



THE UNIVERSITY OF  
**WAIKATO**  
*Te Whare Wānanga o Waikato*



# *Easy Over*

A 3-week mid-semester trial flipping a practical paper

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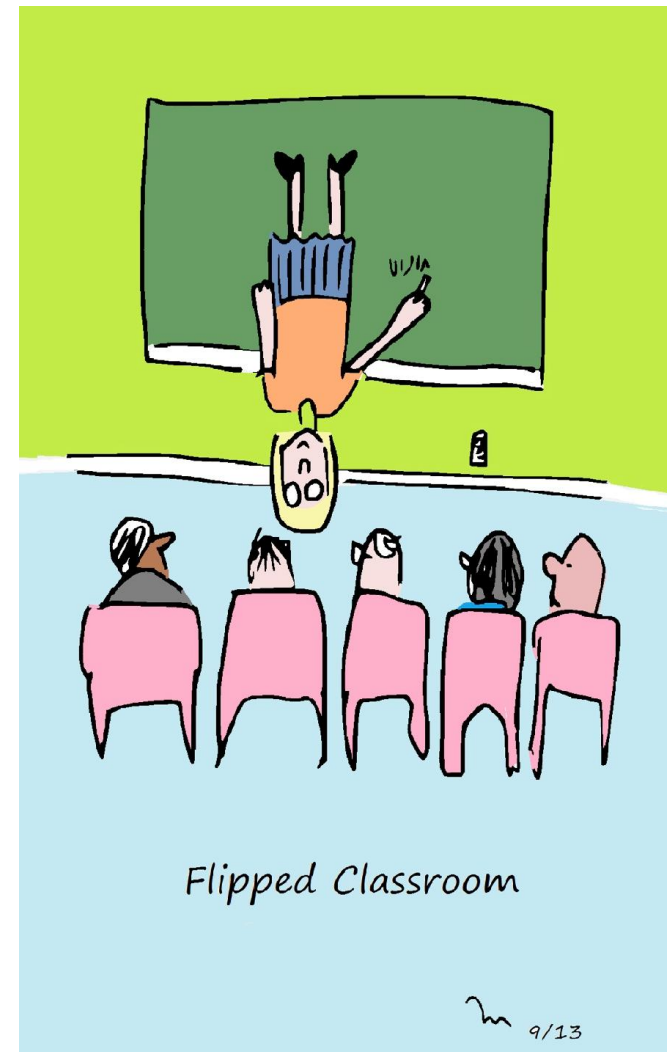
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(The TLRI team)



1. How does an extended flipped classroom model impact on the teaching of TCs?
2. How does an extended flipped classroom model impact on student learning of TCs?
3. How does student learning through an extended flipped classroom model translate into student workplace competency?



# *Flipped class*

In-class time is “re-purposed” for inquiry, application, and assessment

Students gain control of their learning = studying course material outside of class

During class time, instructors = facilitators of the learning process

Main goal in flipping a class: to cultivate deeper, richer active learning

Emphasis is on higher-order thinking skills and application to complex problems (through collaborative learning, case-based learning, peer instruction, problem based learning)

