Emergency Online Delivery of a Freshman Physics Course to Multiple Cohorts

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### School Profiles

<table>
<thead>
<tr>
<th>DEAKIN UNIVERSITY</th>
<th>DEAKIN COLLEGE</th>
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</thead>
<tbody>
<tr>
<td>51,000 students</td>
<td>Part of the Navitas Group</td>
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<tr>
<td>30% off-campus (distance/on-line)</td>
<td>2500 students</td>
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<td>Off-campus students scattered around Victoria, Australia and overseas.</td>
<td>Cohorts from Australia, Southeast Asia, China, Africa, Middle-East.</td>
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**SEB101 ENGINEERING PHYSICS**

- Taught twice per year.
- 200 “on-campus” students.
- 100 “off-campus” students.

**SEB101 ENGINEERING PHYSICS**

- Normally taught on-campus at Geelong, three times per year.
- Average enrolment 25 students (around 10 Australia, 15 overseas).
Challenges from CoVid-19

- Early days of semester one (students were still enrolling- Deakin College).
- Short time frame to transition on-campus to online.
- 1 week’s notice for Deakin University; 2-3 days for Deakin College.
- Effective use of teaching tools (Teaching platforms- Like Zoom and BB-Collabrate).
- All lab practicals had to go online, some experiments had to be changed.
- Educating educators to effectively use technology – tutors and lab assistants.
- Assessments went from in-person to online, including the exam.

Students were in different countries and time zones: Australia, India, Pakistan, Vietnam, Malaysia, Sri Lanka, Africa.
Deakin College Practicals: Simulations from PhET - University of Colorado

https://phet.colorado.edu/en/

- Pendulum
- Hooke’s law
- Motion inclined plane
- Projectiles
- Friction
- Ohm’s law
- Standing waves

Fast, free, available anywhere.
Deakin University Practicals: Mix of at-home and online activities

- Measurements and uncertainties
- Pendulum
- Hooke’s law
- Ohm’s law web-cast
- Standing waves videos (2 parts)
Outcome

- Deakin College online teaching was successful (two semesters 1 and 2) based on:
  1) Student results very similar as compared to pre COVID.
  2) Student satisfaction enhanced for Deakin College.
  3) Future demand for continued online class, especially domestic students.

- Deakin Uni on-campus students made the transition well, but students were very anxious about it.

- Deakin Uni off-campus was almost business as usual. On-campus prac sessions could not run in semester one and will not run over summer 2021, who knows?
The Future

- The University and the College look forward to campus reopening and resuming on-campus classes. This will not fully happen until later in 2021 (if we are lucky).
- In the meantime online teaching and at-home activities will continue.
- Developing more at-home, hands-on practicals.
  - Remote beam-bending experiment
  - Arduino kits for collecting real-time experimental data
  - Cell-phone apps for physical measurements
- Updating online teaching videos and other resources.
Bibliography


Evaluate Sessions and Win!

- Navigate to specific session to evaluate
- Select “Evaluate Session” on session details screen
- Complete session evaluation*

*Each session evaluation completed (limited to one per session) = one contest entry

Five (5) $25 gift cards will be awarded

Must submit evals using the OLC conference website, beta platform mobile app