research led learning
  - Specific conference sessions/field trips
  - Collaborations

## Student learning

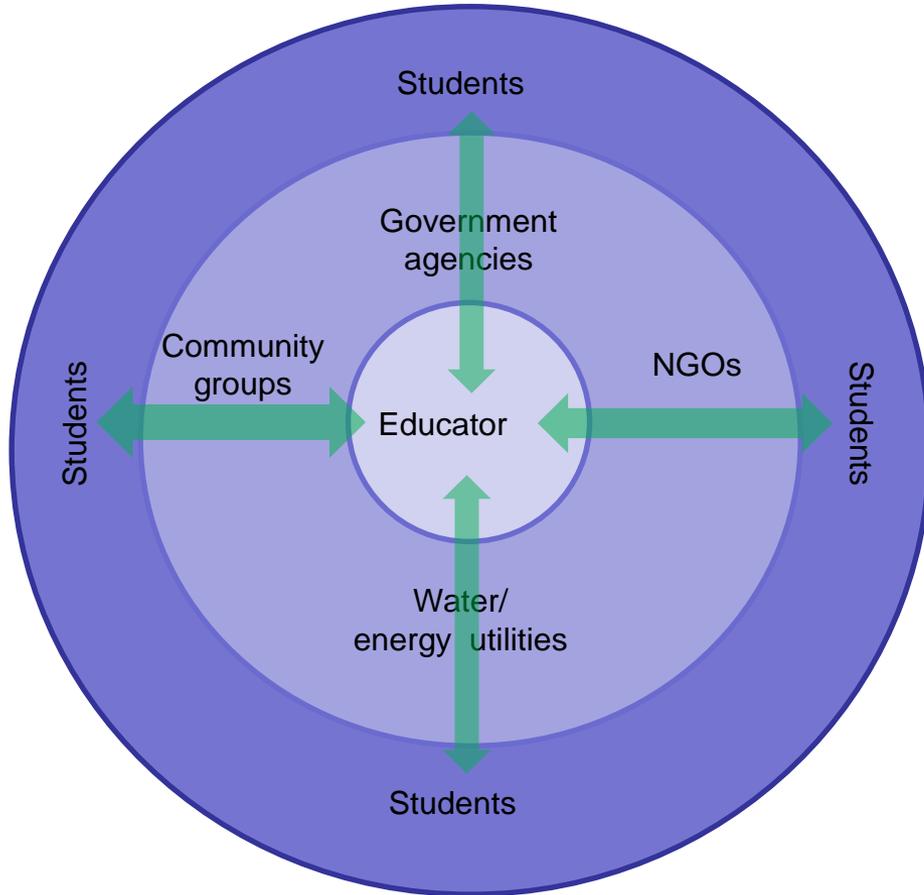
- **Students** with sound disciplinary knowledge, may not understand the processes, character, and constraints of science in decision making
- **Educators** can address this gap by providing students with PD opportunities that involve authentic, robust research

## Stakeholder needs

- Most **communities (and agencies)** lack the resources to collect data and research pressing environmental issues – challenge to sustainability planning
- Scientifically robust research & reporting by later year students can meet these needs and build partnerships