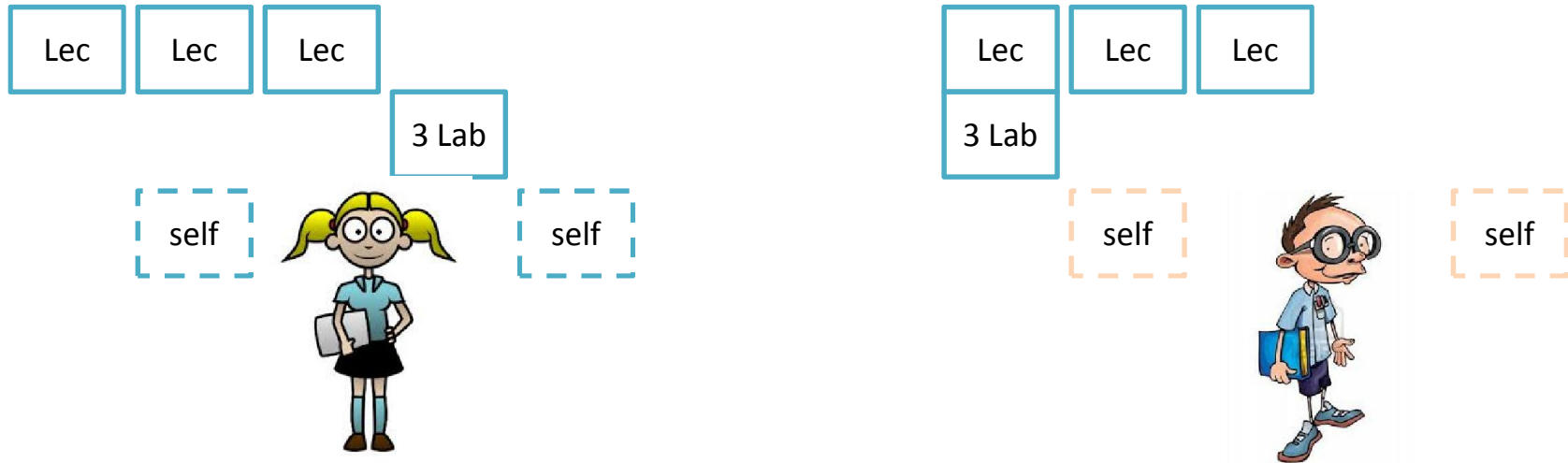
- Traditionally 3L / 1T / 1x3hr-Lab
- 2011 -> TC-focus, de-stuffed curriculum
- 2013 -> 3L/1Lab & eTutorials
- 2015 -> PARTIAL FLIP
- 2016? -> 1Lab & eTutorials & Videos
- 2020? -> MOOC

WE ARE HERE

THE FULL FLIP

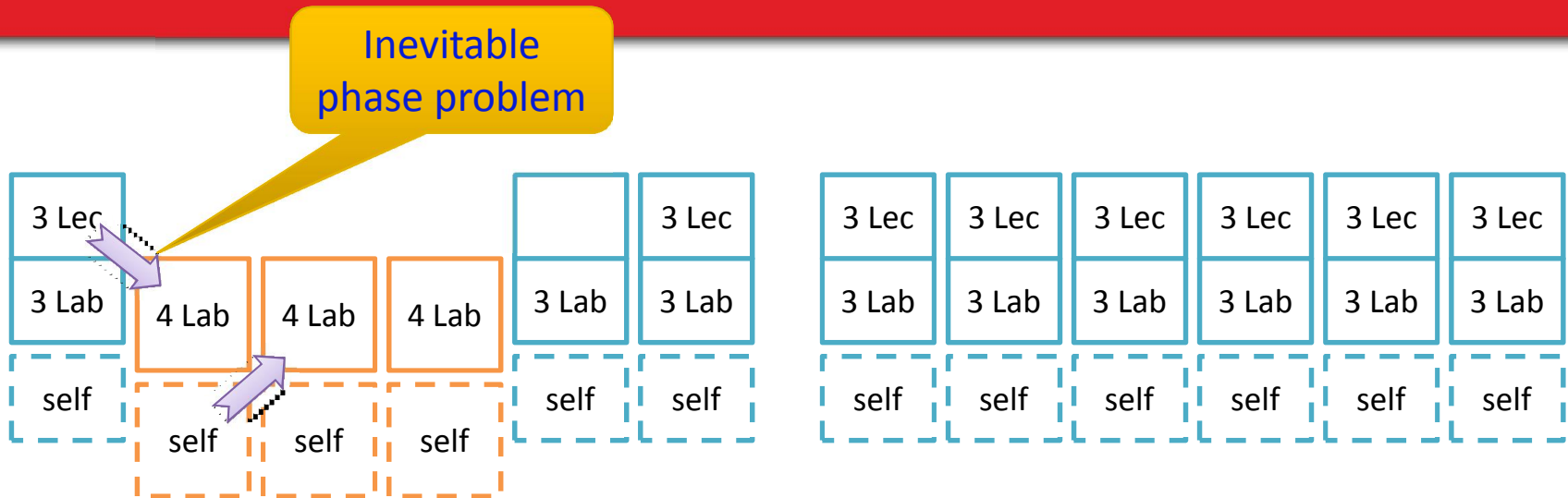
MOOC labs?  
Unsolved problem!

