My Main Concern is
How we Teach – and How Well the
Students Learn!

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UNSW

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The Problem with Engineering Education

“How can you expect me to read a chapter in the book when I don’t understand it?”
“Only 5% of what I learned in Civil Engineering could I use in my career.”

“We must spend more learning time on developing inquisitive minds that can bear down on the pros and cons of a concept rather than providing calculations for a specific facet of a project.”
Understanding Our Students (LTM)

Kolb Model / 4-Mat

- Type 1: Why?
- Type 2: What?
- Type 3: How?
- Type 4: What-if?

<table>
<thead>
<tr>
<th>Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1</td>
<td>16%</td>
</tr>
<tr>
<td>Type 2</td>
<td>33%</td>
</tr>
<tr>
<td>Type 3</td>
<td>22%</td>
</tr>
<tr>
<td>Type 4</td>
<td>10%</td>
</tr>
</tbody>
</table>

USA: 39%
Australia: 55%

- 12% = USA
- 13% = Australia
Grade Differences after First Semester

- WHY? (LTM 1)
- WHAT? (LTM 2)
- HOW? (LTM 3)
- WHAT IF? (LTM 4)

Grade Differences: 0.4
Average GPA at End of 6th Semester
(Year 3)

<table>
<thead>
<tr>
<th>LTM 1 (WHY?)</th>
<th>LTM 2 (WHAT?)</th>
<th>LTM 3 (HOW?)</th>
<th>LTM 4 (WHAT-IF?)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.9</td>
<td>3.14</td>
<td>3.01</td>
<td>2.81</td>
</tr>
<tr>
<td>3.16</td>
<td>3.14</td>
<td>3.01</td>
<td></td>
</tr>
<tr>
<td>3.47</td>
<td>3.47</td>
<td>3.23</td>
<td>2.99</td>
</tr>
</tbody>
</table>

MALE FEMALE

Average GPA at End of 6th Semester
(Year 3)
Leading to Higher Level Thinking

- Knowledge - Remember
- Understand – Describe, Explain
- Apply
- Analyze
- Evaluate
- Create
Global Scheduling & Estimating

Materials Management

Lean Construction

Legal Issues in Construction

From Silo-Teaching to…
Weaving the Knowledge Web
We Need Professional Students

- Test Strategies
- Self Testing
- Study Aids
- Selecting Main Ideas
- Information Processing
- Concentration
- Anxiety
- Time Management
- Motivation
- Attitude

% of Students that Are Seriously Deficient
“We must spend more learning time on developing inquisitive minds that can bear down on the pros and cons of a concept rather than providing calculations for a specific facet of a project.”
## Formative Assessment

### CLASS JOURNAL ASSESSMENT FORM FOR CVEN9706

**Version 1, 2012**

<table>
<thead>
<tr>
<th>Journal Author: Matthew Furness</th>
<th>Assessor: Peter Robertson</th>
</tr>
</thead>
</table>

**Assessment Criteria:**

<table>
<thead>
<tr>
<th>1.0 Professional format</th>
<th>Yes/No</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Does it have an interesting title?</td>
<td>Y</td>
<td>Photo to be added for final (as noted)</td>
</tr>
<tr>
<td>1.2 Is an executive summary included?</td>
<td>N/A</td>
<td>Good layout</td>
</tr>
<tr>
<td>1.3 Table of Contents with page numbers?</td>
<td>Y</td>
<td>Looks professional</td>
</tr>
<tr>
<td>1.4 Margins on all sides are maintained?</td>
<td>Y</td>
<td>Need to re format with the pages No into two sections, one prior to the TOC then ‘restart’ the numbering for the journal. I asked one of the office girls to help and it took her two minutes!</td>
</tr>
<tr>
<td>1.5 All pages are numbered with Nr. 1 after table of contents</td>
<td>N</td>
<td>Most are within the journal itself</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1.6 Are learning assessments included in Appendix?</th>
<th>N/A</th>
<th>Presents well</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.7 Aesthetic (Overall Layout/presentation)</td>
<td>Y</td>
<td>Check the figures as although they are relevant they do not present well in the final journal. It could be the scanning and printing but they are mostly fuzzy and many impossible to read. They are well placed and informative. But the placement is appropriate for what you are trying to portray.</td>
</tr>
<tr>
<td>1.8 Figures</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>- Interesting and adding to the text</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>- On average one figure per page</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>- Figures not larger than 1/3 of page, scaled properly</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>- Each figure has a number and a caption</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>- Each figure is mentioned in the text</td>
<td>N</td>
<td>Not all are noted in the test, just need to be referenced in</td>
</tr>
</tbody>
</table>
We Need to Retool!

- Graduate study is considered a profession requiring expert skills
- Every Learning Style can be successful as teachers are cognizant
- Teachers know how to invoke metacognitive processes
- Students are expected to actively learn and think at a high level
- We need to create a learning society (integrated team-teaching)
- Move from summative to formative assessment

**IT NEEDS TO BE DONE BY US FOR OUR PROFESSION**
Thank You for your Attention and please visit Sydney!