BE Learning & Teaching Showcase Presentation

DESIGNING THE ULTIMATE BLEND FOR TEACHING AND LEARNING

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INFRASTRUCTURE BOOM AND MAKING INFRASTRUCTURE SUSTAINABLE

Navi Mumbai International Airport ($2.4bn) India

Darling Harbour International Convention Centre

Charanka Solar Park ($280m) India

Gothard Rail Tunnel under Swiss Alps (Longest in the world 57.5km & $12.5b)

Jinping-1 Dam will be Even larger than China’s Three Gorges Dam

Sydney Metro North-West

Northconnex Tunnel Excavation

Delhi Mumbai Industrial Corridor ($90bn) India
SUSD0016 SUSTAINABLE INFRASTRUCTURE

- Equally popular amongst full-time and part-time students
- Some part-time students are practicing professionals in the industry
- Face-to-face learning can be challenging to most part-time students because they have the difficult task of balancing work, life and education

PRIOR TO THE BLENDING EXERCISE

- Used traditional methods of teaching - one lecture one tutorial per lesson
- Did not align with findings on how students in modern society learn
- Did not consider that modern students are exposed to high tech communication, technology and media
- There was a mismatch between the teaching methods used and current trends amongst students
UNSW POLICY DIRECTION

2025 Strategy

- Blending embraced the sentiments expressed in the strategy
- Research, consultation and incremental trials and adjustments informed the program to redesign the Sustainable Infrastructure course
- Consultation included peak bodies, Industry partners, students and guest lecturers
- Educating the Sustainable Infrastructure Professional - Challenges, gaps and opportunities

Blended learning is a key element of the UNSW’s 2025 strategy
“Blended learning is realised in teaching and learning environments where there is an effective integration of different modes of delivery, models of teaching and styles of learning as a result of adopting a strategic and systematic approach to the use of technology combined with the best features of face to face interaction.” (Krause, 2007)
CONTINUOUS IMPROVEMENT IN RESPONSE TO CHANGE

- Information and communication technologies are constantly reshaping, redefining and challenging our accepted notions of teaching and learning in higher education (Donnelly, 2010).

- Any blended learning program needs to incorporate continuous feedback, monitoring and evaluation so that the methods can respond to these changing circumstances.
POSSIBILITIES

Source: Bath and Bourke, 2010
BLENDED LEARNING MODES

- **Technology** is used to facilitate course management and resources for learner support.
- **Technology** is used to enrich the quality of the student learning experience through interactive learning activities beyond those attainable through face-to-face classroom interactions.
- **Technology** is used to support learning that is largely self-directed but also involves the use of interactive and collaborative learning activities.
BLENDED APPROACHES

Blended approaches reflect a combination of the following factors.

- **Schedule:**
  - synchronous
  - asynchronous

- **Guidance:**
  - instructor-led
  - self-paced

- **Technology:**
  - online
  - offline

- **Participation:**
  - individual
  - group

To achieve the best blend for Student Centred Learner managed, collaborative and cooperative Learning.
THE BLEND WE DESIGNED

- Significant online (50%) content delivered online and asynchronously - students utilize the material at their own pace, own location, and a time they desire

- **Student Support**
  - through emails and online discussion
  - online forums
  - Industry Mentors
  - Skype/Phone conferencing
  - email, phone

- **Use of Industry Partners:**
  - Infrastructure Sustainability Council of Australia, government departments and private industry

- **Learning activities**
  - **Face to face**: panel discussions, tutorials and exercises
  - **Online**: lectures, quizzes, watching videos, Forums
  - **Group project**: provides opportunities for students to apply what they learn to real life projects and use their research skills to explore
INNOVATION

• Partnership with Infrastructure Sustainability Council (ISCA) of Australia
• Using a panel discussion instead of a lectures
• Real life group projects with Industry partners - specific end product in mind
• Industry mentors for group projects
• Adoption of formative assessment methods which helps modify teaching and learning activities to improve student attainment
• Online lectures and materials are used as preparation for panel discussions
BLENDING SELECTION

- The enrolled students are provided with a complete time table which provides a list of meeting dates and times for face-to-face encounters and all other online participation requirements.