# ENEL111 – Why are we different?



- The phase problem:
  - Lectures: 135-155 people, run once
  - Labs: 30 people, 5 repeats/week
- TC focus

# What we will do



- Flip 2<sup>nd</sup>, 3<sup>rd</sup>, & 4<sup>th</sup> weeks
- Recorded ~30+ videos, 4-18 minutes long
- Recommend ~30+ youtube videos
- Classwork for the extra lab-contact hour

CRAIG WILL  
ELABORATE

- Cost?
  - All summer & SRS -> 3 flipped weeks (pew)
- Benefit?
  - Eliminate “phase problem” (yea!)
  - Improve learning (to be confirmed)

And now on to the next part...



Sorden (2008) describes effective methods for designing educational multimedia:

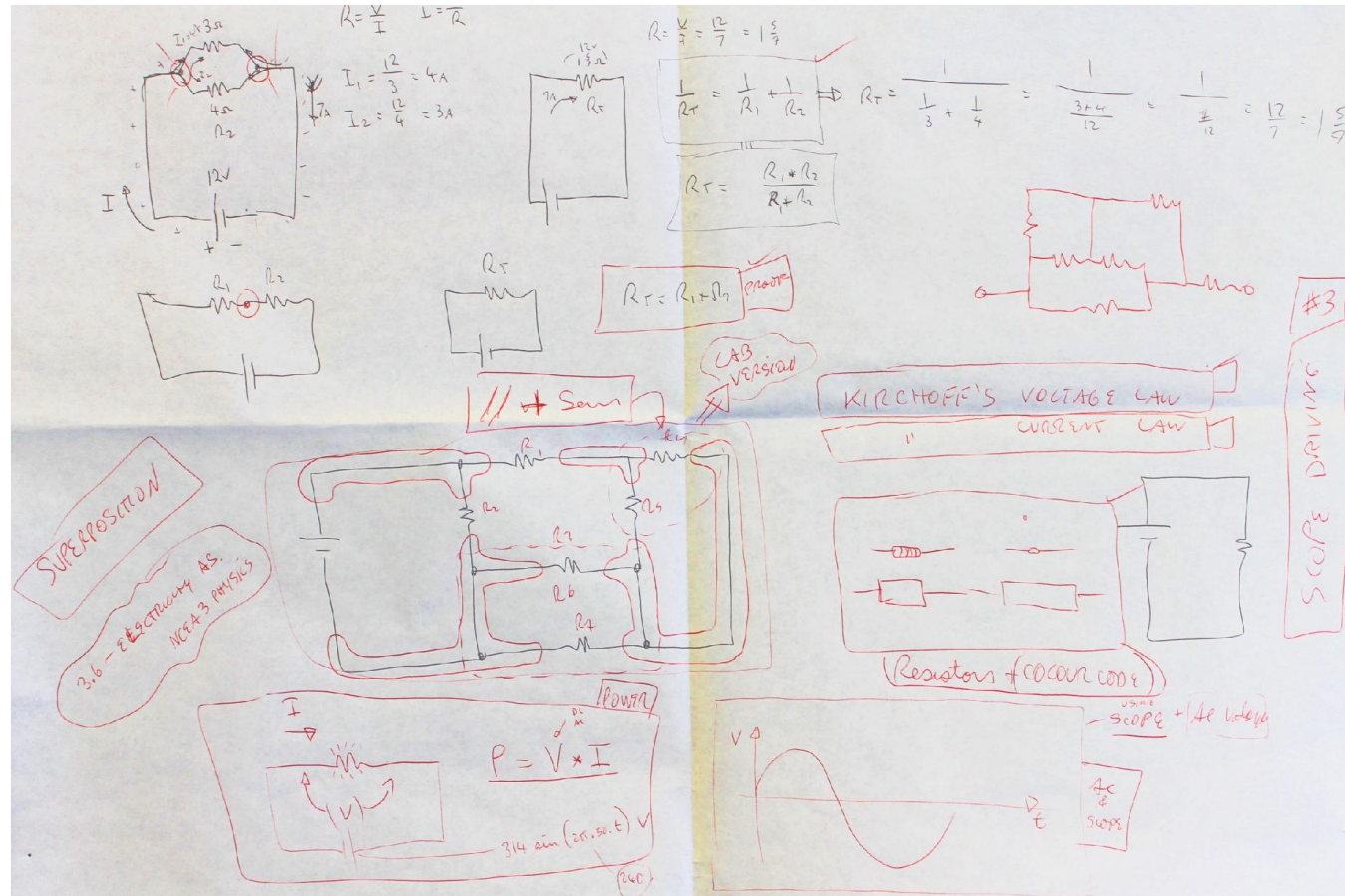
- Worked example effect
- Completion problem effect
- Modality effects
- Contiguity effect
- Personalisation principle
- Redundancy principle
- Pre-training principle
- Pacing principle