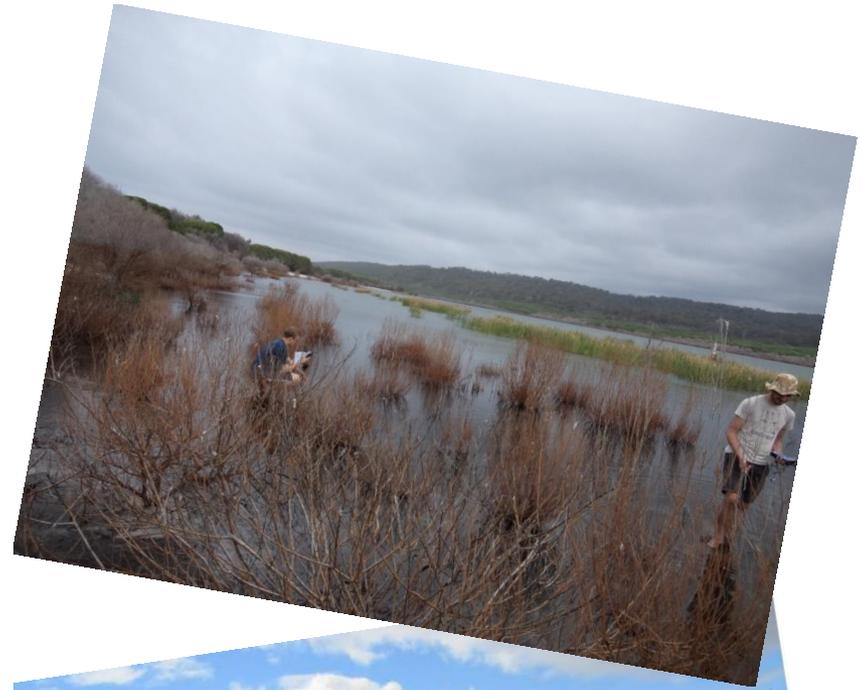
# Linking students' & stakeholders' needs



- (i) Identify ‘clients’<sup>\*</sup> with real needs/knowledge gaps
- (ii) Construct research consultancy topics in partnership with ‘clients’ that incorporate disciplinary and contextual diversity;
- (iii) identify the necessary skill sets (and the relevant learning activities)
- (iv) incorporate all these aspects into the educational design

*\* Here the term “client” is used to reinforce the professional relationship between students & stakeholders*

- Brief students on “client” needs and help them develop research questions in small teams;
- Provide learning support so students can engage with the relevant concepts and knowledge, and prepare a methodology;
- Field intensive (2-5 days)
- Support students in lab work/data analysis; writing
- Student symposium
- Submission of final report





# Some past projects

- The effect of permanent ponding on soil and surface water acidity in an acid sulfate soil (ASS) environment.
- The impacts on surface-groundwater interaction from over-abstraction during drought
- The effectiveness of environmental instruments (such as state & local environmental policies and plans) in protecting the environment
- Biogeophysical audits of wetlands, mangroves and saltmarsh located adjacent to newly zoned urban and peri-urban areas.
- Geochemical assessments of on-farm rubbish dumps.
- The efficacy of community-driven environmental management programmes.
- Post-fire impacts on heavy metal and sediment transport in a water supply catchment
- Floodgate manipulation: flood mitigation vs water quality in deep agricultural drains



# Evolving knowledge/attitudes

- Student

“It was great fun trudging around in the mud with gumboots and taking samples and measurements.... It was challenging to get some samples”.

- Thinking like a scientist

“Research into the findings .... we must have knowledge of background material in order to interpret the results and to start forming relationships between different data obtained”.

- Working as a professional

“As a final year student, it makes me feel well prepared for some jobs that I will be applying for. The feedback will be very useful for determining how well developed these skills are and what I need to work on”.



<b>Is the student work reliable?</b>	<i>I place a great deal of <b>trust</b> in the reports, [which are] developed, researched and referenced in a professional manner. (Environmental Manager, Local Government)</i>
<b>Does the work support ongoing work by stakeholders?</b>	<i>A <b>very useful</b> document . . . I am surprised by the invertebrate data. It will help us track biodiversity, water quality, etc. at all three sites.</i>
<b>Is the student work valued?</b>	<i>I will really <b>value</b> having access to this [report] when I have to discuss the condition of the catchment.  The students' engagement with the community . . . [confirmed] that the locals were contributing to sustainable management. (Project Officer, State Agriculture agency)</i>

- Identifying interested tertiary educators and stakeholders
- Developing institutional and community partnerships with tertiary institutions
- Sharing educational resources cross-institutionally
- STAR Education Working Group



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**THANKYOU**

