

Increasing learner engagement online

..Beyond Breakout meetings: Student success through student autonomy
(or how I learned to stop worrying and love the small group Webex meetings)



UNIVERSITY
OF WOLLONGONG
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Biotechnology: BIOL343/980



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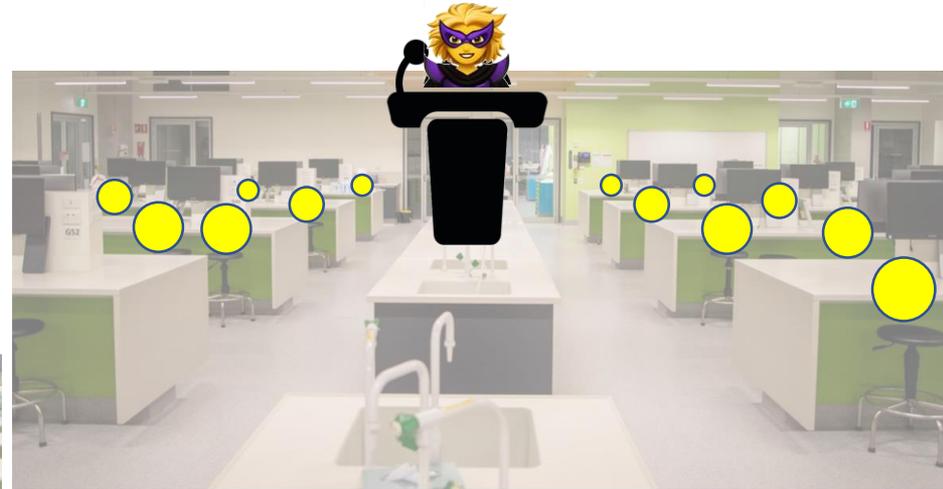
Yee Lian Chew

BIOL343/980: Biotechnology and Techniques in Medical Research

80 students - Pre-medicine; prospective high school teachers; medical researchers

Usual timetable per week: 2 x 1 hour lectures, 2 hour tutorial class, 3 hour practical class

1. Academic addresses all 80 students
with a ~20 minute powerpoint presentation



2. Students work in pairs throughout the class
Demonstrator 🦸 has 20 students total, circulates
among students in lab pairs



3. Demonstrator wraps up with the 20 students
Consolidates knowledge and checks work of individual
students



Students work in the same lab pairs throughout the semester
Students work with the same demonstrator throughout the semester

Groupwork and our BIOL343/980 goals:

Having students critically evaluate and understand the practical class theory and methodology

Co-operative learning positively impacts student achievement (Johnson & Johnson 1989) 🤔

To retain students and ready them for pathways after graduation

Small-group learning in STEM increases academic achievement and positive attitudes towards study; **and** reduces attrition rates (Springer et al 1999)



The remote delivery challenge. We want:

Students to actively interact with each other



Students to engage with the subject material



Students to engage with their demonstrators



Demonstrators to monitor the progress of individual students



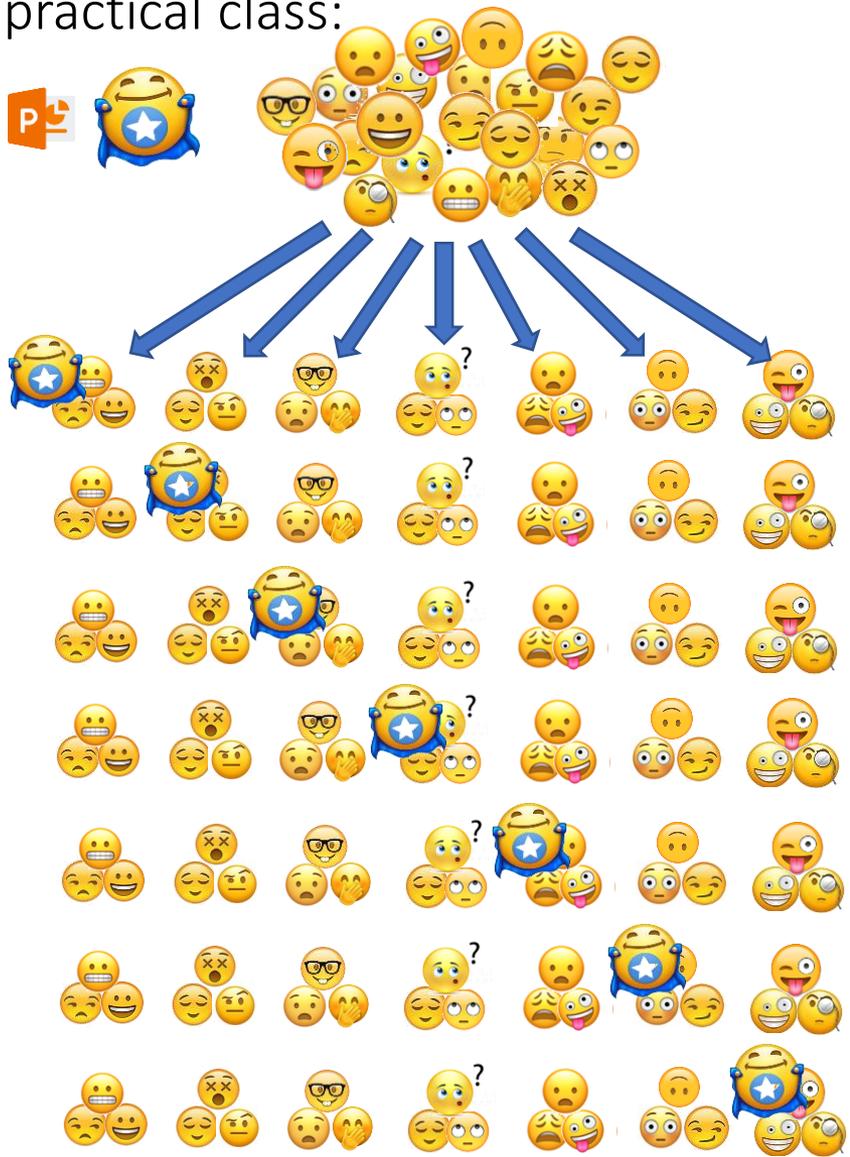
To avoid meltdowns



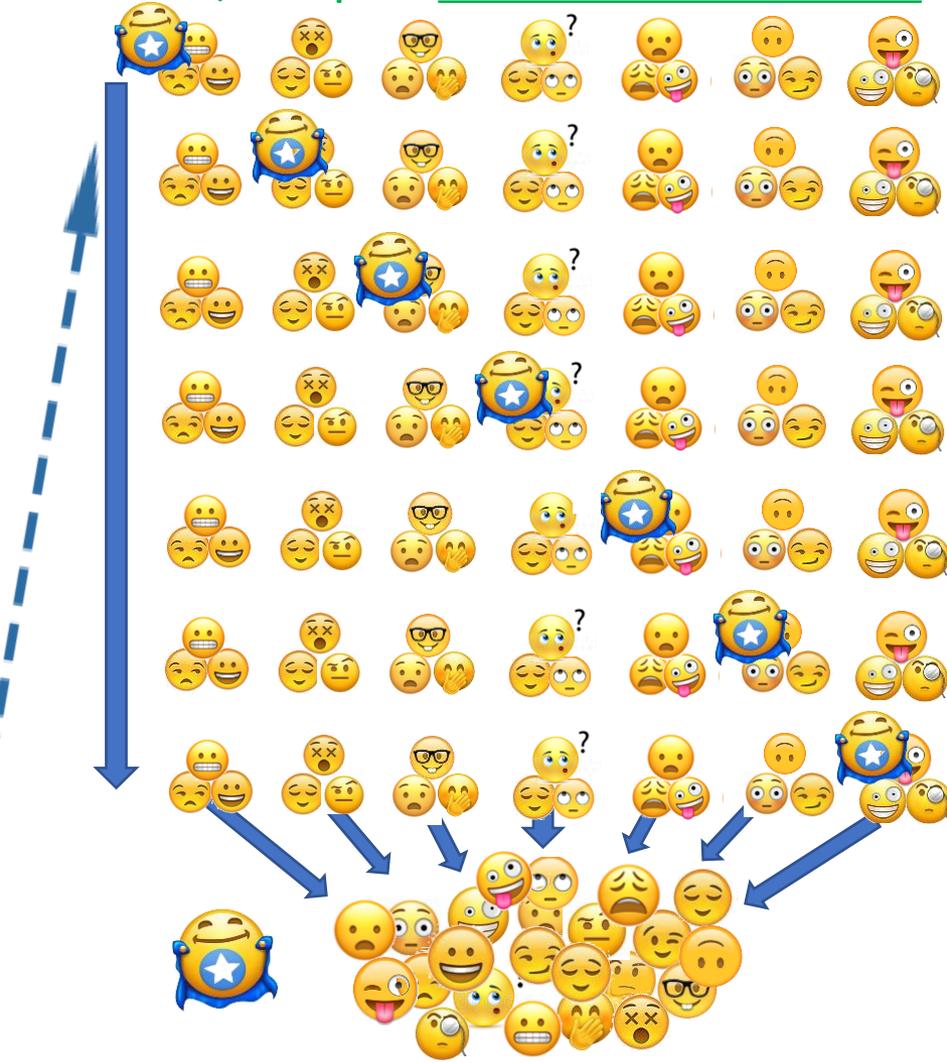
"If we can get our groups to be more comfortable, students should learn better and work better"
(see Theobald *et al.* 2017)