Guo, Kim & Rubin (2014) advise on creating “engaging” videos for MOOC’s:

- Plan for and make short videos (under 6 min.)
- Use “talking heads”/human representations
- Production value might not matter
- Pre-production is important
- Declarative vs procedural videos

# How we made the videos

## 1<sup>st</sup> step: Pre-production



$R = \frac{V}{I} \quad I = \frac{V}{R}$   
 $I_1 = \frac{12}{3} = 4A$   
 $I_2 = \frac{12}{4} = 3A$

$R = \frac{V}{I} = \frac{12}{7} = 1\frac{5}{7}$   
 $\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2} \Rightarrow R_T = \frac{1}{\frac{1}{3} + \frac{1}{4}} = \frac{1}{\frac{3+4}{12}} = \frac{12}{7} = 1\frac{5}{7}$   
 $R_T = \frac{R_1 \cdot R_2}{R_1 + R_2}$

$R_T = R_1 + R_2$  (series)  
 $R_T = \frac{R_1 \cdot R_2}{R_1 + R_2}$  (parallel)

**KIRCHHOFF'S VOLTAGE LAW**  
**KIRCHHOFF'S CURRENT LAW**

**Power**  
 $P = V \times I$   
 $314 \sin(2\pi \cdot 50 \cdot t) \text{ V}$

**AC**  
**scope**  
**scope + the voltage**

**SUPERPOSITION**  
 3.6 - ELECTRICITY AS  
 NCEA 3 PHYSICS

**LAB**  
 version

**#3**  
**SCOPE DRIVING**

# *How we made the videos*

2<sup>nd</sup> step: Filming in controlled conditions

# *How we made the videos*

3<sup>rd</sup> step: Reducing control over conditions

4<sup>th</sup> step: Post-production

# *What we learnt from production*

- Expensive facilities and equipment aren't required
- Time and practice are important
- Invest in pre and post-production

Who is watching, what, when, how many times

Peaks in viewership = point of interest (important for TCs)

Video dropout (navigation away from video before completion)

Viewing & re-viewing (scub, skip, play & pause)

Individual and group data

*Thank you...*



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**Wilf Malcolm Institute  
of Educational Research**

*Te Pūtahi Rangahau Mātauranga o Wilf Malcolm*

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RESEARCH INITIATIVE**

NĀU I WHATU TE KĀKAHU, HE TĀNIKO TAKU