

EDUCATION RESEARCH GROUP OF ADELAIDE


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Developing the Research Skills of First Year Students – 5 Years On

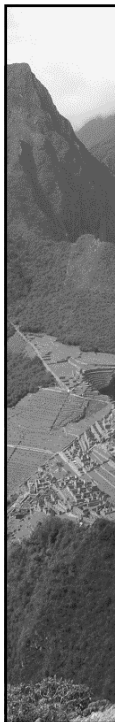
Application of the RSD framework to First Year Human Biology

- Core (compulsory) level I course in Bachelor of Health Sciences Program
 - General program with an emphasis on providing skills and entry level knowledge appropriate to careers in the broad area of health and health care
- Approx 120-140 students/year level
- Dr Eleanor Peirce



Application of the RSD framework to First Year Human Biology

- The challenges:
 - Diverse student population
 - Broad spectrum of prior educational experiences
 - No specific program prerequisites or assumed knowledge
 - Diversity of course offerings within the program
 - 3 core (compulsory) courses
 - Multiples study pathways and career prospects
 - Constraints of combined degree programs



Application of the RSD framework to First Year Human Biology

- The approaches:
 - Gradually introduce students to essential Research Skills
 - Introduction to types of information sources, source selection, acknowledgement of sources, using information appropriately
 - 4 assessment tasks:
 - Skills Workshop – O'Week
 - Competency Exercise 1 – Due early Sem 1
 - Competency Exercise 2 – Due mid Sem 1
 - Competency Exercise 3 – Due late Sem 1
 - Poster Presentation – Due early Sem 1
 - Scientific Report – Due mid Sem 2
 - Use of RSD framework to above blue assessment tasks
 - John to discuss comparison of results of first and last tasks



Application of the RSD framework to First Year Human Biology

- ‘Skills Workshop’ assessment in O-Week
 - Introduce and develop following skills:
 - Effective note taking
 - Identification of key ideas/concepts/terms
 - Synthesis of information from different sources into a set of structured notes
 - Production of a short piece of writing based on notes
 - Accurate ‘tracking’ of information (referencing)

Features of Human Skeletons (1)

The morphology (form or structure) of a person's skeleton can provide useful information about the individual's life, including diet, social behaviour, height, health, sex, how much labour the individual did, age at death, and even in some cases the cause of death. In general, human skeletons show features consistent with an upright posture and bipedalism (i.e. walking on two legs all of the time), and vary in appearance between the two sexes.

The bones of a male are generally larger and heavier than those of a female. The articular ends are thicker in relation to the shafts. In addition, because certain muscles of the male are larger than those of the female, the points of muscle attachment – tuberosities, lines, and ridges – are larger in the male skeleton. For example, male skulls have more pronounced brow ridges, and heavier muscle lines compared with those of females.

Many significant structural differences between the skeletons of males and females are related to pregnancy and childbirth. Because the female's pelvis is wider and shallower than the male's, there is more space in the true pelvis of the female, especially in the openings, the pelvic inlet and pelvic outlet, which accommodate the passage of the infant's head at birth. The pelvic angles are also wider in a female.

Adapted from:
Tortora GJ and Grabowski SR 2004 Introduction to the Human Body The Essentials of Anatomy and Physiology 6th Ed Wiley New York
And
<http://www.geocities.com/Athens/Parthenon/7644/lab2.html>


Sex Determination of Skeletal Remains (2)

Sex determination is only really possible with adolescent or adult skeletons because there is not much sexual dimorphism in children before puberty. One of the common ways to determine sex is using the size of the bones.


The pelvis is one of the most common bones to use if it is available. The subpubic angle is much wider in females than in males, typically more than 90 degrees, and less than 90 degrees, respectively. The greater sciatic notch is also wider in females, usually more than 68 degrees for females and less for males. The acetabulum, where the head of the femur (upper leg bone) meets the hipbone, is typically larger and deeper in males than females. The sacrum is straighter in females and more curved in males. The space in the middle of the pelvic bone (the pelvic inlet) is larger in women to facilitate birthing.

The cranium or skull is another useful bone for sex determination. The chin of males tends to be squarer whereas it tends to come to a point in the middle in females. The angle of the jaw is close to 90 degrees in males. The frontal bone (forehead) of males tends to be slanted back, and on females it tends to be more rounded. A brow ridge above the eyes tends to occur more often in males than females.