The practical class:

Time



1. One demonstrator meets with their 21 students:
Webex "large group" meeting (i) – 15 minutes
Powerpoint presentation, interaction via chat
2. Students join Webex "small group"
3 student meetings - 90 minutes.
Demonstrator drops into each meeting for 6 minutes; and repeats. Interaction via video and audio



3. One demonstrator meets their 21 students:
Webex "large group" meeting (ii) – 15 minutes
Consolidate the practical material, interaction via chat

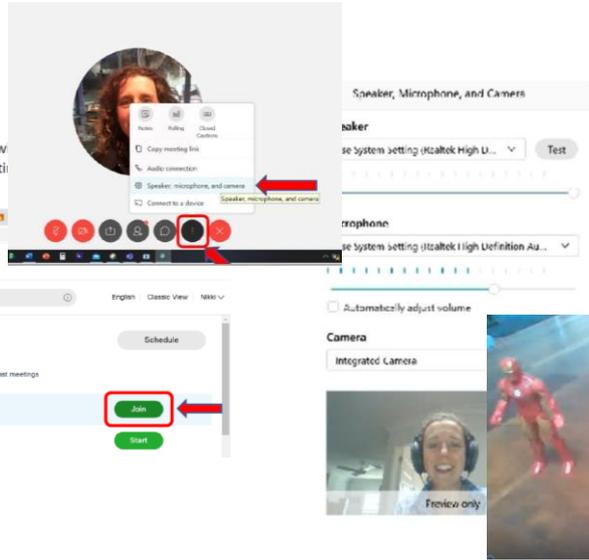
Before the first online practical class

1. Let the students know exactly what is happening:
Moodle, SOLS

1. Joining the 20 student (large demo group) meeting

There are different ways to join a meeting.

a) We recommend you go to uow.webex.com. Login with the "Meetings" tab. You will see a list of the meetings you.



2. Give the students specific instructions for Webex **and** for the class layout.. and for the practice session

3. Have a **practice session** with students and demonstrators – record attendance



4. Immediately follow up via email with all students who missed the practice session



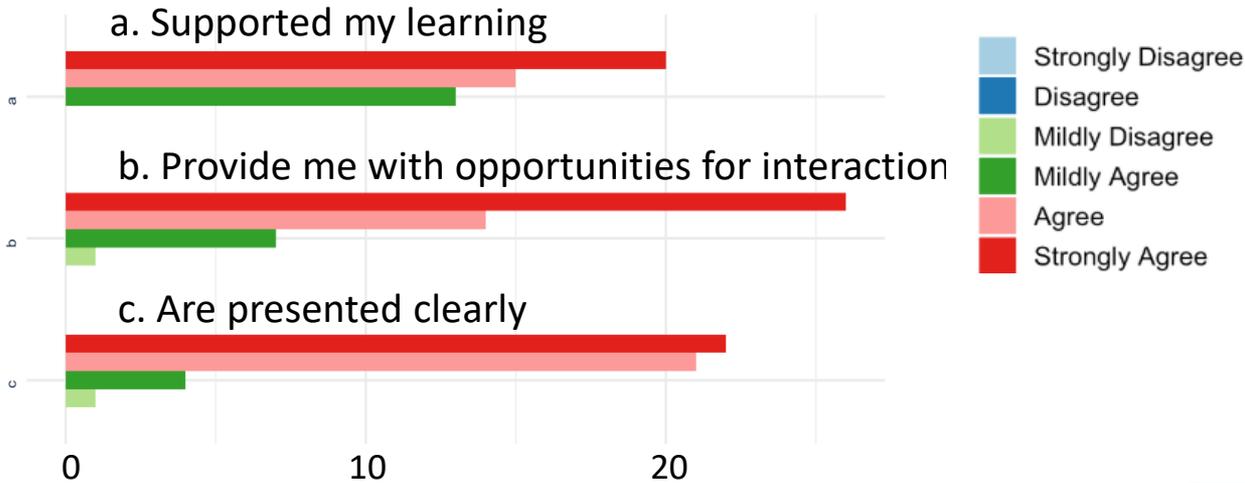
5. Run the practical class! Actively seek feedback from the students and the demonstrators



