

Application of a Research Skills Framework for Learning and Teaching in Human Biology



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Background

Human Biology I

- **Core level I course in BHLthSc Program**
- **Investigates issues of life, health & wellbeing of humans**
- **Approx 120-140 students**

The Challenges

- **Diverse student population**
 - Broad spectrum of prior educational experiences
 - No specific program entry prerequisites or assumed knowledge
 - Broad range of abilities (knowledge base & research skill level) from basic → good
- **How to effectively assess skills and attitudes, not just course content**
- **100 + students**
 - Assessment workload must be manageable





Background

The Approaches

- **Find out what students can and can't do**
 - RSD (Research Skill Development) Diagnostic in O-week
(as part of a *Skills Workshop* for all commencing BHIthSc students)
- **Gradual introduction to research skills via *RSD Tasks***
 - Literature-based RSD Tasks
 - Laboratory-based RSD Tasks
- **RSD Tasks supported by targeted workshops/tutorials**





Literature-Based RSD Tasks

1. **RSD Diagnostic**
 - **O-week:** synthesis & integration of information, note taking
2. **Lit RSD Task 1**
 - **Early Sem 1:** above (advanced)
3. **Lit RSD Task 2**
 - **Mid Sem 1:** critical appraisal
4. **Lit RSD Task 3**
 - **Late Sem 1:** source selection, information retrieval and referencing
5. **Lit RSD Task 4 (Population Analysis Report)**
 - **Early Sem 2:** all above skills
6. **Lit RSD Task 5 (Mini-Symposium)**
 - **Late Sem 1:** all above skills within group context

RSD Task Progression


As RSD Tasks progress, students:

- **Gradually build on skills introduced in earlier tasks**
 - **Are given increased autonomy over task directions and outcomes**
 - In RSD Task 4, students required to construct own aim/hypothesis, collect own data, analyse/synthesise data, identify limitations/biases of study design
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RSD Diagnostic (O-week)

Marking Criteria using RSD Framework


 Facet of Inquiry	Level 1 <i>Students research at the level of a closed inquiry and require a high degree of structure/guidance</i>	Level 2 <i>Students research at the level of a closed inquiry and require a some structure/guidance</i>
A. Students embark on inquiry <i>and so determine a need for knowledge or understanding</i>	<input type="checkbox"/> Identifies some peripheral or duplicated ideas as key	<input type="checkbox"/> Identifies key ideas





Population Analysis Report (Early Semester 2)

Marking Criteria using RSD Framework

 <p><i>Facet of Inquiry</i></p>	<p>Level 1</p> <p><i>Students research at the level of a closed inquiry and require a high degree of structure/guidance</i></p>	<p>Level 2</p> <p><i>Students research at the level of a closed inquiry and require a some structure/guidance</i></p>	<p>Level 3</p> <p><i>Students research independently at the level of a closed inquiry</i></p>	<p>Level 4</p> <p><i>Student engages in open enquiry, within structures guidelines</i></p>
<p>A. Students embark on inquiry and so determine a need for knowledge or understanding</p>	<p><input type="checkbox"/> Aims/hypothesis not made explicit</p>	<p><input type="checkbox"/> Aims/hypothesis not clearly stated or inappropriate</p>	<p><input type="checkbox"/> Aims/ hypothesis clear but adheres to guidelines</p>	<p><input type="checkbox"/> Aims/ hypothesis clear, focussed and innovative</p>





Benefits for Students

- **Caters for all students regardless of their initial or current ability**
 - Addresses and remediates gaps in skill base
 - Extends more capable students
 - Fosters progression, i.e. everyone can improve
- **Clearly articulates expectations and standards**
- **Enables self-assessment against explicit criteria**
- **Enables better quality and more timely feedback**
- **Provides consistency of approach**
- **Provides an approach that can be adapted to other courses/disciplines where less guidance is provided**





Benefits for Staff

- **Facilitates clear linkage/mapping of teaching practices, assessment tasks and outcomes with course objectives and graduate attributes**
- **Less time required in the assessment process**
 - Explicit task guidelines and expectations fewer student → queries
 - Better and more timely feedback
- **Allows assessment of process as well as content**
- **Increased student engagement with course materials**
- **Reduced incidence of poor practice**
 - Drop in plagiarism
 - Evidence of more critical analysis of sources for scientific validity and credibility



RSD Framework:

a systemic approach better preparing undergraduate students for research in further university studies or employment?



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Thank you
Questions?

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