From:
http://www.mnsu.edu/emuseum/biology/forensics/sex_determ.html



<p>Title _____</p> <p><u>Key Idea</u> _____</p> <ul style="list-style-type: none"> • Blah blah (1) • Blah blah(1) • Blah blah (1,2) • Blah (2) blah (1) <p><u>Key idea</u> _____</p> <ul style="list-style-type: none"> • Blah blah (1) • Blah blah (2) • Blah blah (2) • Blah blah (2) • Blah blah (1) <p><u>Key idea</u> _____</p> <ul style="list-style-type: none"> • Blah blah (1,2) • Blah blah (2) 	<p>e.g.</p> <p>Title: <i>Variation in Skeletal Form between males and females</i></p> <p><u>Key Idea:</u> <i>General differences</i></p> <ul style="list-style-type: none"> • <i>Result of different diet, social behaviour, height, health, activity (1)</i> • <i>Men's bones are typically larger and heavier (1, 2)</i> <p><u>Key idea</u> <i>Differences in pelvis</i></p> <ul style="list-style-type: none"> • <i>Hip bone socket is larger in males (1)</i> • <i>Female pelvis is wider and shallower than the male's due to childbirth (1,2)</i> <p><u>Key idea</u> <i>Differences in skull</i></p> <ul style="list-style-type: none"> • <i>Male skull has pronounced brow ridges (1)</i> • <i>Male forehead slants back more than in females where it is rounded (2)</i>
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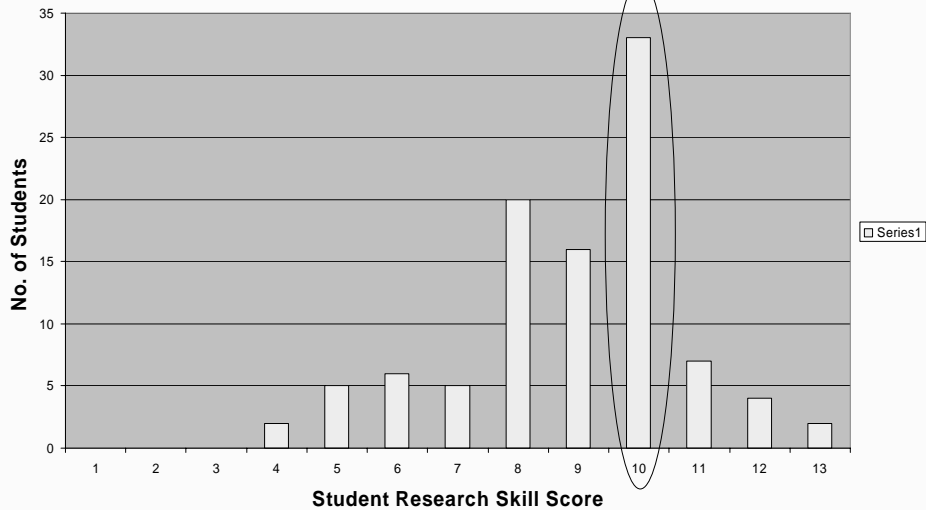


Application of the RSD framework to First Year Human Biology

- Scientific Report in mid Sem 2
 - Encompasses all research skills introduced prior (e.g. note taking, selection and documentation of sources, critical analysis and argument construction)... BUT ...
 - Students collect and interpret their own data +
 - Construct their own aim and/or hypothesis
- Population Analysis report

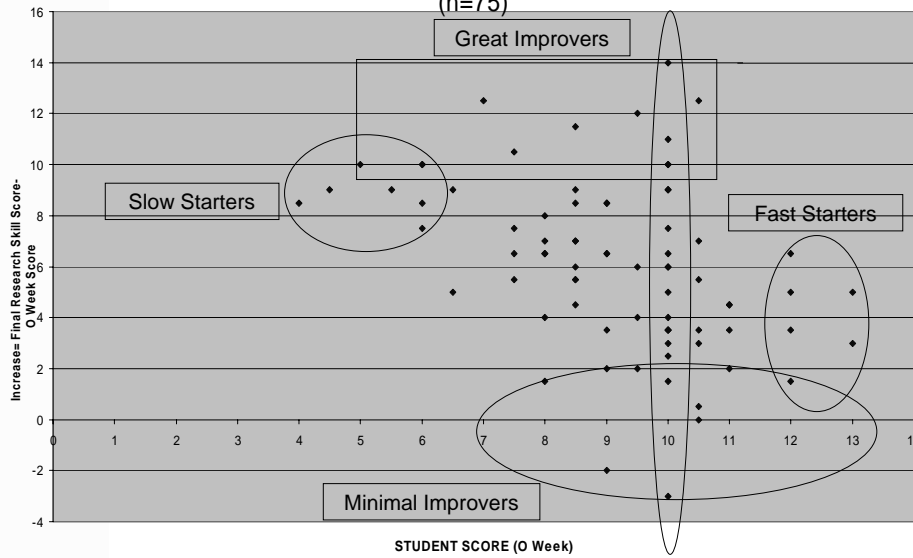
Distribution of 'O-Week' Assessment Results

No. of Students vs Research Skill Score (O Week: N=100)



Research Skill Increase Over Year vs Research Skill at 'O Week'

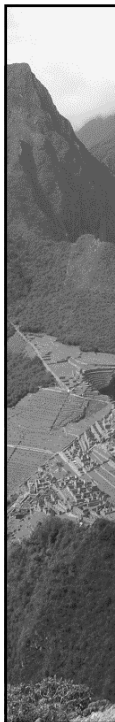
(n=75)





Research Questions

- What are the factors that promote/inhibit student research skill development of each 'cluster'?
- What is the correlation between student research skill as measured at the end of year 1, with participation and completion rates in honours and HDR?



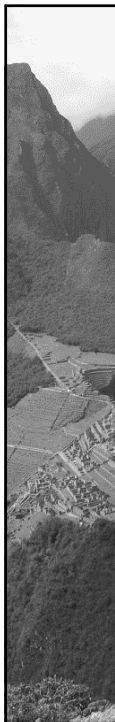
Factors That Affect Research Skill Development

Feature	Factors That Promote	Factors That Inhibit
HB Assessments	Nature of tasks	Order of tasks
Lecturers	Helpfulness and guidance	Uncertainty of expectations
Marking Criteria	Explicit guidance and feedback	Insufficient clarity
Other Courses	Generally	Conflicts in referencing
School	RSD explicit	No RSD
RSD Framework	Vision	Too generic



Student Suggestions about the RSD Framework

- RSD should have been given to us in first year
- It should be used in some other university courses
- It should be used in all other university courses
- Needs customising for each context



Discussion

- 'Great Improvers' prefer to work autonomously
- The factors that influence student research skill development are primarily within university, not external to it
- RSD highly beneficial early on to provide a vision



'Bugger. That's something else to attain ...'