- The content of the course is made available to students in manageable modules which is set out in a logical and sequential manner.

- Content is available for students in the form of CD Rom as well online via Moodle on special request.

- The content is enhanced using technology and Moodle.

- The online content would include short introductory lectures, recorded narrations, power point presentations with voice-over narration, discussion forums, documentary videos clips, movies and quizzes.

- Students are provided with additional resources online or at other convenient locations such as the local library.

- The course content is generated in such a way that the online components of the course would be as demanding as face-to-face time which would include reading, research, review, learning new concepts, and ongoing assessment.

- Students are invited to participate in mid-semester and final course evaluation.
### Structure of the Redesigned Course

<table>
<thead>
<tr>
<th>Activity No</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>Total contact hours</th>
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<tbody>
<tr>
<td>Week 1</td>
<td>Introduction</td>
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<td>Week 3</td>
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<td>T/E</td>
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<tr>
<td>Week 4</td>
<td>L/Q</td>
<td>L/Q</td>
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<td>F</td>
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<td>L/Q</td>
<td>L/Q</td>
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<td>F</td>
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<td>L/Q</td>
<td>L/Q</td>
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<td>T/E</td>
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<td>L/Q</td>
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<td>F</td>
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<td>3</td>
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<tr>
<td>Week 13</td>
<td>Final Presentations and wrap up</td>
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**Legend:**
- L - Lecture
- PD - Panel Discussion
- Q - Online quiz
- P - Project
- T - Tutorial
- E - Exercises
- F - Discussion Forum
<table>
<thead>
<tr>
<th>Week</th>
<th>Face to Face</th>
<th>Core Activity</th>
<th>Self directed activity by students</th>
<th>Discussion Forums/Assessments</th>
</tr>
</thead>
</table>
| 1    | Face to Face | Infrastructure sustainability  
- Introduction to the course  
- Course content  
- Assessment tasks  
- Infrastructure and sustainability – The context  
- Infrastructure – Global picture  
- Measuring infrastructure sustainability - ISCA Rating Scheme  
- Discussion  
  Tutorial  
  - Student Survey  
  - Introductions  
  - A survey of skills backgrounds  
  - Student expectations  
  - Course outline  
  - New ideas  
  - Project Teams are formed  
  - Discussion on project teams and group projects  
  - Short video (5 minutes) shown in class – what is infrastructure sustainability? |  
- Small group discussions – reporting back  
- Feedback on course content  |  
- Exercise/Assessment task  
- Appointment of groups and Selection of group project |
| 4    | Face to face | Panel Discussion  
Existing and future Infrastructure.  
Planning, repairing and retrofitting. Why infrastructure needs to be sustainable? How are we meeting the challenge to ensure sustainability of infrastructure (new and existing)? Changing, maintaining, repairing and retrofitting |  
- Attend in their groups  
- Questions prepared in consultation with peers  
- Q&A  
- Discussion  |  
- Online Assessment task  
- Other
### Online Content

**Video (20-30 minutes lecture presentation)**
- Rapid Urbanisation, Infrastructure, and the boom
- Sustainability of infrastructure – issues and strategies

**Video (20-30 minutes lecture presentation)**
- Infrastructure sustainable council of Australia (ISCA) Rating Scheme

**YouTube video**
- Mega infrastructure Projects of the Future and sustainability

### Online WBT forum
- Selection of projects
- Assessment task – Quiz about the course ISCA, Infrastructure

### Q&A about the course
- Quiz
- Preliminary exploration for Social media interaction with peers
- Online discussion with peers on group project and what is on offer

### Readings
- The Urban Land Institute and Ernest & Young. 2014. Infrastructure 2013 Global Priorities
- BECHTEL Sustainability report 2015
- Bhattacharya, J et al. (2015). Driving sustainable development through better infrastructure: Key elements of a transformation program.
FEEDBACK

▶ 76% favour 100% face to face teaching
▶ Access to online lectures and online material are useful but as an additional resource
▶ Industry based group projects provide encouragement to do my best
▶ Panel discussions make subject matter more meaningful, opportunity for clarifications, feedback from the industry, productive, re-invigourating and relevant
▶ Online quizzes encourage me to be more attentive