Webex small group practical classes: Student Feedback

51 students / 80 total = a **64% response rate** to the Moodle Mid-Session Check-in Survey

Q4 – Any real-time classes (e.g. via Zoom, WebEx, etc.):



Student feedback:

“webex practical sessions are conducted impeccably, and allow thorough engagement with the content (and peers)”

“Practicals - Do not change the format one bit”

“i'm so glad we have a prac group - the social support via webex is my favourite part of my week”

“i love the use of the small groups, really excellent for consolidating learning!”

Separate WebEx Poll:

Did you find the small group meetings (2 – 3 students) in the practical valuable?

A. Very valuable	27/43 (63%)
B. Somewhat valuable	7/43 (16%)
C. Neutral	4/43 (9%)
D. Somewhat not valuable	2/43 (5%)
E. A waste of time	0/43 (0%)

Demonstrator feedback:

“..breaking them into groups of three was really perfect”

“The <small group> sessions helped promote individual learning and student engagement..”

“the smaller group meetings allowed students to ask questions that they were not comfortable asking in the bigger group”

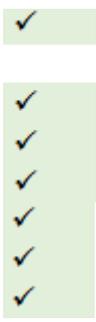
Webex small group practical classes: More evidence

No withdrawals since the start of online practical classes



Near perfect attendance in practical classes: 99.3%

Student's attendance was recorded when they showed their work to their demonstrator



No change in marks for the practical lab report assessment (2019 to 2020)

Students used the meetings outside of practical classes!



Alternate host

Let anyone with a host account on this site or anyone joining from an authenticated

Cisco video device in this organization host my meeting

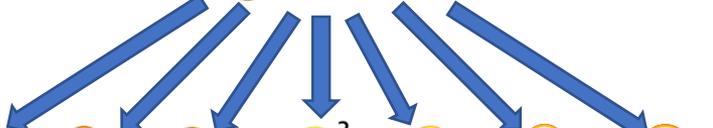


Nikolas Johnston

- | | | | |
|--|-----------------------------------|---|-------|
| | 10:00 AM - 11:30 AM
Tue, 7 Jul | Hammad, Hanna M, Elise small group meetin
Nikki Curthoys | Start |
| | 10:00 AM - 11:30 AM
Tue, 7 Jul | Niklas, Jordyn, Finnian small group meeting (
Nikki Curthoys | Join |
| | 10:00 AM - 11:30 AM
Tue, 7 Jul | Kody, Jay, Tracy small group meeting (Noor
Nikki Curthoys | Start |
| | 10:00 AM - 11:30 AM
Tue, 7 Jul | Kelly, James M, Angus small group meeting
Nikki Curthoys | Start |
| | 10:00 AM - 11:30 AM
Tue, 7 Jul | Isaac, Nura, Deeyara small group meeting (
Nikki Curthoys | Start |
| | 10:00 AM - 11:30 AM
Tue, 7 Jul | Hannah B, Yasmin, Holly small group meeti
Nikki Curthoys | Join |



The budget cut practical class:



Time



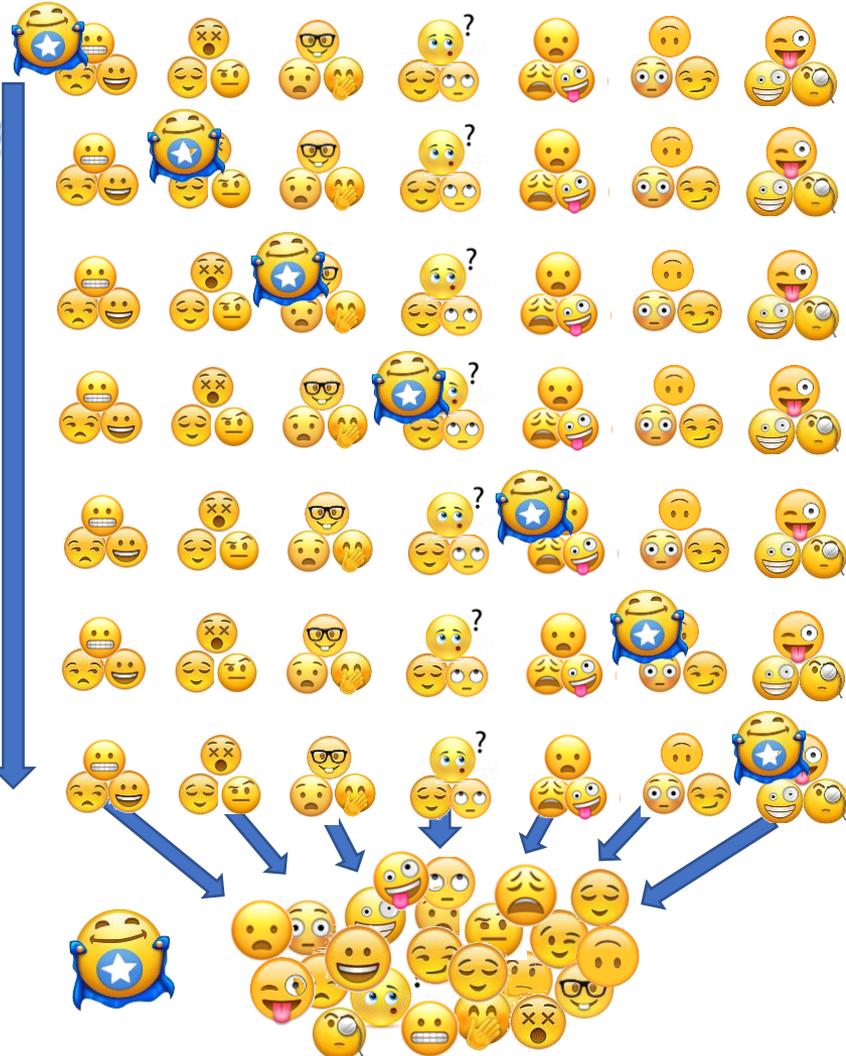
1. One academic meets with all students:
Webex “very large group” meeting (i) – 15 minutes

Powerpoint presentation, interaction via chat

2. Students join Webex “small group”

3 student meetings - 90 minutes.

In the second half of the lab demonstrator drops into each meeting



3. One demonstrator meets their 21 students:
Webex “large group” meeting (ii) – 15 minutes

Consolidate the practical material, interaction via chat

BUT: There is no replacement for a practical class

Demonstrator Feedback:

“.. I think that the online learning environment still has **inherent limitations** especially for substitution of practicals. “

“**students are missing out** on not only practical skills, but also the ability to put into practice the techniques that they are reading about.”

Student Feedback:

“it is impossible to actually develop practical skills... **i will have no idea** how to physically do everything”

BRING BACK THE PRACTICALS in 2021!!



Acknowledgements:

BIOL343/980:



2020 cohort of
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are awesome



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Stafford Lumsden



Janine Delahunty



Adrian Moody



Helen Jamieson



Dave Porter

SMAH Ed Tech:

SCMB:



Tracey Kuit

Thank you!

“i cannot express my gratitude for how well this subject has been transitioned to an online learning environment, especially regarding the layout and conduction of practical classes... I believe other subjects should follow similar structure to that provided in this course.”

References

Johnson, D. W., & Johnson, R. (1989). *Cooperation and competition: Theory and research*. Edina, MN: Interaction Book Company.

Springer L, Stanne M. E, Donovan S. S. (1999). Effects of small-group learning on undergraduates in science, mathematics, engineering, and technology: A meta-analysis. *Rev Educ Res.* 1999;69: 21–51.

Theobald E. J, Eddy S. L, Grunspan D. Z, Wiggins B. L, Crowe A. J. (2017). Student perception of group dynamics predicts individual performance: Comfort and equity matter. *PLoS One.* 2017;12(7):e0181336.